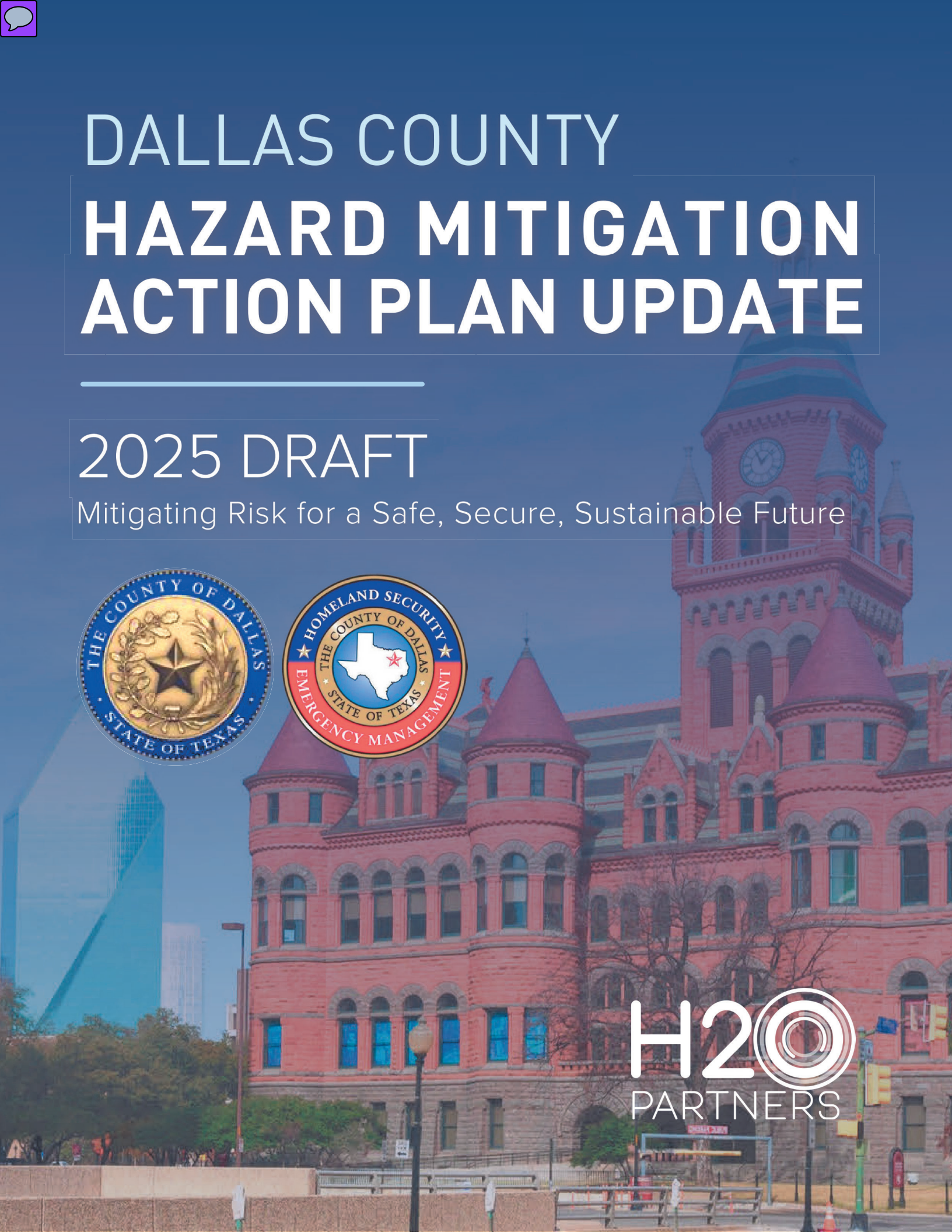
DALLAS COUNTY
HAZARD MITIGATION ACTION PLAN UPDATE

2025 DRAFT

Mitigating Risk for a Safe, Secure, Sustainable Future



H2O PARTNERS

For more information, visit our website at:

https://www.dallascounty.org/

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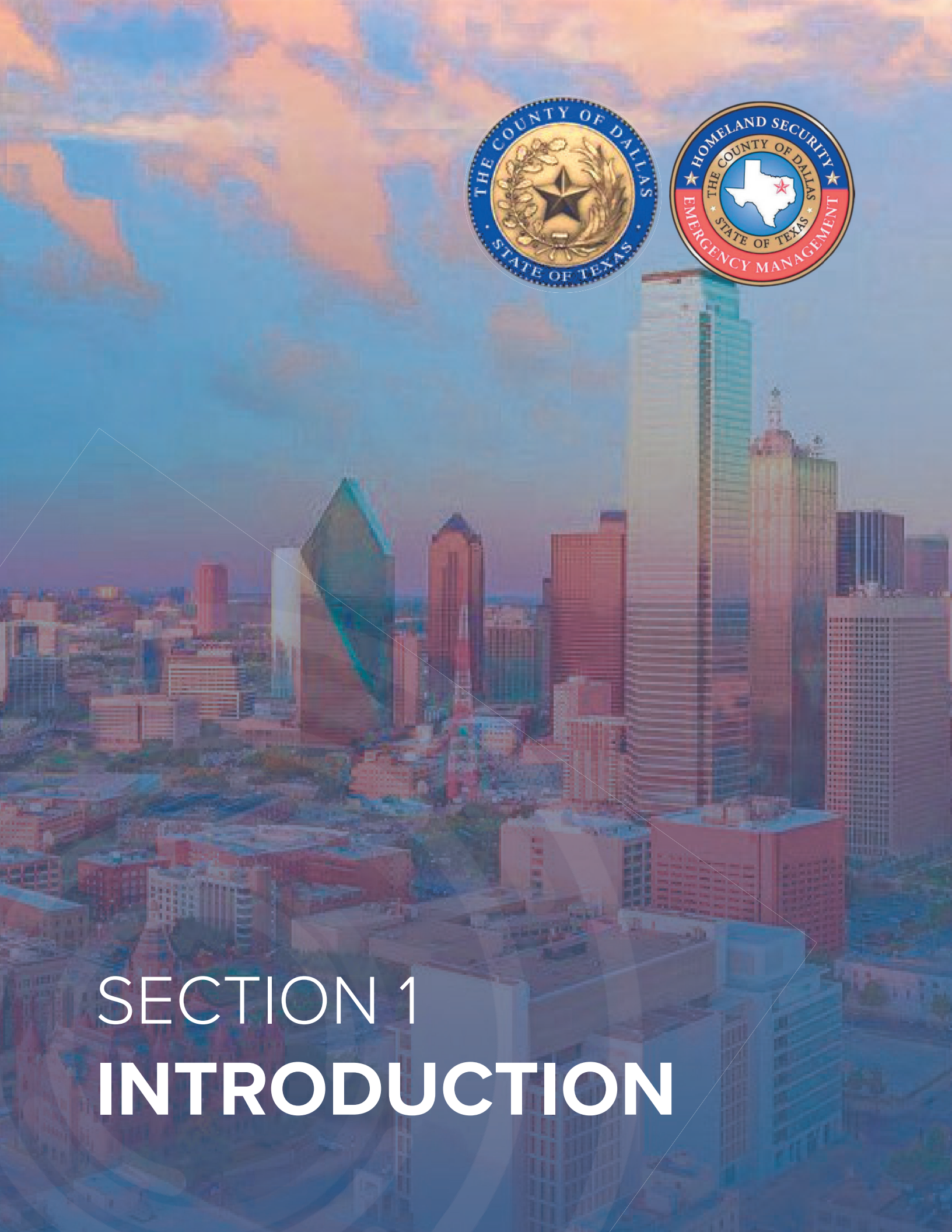
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INTRODUCTION

SECTION 1: INTRODUCTION

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BACKGROUND

Dallas County is located in northcentral Texas in the Dallas-Fort Worth metroplex. The largest city and county seat, Dallas, is the third-most populated city in Texas; Dallas County itself is the second-most populated county in the state. Tarrant County is adjacent to the west, Ellis County borders the southern portion of the county, Kaufman County is to the southeast, Rockwall County is to the east, Collin County is to the northeast, and Denton County is to the northwest.

Texas is prone to extremely heavy rains and flooding with half of the world record rainfall rates (48 hours or less).[1] While flooding is a well-known risk, Dallas County is susceptible to a wide range of natural hazards, including but not limited to tornadoes, extreme heat, wildfire, and drought. These life-threatening hazards can destroy property, disrupt the economy, and lower the overall quality of life for individuals.

While it is impossible to prevent an event from occurring, the impacts from many hazards on people and property can be lessened through mitigation. The Federal Emergency Management Agency (FEMA) defines mitigation as *sustained actions taken to reduce or eliminate long-term risk to people and property from hazards and their effects.*[2] Communities participate in hazard mitigation by developing hazard mitigation plans. The Texas Division of Emergency Management (TDEM) is required to review the plan and FEMA has the authority to review and approve hazard mitigation plans through the Disaster Mitigation Act of 2000.

The Disaster Mitigation Act requires that hazard mitigation plans be reviewed and revised every five years to maintain eligibility for Hazard Mitigation Assistance (HMA) grant funding. In 2020, Dallas County developed their previous Hazard Mitigation Action Plan (HMAP) to be specific to the County and the following participating jurisdictions: Town of Addison, City of Balch Springs, City of Carrollton, City of Cedar Hill, City of Cockrell Hill, City of Coppell, City of DeSoto, City of Duncanville, City of Farmers Branch, City of Glenn Heights, Town of Highland Park, City of Irving, City of Lancaster, City of Richardson, City of Rowlett, City of Sachse, City of Seagoville, Town of Sunnyvale, City of University Park, and City of Wilmer.

FEMA approved the previous Dallas County HMAP in 2020, which then was set to expire in 2025. Therefore, the County began the process of developing a Hazard Mitigation Plan Update in order to maintain eligibility for grant funding. The HMAP Update planning process provided an opportunity for Dallas County to evaluate successful mitigation actions and explore opportunities to avoid future disaster loss.

Dallas County selected H2O Partners, Inc. to write and develop the 2025 HMAP Update, hereinafter titled: “Dallas County Hazard Mitigation Action Plan Update 2025: Maintaining a Safe,

[1] Source: http://www.floodsafety.com/texas/regional-info/san-antonio-flooding/
[2] Source: http://www.fema.gov/hazard-mitigation-planning-resources

Secure, and Sustainable Community" (Plan or Plan Update). This is a multi-jurisdictional plan; the participating jurisdictions include:

- Dallas County
- Town of Addison
- City of Balch Springs
- City of Carrollton
- City of Cedar Hill
- City of Cockrell Hill
- City of Coppell
- City of DeSoto
- City of Duncanville
- City of Farmers Branch
- City of Glenn Heights
- Town of Highland Park
- City of Hutchins**
- City of Lancaster
- City of Richardson
- City of Rowlett
- City of Sachse
- City of Seagoville
- Town of Sunnyvale
- City of University Park
- City of Wilmer

**denotes new Plan participant

The City of Irving will be developing their own plan, so they are no longer participating in the Dallas County HMAP Update.

Hazard mitigation activities are an investment in a community's safety and sustainability. It is widely accepted that the most effective hazard mitigation measures are implemented at the local government level, where decisions on the regulation and control of development are ultimately made. A comprehensive review of a hazard mitigation plan addresses vulnerabilities to hazards that exist today and in the foreseeable future. Therefore, it is essential that a plan identify projected patterns of how future development will increase or decrease a community's overall hazard vulnerability.

SCOPE

The focus of the Plan Update is to identify activities to mitigate hazards classified as "high" or "moderate" risk, as determined through a detailed hazard risk assessment conducted for Dallas County and the participating jurisdictions. The hazard classification enables the participating jurisdictions to prioritize mitigation actions based on hazards which can present the greatest risk to lives and property in the geographic scope.

PURPOSE

The Plan Update was prepared by Dallas County, participating jurisdictions, and H2O Partners, Inc. The purpose of the Plan Update is to protect people and structures and to minimize the costs of disaster response and recovery. The goal of the Plan Update is to minimize or eliminate long-term risks to human life, property, operations, and the environment from known hazards by identifying risks and implementing cost-effective hazard mitigation actions. The planning process is an opportunity for participating jurisdictions within Dallas County, stakeholders, and the general public to evaluate and develop successful hazard mitigation actions to reduce future risk of loss of life and damage to property resulting from a disaster in Dallas County.

The Mission Statement of the Plan Update is, "*Maintaining a secure and sustainable future through the revision and development of targeted hazard mitigation actions to protect life and property.*"

SECTION 1: INTRODUCTION

Participating jurisdictions within Dallas County, and planning participants identified 11 natural hazards to be addressed by the Plan Update. The specific goals of the Plan Update are to:

- Provide a comprehensive update to the 2020 HMAP;
- Minimize disruption to participating jurisdictions within Dallas County following a disaster;
- Streamline disaster recovery by articulating actions to be taken before a disaster strikes to reduce or eliminate future damage;
- Demonstrate a firm local commitment to hazard mitigation principles;
- Serve as a basis for future funding that may become available through grants and technical assistance programs offered by the State or Federal government. The Plan will enable participating jurisdictions within Dallas County to take advantage of rapidly developing mitigation grant opportunities as they arise; and
- Ensure that participating jurisdictions within Dallas County maintain eligibility for the full range of future Federal disaster relief.

AUTHORITY

The Plan is tailored specifically for participating jurisdictions within Dallas County and plan participants including Planning Team members, stakeholders, and the general public who participated in the Plan Update development process. The Plan complies with all requirements promulgated by the Texas Division of Emergency Management (TDEM) and all applicable provisions of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Section 104 of the Disaster Mitigation Act of 2000 (DMA 2000) (P.L. 106-390), and the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004 (P.L. 108–264), which amended the National Flood Insurance Act (NFIA) of 1968 (42 U.S.C. 4001, et al). Additionally, the Plan complies with the Interim Final Rules for the Hazard Mitigation Planning and Hazard Mitigation Grant Program (44 CFR, Part 201), which specify the criteria for approval of mitigation plans required in Section 322 of the DMA 2000 and standards found in FEMA's "Local Mitigation Planning Policy Guide" (April 2023), and the "Local Mitigation Planning Handbook" (May 2023).

SUMMARY OF SECTIONS

Sections 1 and 2 of the Plan Update outline the Plan's purpose and development, including how Planning Team members, stakeholders, and members of the general public were involved in the planning process. Section 3 profiles Dallas County's population and economy.

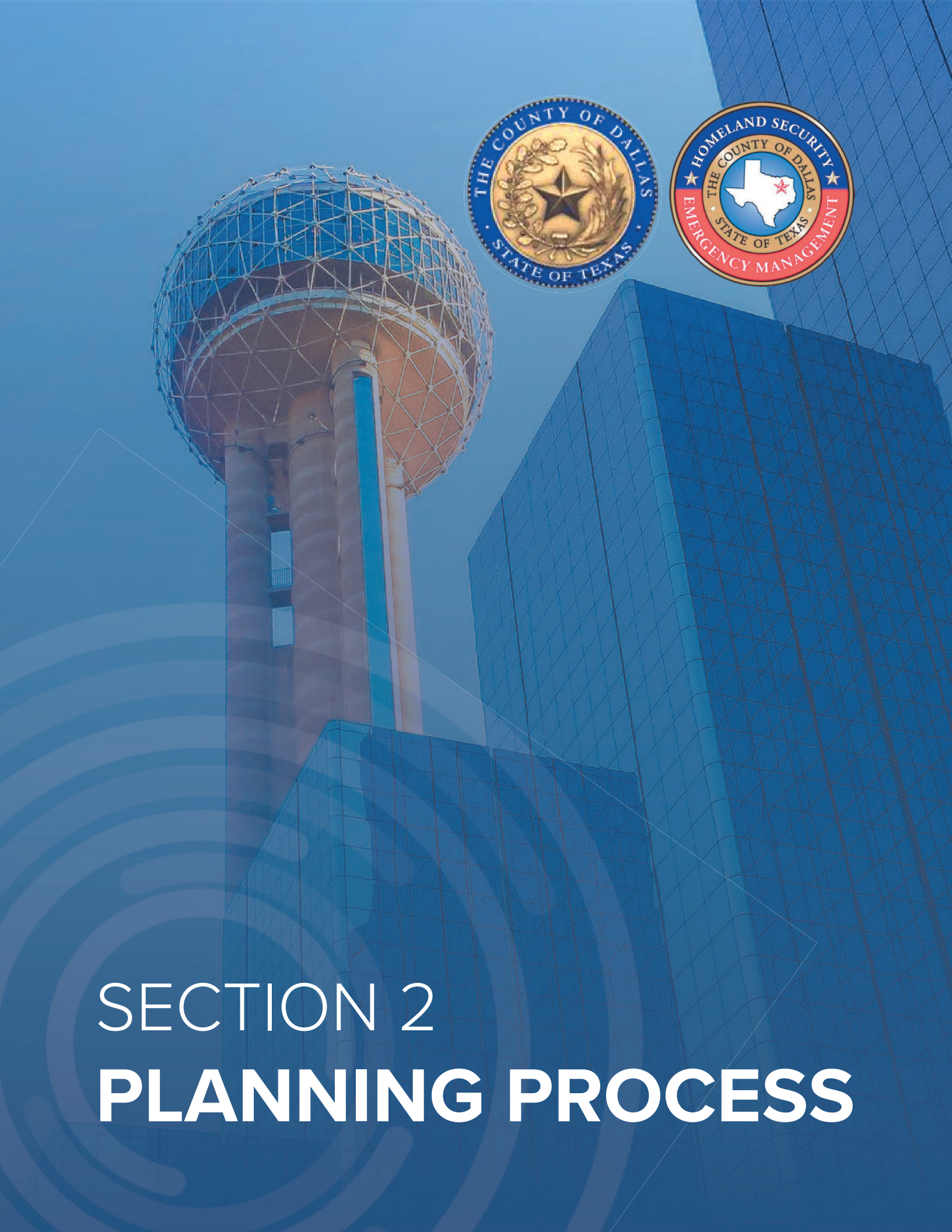
Sections 4 through 15 present a hazard overview and information on individual natural hazards in the planning area. For each hazard, the Plan Update presents a description of the hazard, a list of historical hazard events, and the results of the vulnerability and risk assessment process.

Section 16 presents hazard mitigation goals and objectives. Section 17 gives an analysis for the previous actions and Section 18 presents hazard mitigation actions for Dallas County and the participating jurisdictions. Section 19 identifies Plan maintenance mechanisms.

The list of planning team members and stakeholders is located in Appendix A. Public survey results are analyzed and presented in Appendix B. Appendix C contains a detailed list of critical facilities for the area. Appendix D contains information regarding Dam locations within Dallas County. Appendix E contains information regarding workshops and meeting documentation.

Capability Assessment results for Dallas County are in Appendix F. Appendix G includes State and Federal Funding Opportunities. Appendix H contains the Town of Highland Park's Hackberry Creek Capital Improvement Program. Appendix I contains a list of drainage improvements for the City of Richardson.[3]

[3] Information contained in some of these appendices are exempt from public release under the Freedom of Information Act (FOIA).



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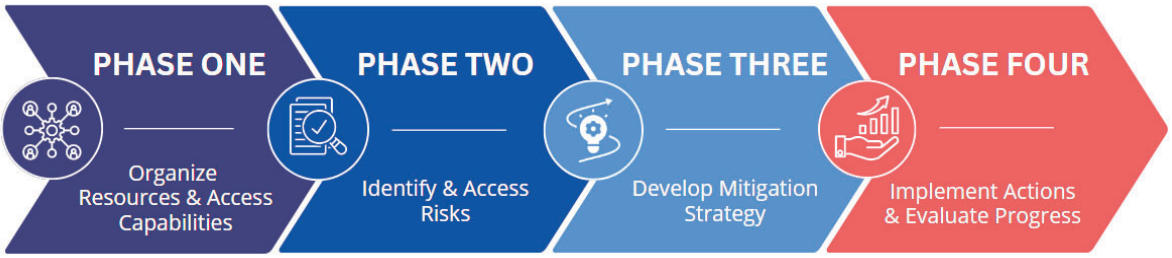
PLAN PREPARATION AND DEVELOPMENT

Hazard mitigation planning involves coordination with various constituents and stakeholders to develop a more disaster-resistant community. Section 2 provides an overview of the planning process including the identification of key steps and a detailed description of how stakeholders and the public were involved.

OVERVIEW OF THE PLAN

Dallas County hired H2O Partners, Inc. (Consultant Team), to provide technical support and oversee the development of the Dallas County Hazard Mitigation Action Plan Update 2025. The Consultant Team used the FEMA “Local Mitigation Planning Policy Guide” (April 2023), and the “Local Mitigation Planning Handbook” (May 2023) to develop the Plan Update. The overall planning process is shown in Figure 2-1 below.

Figure 2-1. Mitigation Planning Process



Dallas County, the participating jurisdictions, and the Consultant Team met in February 2024 to begin organizing resources, identify Planning Team members, and conduct a Capability Assessment.

PLANNING TEAM

Key members of H2O Partners, Inc. developed the Plan Update in conjunction with the Planning Team. The Planning Team was established using a direct representation model. Some of the responsibilities of the Planning Team included: completing Capability Assessment surveys, providing input regarding the identification of hazards, identifying mitigation goals, and developing mitigation strategies. An Executive Planning Team consisting of key personnel involved in hazard mitigation activities from each of the participating jurisdictions within Dallas County, shown in Table 2-1, was formed to coordinate planning efforts and request input and participation in the planning process.

Table 2-2 reflects the Advisory Planning Team, consisting of additional representatives from area organizations and departments from the participating jurisdictions within Dallas County that participated throughout the planning process. All Executive and Advisory Planning Team members are involved in hazard mitigation activities; those with the authority to regulate development are identified with an asterisk next to their title.

Table 2-1. Executive Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Dallas County – Office of Homeland Security & Emergency Management	Department Manager and Chief of Emergency Services
Dallas County – Office of Homeland Security & Emergency Management	Division Chief - Preparedness
Dallas County – Office of Homeland Security & Emergency Management	Training & Exercise and Hazard Mitigation Coordinator
Town of Addison – Fire	Emergency Management Coordinator
City of Balch Springs – Fire	Emergency Management Coordinator
City of Carrollton – Emergency Management	Emergency Management Coordinator
City of Cedar Hill – Emergency Management	Regional Emergency Management Operations Coordinator
City of Cockrell Hill – Fire	Fire Marshal*

ORGANIZATION / DEPARTMENT	TITLE
City of Coppell – Emergency Management	Emergency Management Coordinator
City of DeSoto – Emergency Management	Regional Emergency Management Operations Coordinator
City of Duncanville – Emergency Management	Regional Emergency Management Operations Coordinator
City of Farmers Branch – Fire	Emergency Management Coordinator
City of Glenn Heights – Government	Deputy City Manager*
Town of Highland Park – Fire	Fire Marshal*
City of Hutchins – Fire	Fire Chief
City of Lancaster – Emergency Management	Regional Emergency Management Operations Coordinator
City of Richardson – Emergency Management	Response and Recovery Coordinator
City of Rowlett – Fire	Emergency Management Coordinator
City of Sachse – Fire Rescue	Emergency Management Specialist
City of Seagoville – Fire	Fire Marshal*
Town of Sunnyvale – Fire	Fire Chief
City of University Park – Fire	Fire Chief
City of Wilmer – Fire	Fire Chief

Table 2-2. Advisory Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Dallas County – Facilities Management	Director
Dallas County – Fire Marshal's Office	Fire Marshal*
Dallas County – Government	District 1 Commissioner*
Dallas County – Government	District 2 Commissioner*
Dallas County – Government	District 3 Commissioner*
Dallas County – Government	District 4 Commissioner*
Dallas County – Government	County Judge*
Dallas County – Health and Human Services	Director

ORGANIZATION / DEPARTMENT	TITLE
Dallas County – Office of Homeland Security & Emergency Management	Administrative Analyst
Dallas County – Office of Homeland Security & Emergency Management	Division Chief - Logistics and Critical Infrastructure
Dallas County – Office of Homeland Security & Emergency Management	Division Chief - Operations
Dallas County – Office of Homeland Security & Emergency Management	Emergency Planning & Volunteer Coordinator
Dallas County – Office of Homeland Security & Emergency Management	HazMat and Technology Manager
Dallas County – Public Works	Director
Dallas County – Public Works	Senior Bridge Engineer and Floodplain Manager*
Dallas County – Sheriff's Office	Chief Deputy - General Services
Dallas County – Sheriff's Office	Chief Deputy - Special Services:
Dallas County – Sheriff's Office	Sheriff
Town of Addison – Administration	City Manager*
Town of Addison – Administration	City Secretary
Town of Addison – Administration	Mayor*
Town of Addison – Fire	Fire Chief
Town of Addison – Police	Chief of Police
Town of Addison – Public Works and Engineering	Director
City of Balch Springs – Administration	City Manager*
City of Balch Springs – Administration	City Secretary
City of Balch Springs – Administration	Mayor*
City of Balch Springs – Fire	Assistant Fire Chief
City of Balch Springs – Police	Chief of Police
City of Balch Springs – Public Services	Director of Public Works
City of Carrollton – Emergency Management	Emergency Management Specialist
City of Carrollton – Emergency Management	Emergency Preparedness Program Assistant II
City of Carrollton – Fire	Fire Marshal*

ORGANIZATION / DEPARTMENT	TITLE
City of Carrollton – Government	City Manager*
City of Carrollton – Government	City Secretary
City of Carrollton – Government	Mayor*
City of Carrollton – Planning and Zoning	Executive Director of Development Services*
City of Carrollton – Planning and Zoning	Senior Planner*
City of Carrollton – Police	Chief of Police
City of Carrollton – Public Works	Director
City of Cedar Hill – Administration	City Manager*
City of Cedar Hill – Administration	City Secretary
City of Cedar Hill – Administration	Mayor*
City of Cedar Hill – Environmental Services	Environmental Manager
City of Cedar Hill – Fire	Fire Chief
City of Cedar Hill – Planning	Director/HHPD Dam Owner*
City of Cedar Hill – Police	Chief of Police
City of Cedar Hill – Public Works	City Engineer
City of Cedar Hill – Public Works	Project Manager
City of Cockrell Hill – Administration	City Administrator*
City of Cockrell Hill – Administration	City Secretary
City of Cockrell Hill – Administration	Mayor*
City of Cockrell Hill – Fire	Fire Chief
City of Cockrell Hill – Police	Chief of Police
City of Cockrell Hill – Public Works	Director
City of Coppell – Government	City Manager*
City of Coppell – Government	City Secretary
City of Coppell – Government	Mayor*
City of Coppell – Economic and Community Development	Coordinator*
City of Coppell – Police	Chief of Police
City of Coppell – Public Works	Director

ORGANIZATION / DEPARTMENT	TITLE
City of Coppell – Public Works	Assistant Director - Engineering
City of Coppell – Public Works	Assistant Director - Operations
City of DeSoto – Fire	Fire Chief
City of DeSoto – Development Services	Director
City of DeSoto – Government	City Manager*
City of DeSoto – Government	City Secretary
City of DeSoto – Government	Mayor*
City of DeSoto – Police	Chief of Police
City of Duncanville – Administration	City Manager*
City of Duncanville – Administration	City Secretary
City of Duncanville – Emergency Management	Emergency Management Specialist
City of Duncanville – Fire	Fire Marshal*
City of Duncanville – Planning and Zoning	Director*
City of Duncanville – Police	Chief of Police
City of Duncanville – Public Works	Director
City of Farmers Branch – Community Services	Director*
City of Farmers Branch – Economic Development, Planning, and Tourism	Director*
City of Farmers Branch – Government	City Manager*
City of Farmers Branch – Government	Director of Administrative Services
City of Farmers Branch – Government	Mayor*
City of Farmers Branch – Police	Chief of Police
City of Farmers Branch – Public Works	Director
City of Glenn Heights – Fire	Fire Chief
City of Glenn Heights – Government	City Manager*
City of Glenn Heights – Government	City Secretary
City of Glenn Heights – Government	Mayor*
City of Glenn Heights – Planning and Development Services	Director*

ORGANIZATION / DEPARTMENT	TITLE
City of Glenn Heights – Police	Chief of Police
City of Glenn Heights – Public Works	Director
Town of Highland Park – Development Services	Director
Town of Highland Park – Engineering	Assistant Director
Town of Highland Park – Engineering	Director
Town of Highland Park – Engineering	Project Manager
Town of Highland Park – Government	Town Administrator*
Town of Highland Park – Government	Town Secretary
Town of Highland Park – Government	Mayor*
Town of Highland Park – Public Safety	Deputy Fire Chief
Town of Highland Park – Public Safety	Deputy Police Chief
Town of Highland Park – Public Safety	Director/HHPD Dam Owner
City of Hutchins – Code Compliance	Building Official*
City of Hutchins – Community Services and Parks	Director
City of Hutchins – Economic Development Corporation	Director*
City of Hutchins – Government	City Administrator*
City of Hutchins – Government	City Secretary
City of Hutchins – Government	Mayor*
City of Hutchins – Police	Chief of Police
City of Hutchins – Public Works	Director
City of Lancaster – Administration	Assistant City Manager*
City of Lancaster – Administration	City Manager*
City of Lancaster – Administration	City Secretary
City of Lancaster – Administration	Deputy City Manager*
City of Lancaster – Development Services	Director
City of Lancaster – Fire	Assistant Fire Chief
City of Lancaster – Fire	Fire Chief

ORGANIZATION / DEPARTMENT	TITLE
City of Lancaster – Government	Deputy Mayor Pro Tem, District 2*
City of Lancaster – Government	Mayor*
City of Lancaster – Police	Chief of Police
City of Lancaster – Public Works	Director
City of Richardson – Emergency Management	Director
City of Richardson – Emergency Management	Emergency Management Coordinator
City of Richardson – Emergency Management	Preparedness and Resiliency Coordinator
City of Richardson – Government	City Manager*
City of Richardson – Government	Mayor*
City of Richardson – Fire	Fire Chief
City of Richardson – Police	Chief of Police
City of Rowlett – Community Development	Director*
City of Rowlett – Community Development	Neighborhood Services Manager
City of Rowlett – Fire	Administrative Services Manager
City of Rowlett – Fire	Assistant Emergency Management Coordinator
City of Rowlett – Fire	Fire Chief
City of Rowlett – Engineering	City Engineer
City of Rowlett – Government	City Manager*
City of Rowlett – Government	City Secretary
City of Rowlett – Government	Mayor*
City of Rowlett – Police	Chief of Police
City of Rowlett – Public Works	Director (Interim)
City of Sachse – Development Services	Director
City of Sachse – Fire Rescue	Fire Chief
City of Sachse – Government	City Manager*
City of Sachse – Government	City Secretary
City of Sachse – Government	Mayor*

ORGANIZATION / DEPARTMENT	TITLE
City of Sachse – Neighborhood Services	Senior Neighborhood Services Specialist
City of Sachse – Police	Chief of Police
City of Sachse – Public Works	Director
City of Seagoville – Community Development	Director*
City of Seagoville – Fire	Fire Chief
City of Seagoville – Government	City Manager*
City of Seagoville – Government	City Secretary
City of Seagoville – Government	Mayor*
City of Seagoville – Keep Seagoville Beautiful	Liaison
City of Seagoville – Police	Assistant Chief
City of Seagoville – Police	Chief of Police
Town of Sunnyvale – Code Compliance	Code Enforcement Officer*
Town of Sunnyvale – Engineering	Assistant Town Engineer
Town of Sunnyvale – Government	Mayor*
Town of Sunnyvale – Government	Town Manager*
Town of Sunnyvale – Government	Town Secretary
Town of Sunnyvale – Planning and Development	Director*
Town of Sunnyvale – Police	Chief of Police
Town of Sunnyvale – Public Works	Director
City of University Park – Administration	City Manager*
City of University Park – Administration	City Secretary
City of University Park – Community Development	Director*
City of University Park – Engineering	Director
City of University Park – Police	Chief of Police
City of University Park – Public Works	Director
City of Wilmer – Administration	City Manager*
City of Wilmer – Administration	City Secretary

ORGANIZATION / DEPARTMENT	TITLE
City of Wilmer – Administration	Mayor*
City of Wilmer – Planning and Development	Senior Planner*
City of Wilmer – Police	Chief of Police
City of Wilmer – Public Works	Director

Additionally, a Stakeholder Group was invited via email to participate in the planning process by attending meetings, commenting on draft versions of the plan, and/or by providing data to inform the planning process. The Consultant Teams, Planning Teams, and Stakeholder Group coordinated to identify mitigation goals, and develop mitigation strategies and actions for the Plan. Appendix A provides a complete listing of all participating Planning Team members and stakeholders from participating jurisdictions within Dallas County by organization, title, and stakeholder type. Stakeholder involvement is discussed further below.

Based on results of completed Capability Assessment, participating jurisdictions within Dallas County described methods for achieving future hazard mitigation measures by expanding existing capabilities. For example, each jurisdiction has an opportunity to identify opportunities for cross-training or increasing the technical expertise of staff by attending free training available through FEMA and the Texas Division of Emergency Management (TDEM) by monitoring classes and availability through TDEM Training Division Learning Management Site (LMS) (https://tdem.texas.gov/preparedness/training). In addition, each jurisdiction can identify Planning Team members with the authority to monitor the Plan and identify grant funding opportunities for expanding staff. Other options for improving capabilities for each jurisdiction include the following:

Table 2-3 Opportunities for Improving and Expanding Existing Capabilities by Jurisdiction

JURISDICTION	OPPORTUNITIES
Dallas County	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Develop a **Comprehensive Plan** based on information in the risk assessment and identified mitigation projects within the HMAP. • Integrate risk information from HMAP into future updates to **Community Wildfire Protection Plan.** • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to conform to the highest mitigation standards.
Town of Addison	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**.

JURISDICTION	OPPORTUNITIES
	• Develop a **Community Wildfire Protection Plan** based on information in the risk assessment and identified mitigation projects within the HMAP. • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of Balch Springs	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Develop a **Community Wildfire Protection Plan** based on information in the risk assessment and identified mitigation projects within the HMAP. • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of Carrollton	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Integrate risk information from HMAP into future updates to **Community Wildfire Protection Plan.** • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of Cedar Hill	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Integrate risk information from HMAP into future updates to **Community Wildfire Protection Plan.** • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.

JURISDICTION	OPPORTUNITIES
City of Cockrell Hill	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Integrate risk information from HMAP into future updates to **Community Wildfire Protection Plan.** • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of Coppell	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Integrate risk information from HMAP into future updates to **Community Wildfire Protection Plan.** • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of DeSoto	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Integrate risk information from HMAP into future updates to **Community Wildfire Protection Plan.** • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of Duncanville	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Integrate risk information from HMAP into future updates to **Community Wildfire Protection Plan.** • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes.

JURISDICTION	OPPORTUNITIES
	• Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of Farmers Branch	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Develop a **Community Wildfire Protection Plan** based on information in the risk assessment and identified mitigation projects within the HMAP. • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of Glenn Heights	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Integrate risk information from HMAP into future updates to **Community Wildfire Protection Plan.** • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
Town of Highland Park	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Develop a **Community Wildfire Protection Plan** based on information in the risk assessment and identified mitigation projects within the HMAP. • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of Hutchins	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**.

JURISDICTION	OPPORTUNITIES
	• Develop a **Community Wildfire Protection Plan** based on information in the risk assessment and identified mitigation projects within the HMAP. • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of Lancaster	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Integrate risk information from HMAP into future updates to **Community Wildfire Protection Plan.** • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of Richardson	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Develop a **Community Wildfire Protection Plan** based on information in the risk assessment and identified mitigation projects within the HMAP. • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of Rowlett	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Develop a **Community Wildfire Protection Plan** based on information in the risk assessment and identified mitigation projects within the HMAP. • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.

JURISDICTION	OPPORTUNITIES
City of Sachse	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Integrate risk information from HMAP into future updates to **Community Wildfire Protection Plan.** • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of Seagoville	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Integrate risk information from HMAP into future updates to **Community Wildfire Protection Plan.** • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
Town of Sunnyvale	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Develop a **Community Wildfire Protection Plan** based on information in the risk assessment and identified mitigation projects within the HMAP. • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of University Park	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Develop a **Community Wildfire Protection Plan** based on information in the risk assessment and identified mitigation projects within the HMAP.

JURISDICTION	OPPORTUNITIES
	• Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.
City of Wilmer	• Integrate risk information from HMAP into future updates to **Capital Improvement Plan**. • Integrate risk information from HMAP into future updates to **Comprehensive Plan**. • Integrate risk information from HMAP into future updates to **Community Wildfire Protection Plan.** • Review current **floodplain ordinances** for opportunities to increase resiliency such as modifying permitting or building codes. • Review current **land use and building ordinances** that will require all new developments to confirm to the highest mitigation standards.

Sample hazard mitigation actions developed with similar hazard risk were shared at the meetings. These important discussions resulted in the development of multiple mitigation actions that are included in the Plan Update to further mitigate risk from natural hazards in the future.

The Planning Team developed hazard mitigation actions for mitigating risk from all of the hazards including potential flood, tornado, and wildfire events. These actions include but are not limited to the county and participating jurisdictions acquiring and installing generators at all critical facilities, developing and implementing a safe room rebate program for individual safe rooms, and developing and implementing a Weatherization Assistance Program (WAP) to provide assistance to income eligible households by weatherizing their homes, conserving energy, and reducing high utility costs.

PLANNING PROCESS

The process used to prepare the Plan Update followed the four major steps included at Figure 2-1. After the Planning Team was organized, a capability assessment was developed and distributed at the Kick-Off Workshop. Hazards were identified and assessed, and results associated with each of the hazards were provided at the Risk Assessment Workshop. Based on Dallas County's identified vulnerabilities, specific mitigation strategies were discussed and developed at the Mitigation Strategy Workshop. Finally, Plan maintenance and implementation procedures were developed and are included in Section 19. Participation of Planning Team members, stakeholders, and the public at each of the workshops is documented in Appendix E. The City of Hutchins was unable to attend workshops throughout the planning process. The Consultant Team followed up directly with the City of Hutchins and the County to review information discussed and gather documents that were collected during the workshops.

At the Plan development workshops held throughout the planning process described herein, the following factors were taken into consideration:

- The nature and magnitude of risks currently affecting the community;

- Hazard mitigation goals to address current and expected conditions;
- Whether current resources will be sufficient for implementing the Plan Update;
- Implementation problems, such as technical, political, legal, and coordination issues that may hinder development;
- Anticipated outcomes; and
- How participating jurisdictions within Dallas County, agencies, and partners will participate in implementing the Plan Update.

KICKOFF WORKSHOP

The Kickoff Workshop was held on April 3, 2024, at the Life Safety Park in the City of Coppell. The initial workshop informed participating officials and key department personnel about how the planning process pertained to their distinct roles and responsibilities and engaged stakeholder groups that focus on vulnerable populations and underserved communities including, but not limited to public libraries, economic development agencies, local colleges, and surrounding communities. In addition to the kickoff presentation, participants received the following information:

- Project overview regarding the planning process;
- Public survey access information;
- Hazard Ranking form; and
- Capability Assessment survey for completion.

A risk ranking exercise was conducted at the Kickoff Workshop to get input from the Planning Team and stakeholders pertaining to various risks from a list of natural hazards affecting the planning area. Each participant at the Kickoff Workshop was provided a risk ranking sheet that asked participants to rank hazards in terms of the probability or frequency of occurrence, extent of spatial impact, and the magnitude of impact. The results of the ranking sheets identified unique perspectives on varied risks throughout the planning area. The assessments were also used to set priorities for hazard mitigation actions based on potential loss of lives and dollar losses.

HAZARD IDENTIFICATION

At the Kickoff Workshop, and through e-mail and phone correspondence, the Planning Team conducted preliminary hazard identification. The Planning Team in coordination with the Consultant Team reviewed and considered a full range of natural hazards. Once identified, the teams narrowed the list to significant hazards by reviewing hazards affecting the area, the 2023 State of Texas Hazard Mitigation Plan, and initial study results from reputable sources such as federal and state agencies. Based on this initial analysis, the teams identified a total of 11 natural hazards which pose a significant threat to the planning area.

RISK ASSESSMENT

An initial risk assessment for participating jurisdictions within Dallas County was completed in April 2024 and results were presented to Planning Team members at the Risk Assessment Workshop held on May 6, 2024, at the Cedar Hill Recreation Center in the City of Cedar Hill. At the workshop, the characteristics and consequences of each hazard were evaluated to determine the extent to which the planning area would be affected in terms of potential danger to property and citizens.

Property and crop damages were estimated by gathering data from the National Centers for Environmental Information (NCEI) and National Oceanic and Atmospheric Administration

(NOAA). The assessment also examined the impact of various hazards on the built environment, including general building stock, critical facilities, lifelines, and infrastructure. The resulting risk assessment profiled hazard events provided information on previous occurrences, estimated probability of future events, and detailed the spatial extent and magnitude of impact on people and property. Following the risk assessment workshop past event data from NCEI is provided to the planning team for their review and assistance in identifying significant events. A hazard profile and vulnerability analysis for each of the hazards can be found in Sections 4 through 15.

MITIGATION REVIEW AND DEVELOPMENT

Developing the Mitigation Strategy for the Plan involved identifying mitigation goals and new mitigation actions. A Mitigation Workshop was held on July 29, 2024, at the Bill J. Priest Center in the City of Dallas. In addition to the Planning Team, stakeholder groups were invited to attend the workshop. Regarding hazard mitigation actions, workshop participants emphasized the desire for flood and extreme heat projects. Additionally, the participating jurisdictions were proactive in identifying mitigation actions to lessen the risk of all the identified hazards included in the Plan Update.

An inclusive and structured process was used to develop and prioritize new hazard mitigation actions for the Plan Update. The prioritization method was based on FEMA's STAPLEE criteria and included social, technical, administrative, political, legal, economic, and environmental considerations. As a result, each Planning Team Member assigned an overall priority to each hazard mitigation action. The overall priority of each action is reflected in the hazard mitigation actions found in Section 18.

Planning Team Members then developed action plans identifying proposed actions, costs and benefits, the responsible organization(s), effects on new and existing buildings, implementation schedules, priorities, and potential funding sources.

Specifically, the process involved:

- Listing optional hazard mitigation actions based on information collected from previous plan reviews, studies, and interviews with federal, state, and local officials. Workshop participants reviewed the optional mitigation actions and selected actions that were most applicable to their area of responsibility, cost-effective in reduction risk, easily implemented, and likely to receive institutional and community support.
- Workshop participants inventoried federal and state funding sources that could assist in implementing the proposed hazard mitigation actions. Information was collected, including the program name, authority, purpose of the program, types of assistance and eligible projects, conditions on funding, types of hazards covered, matching requirements, application deadlines, and a point of contact.
- Planning Team Members considered the benefits that would result from implementing the hazard mitigation actions compared to the cost of those projects. Although detailed cost-benefit analyses were beyond the scope of the Plan Update, Planning Team Members utilized economic evaluation as a determining factor between hazard mitigation actions.
- Planning Team Members then selected and prioritized mitigation actions.

Hazard mitigation actions identified in the process were made available to the Planning Team for review. The draft Plan Update was maintained on file by Dallas County and participating jurisdictions and was made available to the general public for review.

REVIEW AND INCORPORATION OF EXISTING PLANS

REVIEW

Background information utilized during the planning process included various studies, plans, reports, and technical information from sources such as FEMA, the United States Army Corps of Engineers (USACE), the U.S. Fire Administration, National Oceanic and Atmospheric Administration (NOAA), the Texas Water Development Board (TWDB), the Texas Commission on Environmental Quality (TCEQ), the Texas State Data Center, Texas Forest Service, the Texas Division of Emergency Management (TDEM), and local hazard assessments and plans. Section 4 and the hazard-specific sections of the Plan (Sections 5-15) summarize the relevant background information.

Specific background documents, including those from FEMA, provided information on hazard risk, hazard mitigation actions currently being implemented, and potential mitigation actions. Previous hazard events, occurrences, and descriptions were identified through NOAA's National Centers for Environmental Information (NCEI). Results of past hazard events were found through searching the NCEI. The USACE studies were reviewed for their assessment of risk and potential projects in the region. Information from the State Demographer was reviewed for population and other projections and included in Section 3 of the Plan. Data from the Texas Forest Service was used to appropriately rank the wildfire hazard, and to help identify potential grant opportunities. Materials from FEMA and TDEM were reviewed for guidance on Plan Update development requirements.

INCORPORATION OF EXISTING PLANS INTO THE HMAP PROCESS

A Capability Assessment was completed by key departments from the participating jurisdictions within Dallas County which provided information pertaining to existing plans, policies, ordinances, and regulations to be integrated into the goals and objectives of the Plan Update. The relevant information was included in a master Capability Assessment, Appendix F.

Existing projects and studies were utilized as a starting point for discussing hazard mitigation actions among Planning and Consultant Team members. For example, the City of Balch Springs installed lightning rods to the city facilities with radio and communication sites and the City of Carrollton installed lightning detection systems at city parks and outdoor facilities. Also, the City of Carrollton upgraded pump station facilities to better function during hazard events. For a comprehensive list of actions from the previous 2020 Dallas County HMAP, please refer to Section 17.

Additionally, policies and ordinances were reviewed by several of the participating jurisdictions. These jurisdictions have included actions to develop and adopt higher building code standards. Other plans were reviewed, such as Capital Improvement Plans and Emergency Operations Plans, to identify any additional mitigation actions. Finally, the 2023 State of Texas Hazard Mitigation Plan, developed by TDEM, was discussed in the initial planning meeting in order to develop a specific group of hazards to address in the planning effort. The 2023 State Plan was also used as a guidance document, along with FEMA materials, in the development of the Dallas County Hazard Mitigation Action Plan Update 2025.

INCORPORATION OF THE HMAP INTO OTHER PLANNING MECHANISMS

Planning Team members will integrate implementation of the Plan Update with other planning mechanisms for Dallas County, such as the Emergency Operations Plan. Existing plans for participating jurisdictions will be reviewed and incorporated into the Plan Update, as appropriate. This section discusses how the Plan will be implemented by the participating jurisdictions within Dallas County. It also addresses how the Plan will be evaluated and improved over time, and how the public will continue to be involved in the hazard mitigation planning process.

Participating jurisdictions within Dallas County will be responsible for implementing hazard mitigation actions contained in Section 18. Each hazard mitigation action has been assigned to a specific County, City, or Town department that is responsible for tracking and implementing the action.

A funding source has been listed for each identified hazard mitigation action and may be utilized to implement the action. An implementation time period has also been assigned to each hazard mitigation action as an incentive and to determine whether actions are implemented on a timely basis.

Participating jurisdictions within Dallas County will integrate hazard mitigation actions contained in the Plan Update with existing planning mechanisms such as ordinances, Emergency Operations or Management Plans, and other local and area planning efforts. Dallas County will work closely with area organizations to coordinate implementation of hazard mitigation actions that benefit the planning area in terms of financial and economic impact.

Upon formal adoption of the Plan Update, Planning Team members from the participating jurisdictions will review existing plans along with building codes to guide development and ensure that hazard mitigation actions are implemented. Each of the jurisdictions will be responsible for coordinating periodic review of the Plan Update with members of the Advisory Planning Team to ensure integration of hazard mitigation strategies into these planning mechanisms and codes. The Planning Team will also conduct periodic reviews of various existing planning mechanisms and analyze the need for any revisions or updates in light of the approved Plan Update. Participating jurisdictions within Dallas County will ensure that future long-term planning objectives will contribute to the goals of the Plan to reduce the long-term risk to life and property from moderate and high-risk hazards. Within one year of formal adoption of the Plan, existing planning mechanisms will be reviewed and analyzed as they pertain to the Plan Update.

Planning Team members will review and revise, as necessary, the long-range goals and objectives in its strategic plan and budgets to ensure that they are consistent with the Plan Update.

Furthermore, Dallas County will work with neighboring jurisdictions to advance the goals of the Plan Update as it applies to ongoing, long-range planning goals and actions for mitigating risk to natural hazards throughout the planning area.

Table 2-4 identifies types of planning mechanisms and examples of methods for incorporating the Plan into other planning efforts.

Table 2-4. Examples of Methods of Incorporation

Planning Mechanism	Incorporation of Plan
Annual Budget Review	Various departments and key personnel that participated in the planning process for participating jurisdictions within Dallas County will review the Plan and mitigation actions therein when conducting their annual budget review. Allowances will be made in accordance with grant applications sought, and mitigation actions that will be undertaken, according to the implementation schedule of the specific action.
Capital Improvement Plans	All participating jurisdictions within Dallas County have a Capital Improvement Plan (CIP) in place or under development. Prior to any revisions to the CIP, County, City, and Town departments will review the risk assessment and mitigation strategy sections of the HMAP, as limiting public spending in hazardous zones is one of the most effective long-term mitigation actions available to local governments.
Community Wildfire Protection Plan	Currently, several participating jurisdictions within Dallas County have a Community Wildfire Protection Plan (CWPP). CWPPs include preventative and corrective actions to address a community's risk of damage from wildfire. Information found in Section 14 of this Plan Update discussing the people and property at risk to wildfire will be reviewed and revised when participating jurisdictions update their CWPP or develop new plans.
Comprehensive Plans	Several participating jurisdictions within Dallas County have a Comprehensive Land Use Plan in place. Since comprehensive plans involve developing a unified vision for a community, the mitigation vision and goals of the Plan will be reviewed in the development or revision of a Comprehensive Plan.
Floodplain Management Plans	Floodplain management plans include preventative and corrective actions to address the flood hazard. Therefore, the actions for flooding and information found in Section 9 of this Plan Update discussing the people and property at risk to flood will be reviewed and revised when the county and participating cities and towns within Dallas County update their management plans or develops new plans.

Planning Mechanism	Incorporation of Plan
Grant Applications	The HMAP will be evaluated by participating jurisdictions within Dallas County when grant funding is sought for mitigation projects. If a project is not in the Plan Update, a Plan Revision may be necessary to include the action in the Plan.
Regulatory Plans	Currently, several participating jurisdictions within Dallas County have regulatory plans in place, such as Emergency Operations Plans, Land Use Plans, and Evacuation Plans. The Plan Update will be consulted when County, City, and Town departments review or revise their current regulatory planning mechanisms, or in the development of regulatory plans that are not currently in place.

Appendix F Capability Assessment provides an overview of Planning Team members' existing planning and regulatory capabilities. These existing capabilities provide the mechanisms to implement the mitigation strategy objectives. For example, the adoption of building codes and implementation of land use regulations have been demonstrated to help communities avoid losses from natural hazard events. Currently, all participating jurisdictions have building codes in place. All participating jurisdictions have zoning ordinances and land use restrictions in place as well. Please refer to Appendix F for a complete inventory of each participating jurisdiction's capabilities.

It should be noted for the purposes of the Plan Update that the HMAP has been used as a reference when reviewing and updating all plans and ordinances for the entire planning area, including all participating jurisdictions. The Emergency Management Action Plans developed for City of Balch Springs, City of Carrollton, City of Cedar Hill, City of Cockrell Hill, City of Coppell, City of DeSoto, City of Duncanville, City of Glenn Heights, Town of Highland Park, City of Lancaster, City of Rowlett, City of Sachse, City of Seagoville, Town of Sunnyvale, and City of Wilmer are updated every 5 years and incorporate goals, objectives and actions identified in the mitigation plan.

PLAN REVIEW AND PLAN UPDATE

As with the development of Plan Update, participating jurisdictions within Dallas County will oversee the review and update process for relevance and if necessary, make adjustments. At the beginning of each fiscal year, Planning Team Members will meet to evaluate the Plan and review other planning mechanisms to ensure consistency with long-range planning efforts. In addition, planning participants will also meet once a year, by conference call or presentation, to re-evaluate prioritization of the hazard mitigation actions.

TIMELINE FOR IMPLEMENTING MITIGATION ACTIONS

Both the Executive Planning Team (Table 2-1) and the Advisory Planning Team (Table 2-2) will engage in discussions regarding a timeframe for how and when to implement each hazard mitigation action. Considerations include when the action will be started, how existing planning mechanisms' timelines affect implementation, and when the action should be fully implemented.

Timeframes may be general, and there will be short, medium, and long-term goals for implementation based on prioritization of each action, as identified on individual Hazard Mitigation Action worksheets included in the Plan Update for participating jurisdictions within Dallas County.

Both the Executive and Advisory Planning Team will evaluate and prioritize the most suitable hazard mitigation actions for the community to implement. The timeline for implementation of actions will partially be directed by participating jurisdictions' comprehensive planning process, budgetary constraints, and community needs. Participating jurisdictions within Dallas County are committed to addressing and implementing hazard mitigation actions that may be aligned with and integrated into the Plan Update.

Overall, the Planning Team is in agreement that goals and actions of the Plan Update shall be aligned with the timeframe for implementation of hazard mitigation actions with respect to annual review and updates of existing plans and policies.

PUBLIC AND STAKEHOLDER INVOLVEMENT

An important component of hazard mitigation planning is public participation and stakeholder involvement. Input from individual citizens and the community as a whole provides the Planning Team with a greater understanding of local concerns and increases the likelihood of successfully implementing hazard mitigation actions. If citizens and stakeholders, such as local businesses, non-profits, hospitals, and schools are involved, they are more likely to gain a greater appreciation of the risks that hazards may present in their community and take steps to reduce or mitigate their impact.

The public was involved in the development of the Dallas County Hazard Mitigation Action Plan Update 2025 at different stages prior to official Plan approval and adoption. Public input was sought using three methods: (1) open public meetings; (2) survey instruments; and (3) making the draft Plan Update available for public review on participating jurisdictions' websites.

The draft Plan Update was made available to the general public for review and comment on participating jurisdictions' websites. The public was notified at the public meetings that the draft Plan Update would be available for review. No feedback was received on the draft Plan Update, although it was given on the public survey, and all relevant information was incorporated into the Plan Update[1]. Public input was utilized to assist in identifying hazards that were of most concern to the citizens of the County and what actions they felt should be included and prioritized.

The Plan Update will be advertised and posted on Dallas County and participating jurisdictions' websites upon approval from FEMA, and a copy will be kept at the Dallas County Courthouse.

UNDERSERVED COMMUNITIES / VULNERABLE POPULATIONS

A goal of the Planning Team was building equity into the planning process. Including organizations that aid underserved communities and socially vulnerable populations to participate in the plan helps ensure equitable access to the planning process and the meaningful participation of all residents. In addition, these groups can make sure that the interests of vulnerable populations are accurately represented and act as a valuable resource to share information with those vulnerable populations.

[1] This sentence will be updated upon receipt of public feedback.

The Planning Team worked to identify local agencies, organizations and community leaders that focus on reaching vulnerable populations and underserved communities. These organizations were included in the planning process as stakeholders and were invited to participate in the planning process via email. These agencies were encouraged to post public planning meetings as well as solicit feedback via the public survey.

All stakeholders and planning team members were invited to participate in the development of the Plan during this process, including all public meetings, and surveys. All stakeholders are listed in Table 2-5 below. Some stakeholders have been detailed below along with the agency's mission, including:

- Dallas Children's Advocacy Center – works with public and private agencies to investigate, prosecute, and provide healing services for child abuse cases within Dallas County. The Advocacy Center works to reduce re-victimization of children, remove barriers to investigation and treatment, and enhance criminal prosecution with a multidisciplinary approach to complex and severe cases.
- Serving With A Purpose – Nonprofit organization, founded in 2011, whose mission is to equip, empower, and emerge students and their families within title 1 schools and low-income communities by providing holistic support and resource accessibility. Services include Resource Centers built inside schools, providing free basic needs, and housing through their community revitalization program.
- Under 1 Roof Dallas – Nonprofit organization that provides supportive housing and other services to low-income individuals and families experiencing homelessness within the community. Services include transitioning individuals to permanent housing, rapid rehousing programs, and homelessness prevention assistance.

In addition, public notices were posted on public bulletin boards throughout the planning area, such as in the cities of Coppell and Seagoville, as well as posted on the participating jurisdictions' websites and social media platforms. For a sample of these postings, please see Appendix E. In addition to public meetings, the Planning and Consultant Teams developed a public survey designed to solicit public input during the planning process from citizens and stakeholders and to obtain input and feedback on the mitigation plan. For each form of engagement, all efforts were made to reach Dallas County's underserved communities and vulnerable populations throughout the planning process. Additional survey information is provided at the end of this section.

STAKEHOLDER INVOLVEMENT

Stakeholder involvement is essential to hazard mitigation planning since a wide range of stakeholders can provide input on specific topics and from various points of view. Throughout the planning process, members of community groups, local businesses, and neighboring jurisdictions were invited to participate in development of the Plan Update. The Stakeholder Group (Table 2-5) included a broad range of representatives from both the public and private sector and served as a key component in Dallas County's outreach efforts for development of the Plan Update. Documentation of stakeholder meetings is found in Appendix E. A list of organizations invited to attend via email is found in Table 2-5. Those that participated in the public meetings are identified with a plus symbol (+) next to their stakeholder type.

Table 2-5. Stakeholder Working Group

AGENCY	TITLE	STAKEHOLDER TYPE
Addison Fire Department	Fire Chief	Community Organization
American Red Cross	Metro East DPM	Community Organization+
American Red Cross	Regional Chief Executive Director	Community Organization
Balch Springs Fire Department	Fire Chief	Community Organization
Baylor Scott & White Medical Center	Vice President of Emergency Management	Healthcare Agency
Carrollton Fire Department	Fire Chief	Community Organization
Carrollton-Farmers Branch ISD	Superintendent	Academia
Catholic Charities of Dallas	Chief Operations Officer	Community Organization / Vulnerable Populations
Cedar Hill Fire Department	Fire Chief	Community Organization
Cedar Hill ISD	Assistant Superintendent of Student Services and Administration	Academia
Cedar Valley College	Assistant Director of Operations	Academia
City of Dallas	Senior Emergency Management Specialist	Neighboring Community/HHPD Dam Owner+
Cockrell Hill Fire Department	Fire Chief	Community Organization
Collin County	Emergency Management Coordinator	Neighboring Community
Combine Water Supply Corporation	Operation	Utility Provider
Coppell Fire Department	Fire Chief	Community Organization
Coppell ISD	Superintendent	Academia+
Crescent Regional Hospital	CEO	Healthcare Agency
Crescent Regional Hospital	CFO	Healthcare Agency
Crisis Ministries	Manager	Community Organization / Vulnerable Populations
Dallas Behavioral Health Care Hospital	CEO	Healthcare Agency
Dallas Behavioral Health Care Hospital	CFO	Healthcare Agency
Dallas Behavioral Health Care Hospital	Representative	Healthcare Agency+

AGENCY	TITLE	STAKEHOLDER TYPE
Dallas County 211	211 Point of Contact	Community Organization
Dallas County Child Advocacy Center	Lancaster Point of Contact	Community Organization
Dallas County Animal Services	Director	Community Organization
Dallas County Fire Rescue	Fire Chief	Community Organization
Dallas ISD	Superintendent	Academia
Denton County	Emergency Management Coordinator	Neighboring Community
DeSoto Area Chamber of Commerce	President / CEO	Community Organization
DeSoto Fire Department	Fire Chief	Community Organization
DeSoto ISD	Chief of Maintenance and Operations	Academia
DeSoto Public Library	Library Director	Community Organization
DeSoto Senior Center	Director	Community Organization / Vulnerable Populations
DFW Airport Public Safety	Fire Chief	Community Organization
Duncanville Fire Department	Fire Chief	Community Organization
Duncanville ISD	Chief of Operations	Academia
Duncanville Public Library	Library Director	Community Organization
Ellis County	Emergency Management Coordinator	Neighboring Community
Environmental Protection Agency (EPA), Region 6	Deputy Regional Administrator	Federal Agency
Environmental Protection Agency (EPA), Region 6	Director of Superfund an Emergency Management Division	Federal Agency
Environmental Protection Agency (EPA), Region 6	Regional Administrator	Federal Agency
Farmers Branch Fire Department	Fire Chief	Community Organization
Garland Fire Department	Fire Chief	Community Organization

AGENCY	TITLE	STAKEHOLDER TYPE
Garland ISD	Executive Director of Facilities and Maintenance	Academia
Garland ISD	Superintendent	Academia
Glenn Heights Fire Department	Fire Chief	Community Organization
Grand Prairie Fire Department	Fire Chief	Community Organization
Grand Prairie ISD	Chief of Security and Emergency Preparedness	Academia
Green Careers Dallas	Representative	Community Organization
Highland Fire Department	Fire Chief	Community Organization
Highland Park ISD	Director of Facility Services	Academia
Highland Public Library	Town Librarian	Community Organization
Hutchins Fire Rescue	Fire Chief	Community Organization
Irving Cares	CEO	Community Organization / Vulnerable Populations
Irving Fire Department	Fire Chief	Community Organization
Irving ISD	Chief of Schools	Academia
Irving ISD	Deputy Superintendent	Academia
Irving Public Library	Library Administrator	Community Organization
Kaufman County	Emergency Management Coordinator	Neighboring Community
Lancaster Fire Department	Fire Chief	Community Organization
Lancaster ISD	Executive Director of Maintenance, Operations, and Transportation	Academia
Lancaster Veterans Memorial Library	Library Manager	Community Organization
Life Schools	Chief Operations Office	Academia
Life Schools	Safety Coordinator	Academia+
Meals on Wheels	Community Engagement Supervisor	Community Organization / Vulnerable Populations
Mesquite Fire Department	Fire Chief	Community Organization
Mesquite ISD	Superintendent	Academia

AGENCY	TITLE	STAKEHOLDER TYPE
Methodist Charlton Medical Center	CEO	Healthcare Agency
Mountain View College	Vice Chancellor of Student Success / Interim President	Academia
NOAA	Chief of Policy, Planning and Communications	Federal Agency
NWS	Fort Worth / Dallas Regional Contact	Federal Agency
Richardson Fire Department	Fire Chief	Community Organization
Richardson ISD	Assistant Superintendent of District Operations	Academia
Richardson ISD	Superintendent	Academia
Richardson Public Library	Library Director	Community Organization
Rockwall County	Emergency Management Coordinator	Neighboring Community
Rowlett Fire Rescue	Fire Chief	Community Organization
Sachse Fire Department	Fire Chief	Community Organization
Salvation Army	Senior Director of Community Relations	Community Organization / Vulnerable Populations
Seagoville Fire Department	Fire Chief	Community Organization
Seagoville Public Library	Library Director	Community Organization
Seagoville Senior Citizens Center	Senior Citizens Director	Community Organization / Vulnerable Populations
Serving with a Purpose	President / Founder	Community Organization / Vulnerable Populations
Sunnyvale Fire Department	Fire Chief	Community Organization
Tarrant County	Emergency Management Coordinator	Neighboring Community
Texas A&M AgriLife Extension	County Representative	State Agency
Texas A&M Forest Service	Representative	State Agency
Texas A&M Forest Service	Urban and Community Forestry	State Agency
Texas Commission of Environmental Quality (TCEQ), Region 4	Executive Assistant	State Agency
Texas Commission of Environmental Quality (TCEQ), Region 4	Regional Director	State Agency

AGENCY	TITLE	STAKEHOLDER TYPE
Texas Commission of Environmental Quality (TCEQ), Region 4	Solid Waste Work Lead	State Agency+
Texas Department of Health and Human Services (HHS), Region 3	Regional Director	State Agency
Texas Department of Homeland Security	Media Representative	State Agency
Texas Department of Housing and Community Affairs (TDCHA)	Director of Single-Family and Homeless Program	State Agency
Texas Department of Housing and Community Affairs (TDCHA)	Manager of Single-Family Program	State Agency
Texas Department of Transportation (TXDOT)	District Engineer	State Agency
Texas Division of Emergency Management (TDEM), Region 2	District Chief	State Agency
Texas Legislature	District 100	State Agency
Texas Legislature	District 102	State Agency
Texas Legislature	District 103	State Agency
Texas Legislature	District 104	State Agency
Texas Legislature	District 105	State Agency
Texas Legislature	District 107	State Agency
Texas Legislature	District 108	State Agency
Texas Legislature	District 109	State Agency
Texas Legislature	District 110	State Agency
Texas Legislature	District 111	State Agency
Texas Legislature	District 112	State Agency
Texas Legislature	District 113	State Agency
Texas Legislature	District 114	State Agency
Texas Legislature	District 115	State Agency
Texas Senate	District 2	State Agency
Texas Senate	District 12	State Agency

AGENCY	TITLE	STAKEHOLDER TYPE
Texas Senate	District 6	State Agency
Texas Senate	District 23	State Agency
Texas State Soil and Water Conservation Board	Program Supervisor for Dublin Regional Office	State Agency
Texas Water Development Board (TWDB)	Representative	State Agency
Texas Windstorm Insurance Association	Representative	State Agency
Tri-City Animal Shelter	Shelter Manager	Community Organization
Under 1 Rood	Executive Director	Community Organization / Vulnerable Populations
University Park Fire Department	Fire Chief	Community Organization
U.S. Fish and Wildlife	Southwest Regional Representative	Federal Agency
U.S. Army Corps of Engineers	Southwest Regional Representative	Federal Agency
West Dallas Family Service Center	Food Program Supervisor	Community Organization / Vulnerable Populations
Wilmer Fire Department	Fire Chief	Community Organization
Wilmer Senior Citizens Services	Service Coordinator	Community Organization / Vulnerable Populations
Zula B. Wylie Public Library	Library Services Director	Community Organization

Stakeholders and participants from neighboring communities that attended the Planning Team and public meetings played a key role in the planning process. For example, stakeholders were concerned with the impacts of thunderstorms, including wind, therefore, Dallas County included an action to harden all critical facilities to hazard-resistant levels to ensure continuity of operations during thunderstorm wind events.

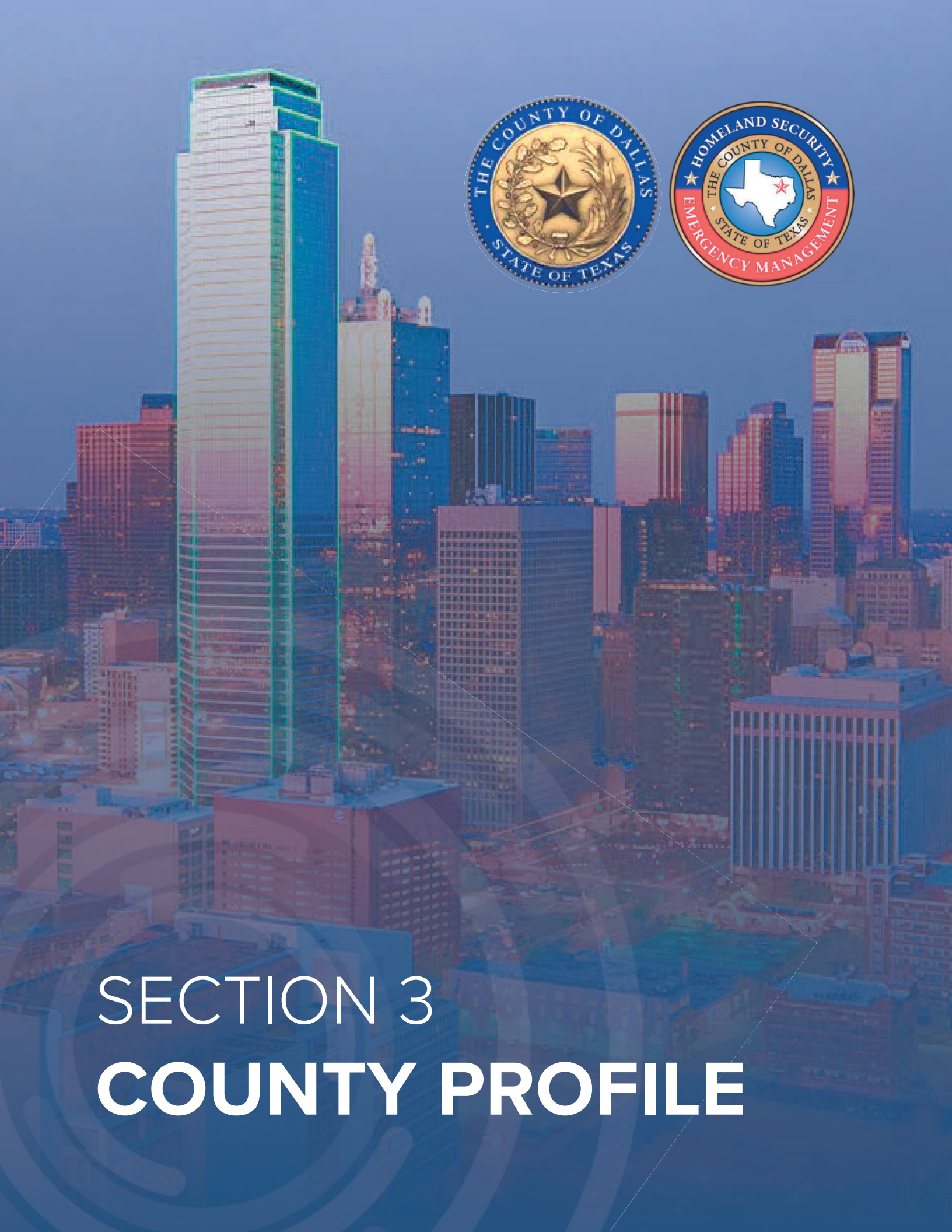
PUBLIC MEETINGS

A series of public meetings were held throughout the planning area to collect public and stakeholder input. Topics of discussion included the purpose of hazard mitigation, discussion of the planning process, and types of natural hazards. Each participating jurisdiction within Dallas County released information regarding the public meetings in their area to increase public participation in the Plan Update development process, through posting on their website, on social media sources including Facebook, Instagram, LinkedIn, NextDoor, and X (formerly known as Twitter), and/or posting the information on bulletin boards in public facilities. A sampling of these notices can be found in Appendix E, along with the documentation on the public meetings. Representatives from area neighborhood associations and area residents were invited to participate. Public meetings were held on the following dates:

- April 3, 2024, at Life Safety Park in the City of Coppell
- May 6, 2024, at Cedar Hill Recreation Center in the City of Cedar Hill
- July 29, 2024, at Bill J. Priest Center in the City of Dallas

PUBLIC PARTICIPATION SURVEY

In addition to public meetings, the Planning and Consultant Teams developed a public survey designed to solicit public input during the planning process from citizens and stakeholders to obtain data regarding the identification of any potential hazard mitigation actions or problem areas. The survey was promoted by local officials and a link to the survey was posted on participating jurisdictions' websites. A total of 245 surveys were completed online. The survey results are analyzed in Appendix B. Participating jurisdictions within Dallas County reviewed the input from the surveys and decided which information to incorporate into the Plan as hazard mitigation actions. For example, results indicate that extreme heat and hail are the hazards of highest concern for the public. Improving the reliability of utilities and constructing infrastructure to reduce hazard impact were the two main actions indicated that the local government should take to mitigate risk to these hazards. As a result, the Planning Team has included mitigation actions to include sheltering when updating public parks so that park patrons can quickly reach a shelter during inclement weather events and burying existing overhead utilities to reduce the impact to critical infrastructure and vulnerable residents.



SECTION 3
COUNTY PROFILE

SECTION 3: COUNTY PROFILE

Overview 1
Population and Demographics 4
Population Growth 6
Economic Impact 7
Natural, Cultural, and Historic Resources 9
Existing Land Use and Development Trends 10
Changes in Vulnerability 13
Future Growth and Development 14

OVERVIEW

Dallas County is in north central Texas, with the city of Dallas being the county seat and largest city. Some of the first people to inhabit the land were the Anadarko's, a Caddoan group, which settled in villages along the Trinity River. In 1542 the first European explorers, the Moscoso expedition, entered the area, with more explorers coming in the eighteenth century. Chief Bowl, the principal chief of the Cherokees in Texas, left Arkansas to lead and settle in the Trinity River area with a group of sixty Cherokee warriors and their families in 1819, however violence caused them to leave the area after three years. By 1840, American explorers began to enter the area.

The area that would become Dallas County was originally Nacogdoches County and Robertson County. The area had rich soil, water, and chalk that made a firm foundation for roadways. The area had wild game such as deer, buffalo, bear, and jackrabbits that could be hunted, as well as useful trees such as the pecan and oak tree. The 1840s saw more people move to the area to live at Fort Bird, or Bird's Fort, the present-day City of Euless. The Texas Emigration and Land Company was recruiting people to come live in the 1,300 square mile area called Peters Colony but faced backlash from the residents of Bird's Fort; however, Peters Colony prevailed and by 1842 the area was known as the town of Dallas. The towns of Farmers Branch, Cedar Springs, and Hord's Ridge soon sprang up to compete with Dallas for settlers.

In 1846, Dallas County was officially formed by the state legislature and named for George Mifflin Dallas, the Vice President under James K. Polk. A temporary courthouse was built in the City of Dallas with an election in 1850 to determine the permanent county seat, which the City of Dallas won. By 1850, Dallas County had a population of 2,743 and in 1860 the population tripled to 8,665. To serve the growing population there were two churches and one public school in Dallas County, with 278 farms growing corn and cotton. By 1860 farmers were adding wheat to their crops and raising cattle, sheep, and hogs. During the Civil War Dallas County produced food for North Texas and Lancaster was the site of a pistol factory. After the war the population jumped to 13,414 in 1870, the economy was prosperous, with settlers coming from the East Coast and the South to grow wheat or other agricultural pursuits.

Between 1880 to 1920, agriculture was the main producer for the economy, but manufacturing was growing. As agriculture crops flopped, the area maintained the economy with the increase of manufacturing production. In 1860 there were fifteen manufacturing companies producing $341,000, this increased to $116 million in 1920 with 492 manufacturing companies in the area. The population rose from 33,477 in 1880 to 210,551 in 1920. The railroads built in the area in 1885 increased transportation in the area.

SECTION 3: COUNTY PROFILE

Dallas County was officially classified as the Dallas Metropolitan Statistical Area by the census bureau in 1950.[1]

Figure 3-1 shows the general location of Dallas County and the cities within the county.

Figure 3-1. Location of Dallas County

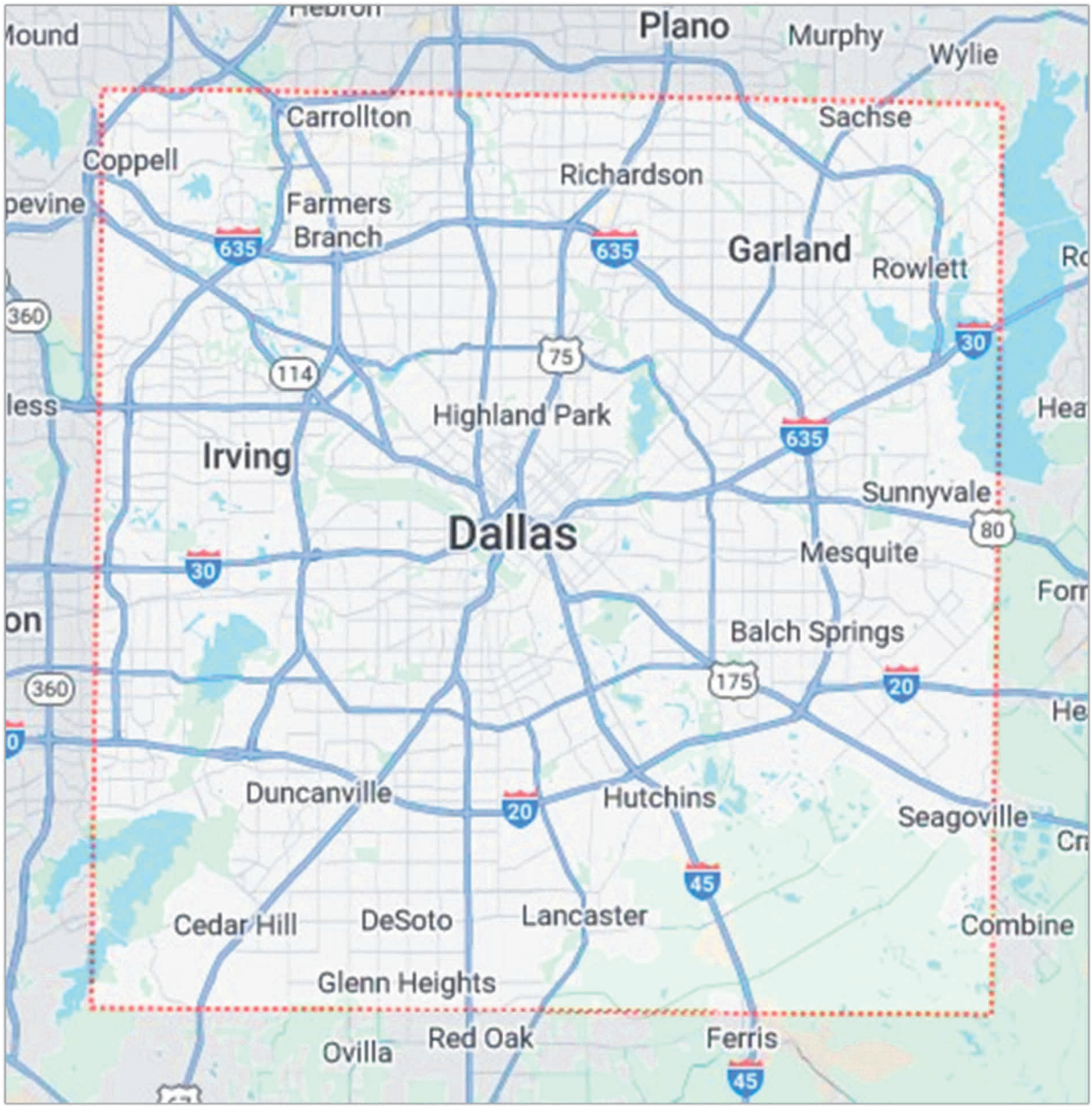


Figure 3-2 shows the participating jurisdictions within Dallas County that are covered in the risk assessment analysis of the Plan Update.

[1] Source: https://www.tshaonline.org/handbook/entries/dallas-county

Figure 3-2. Dallas County Planning Area

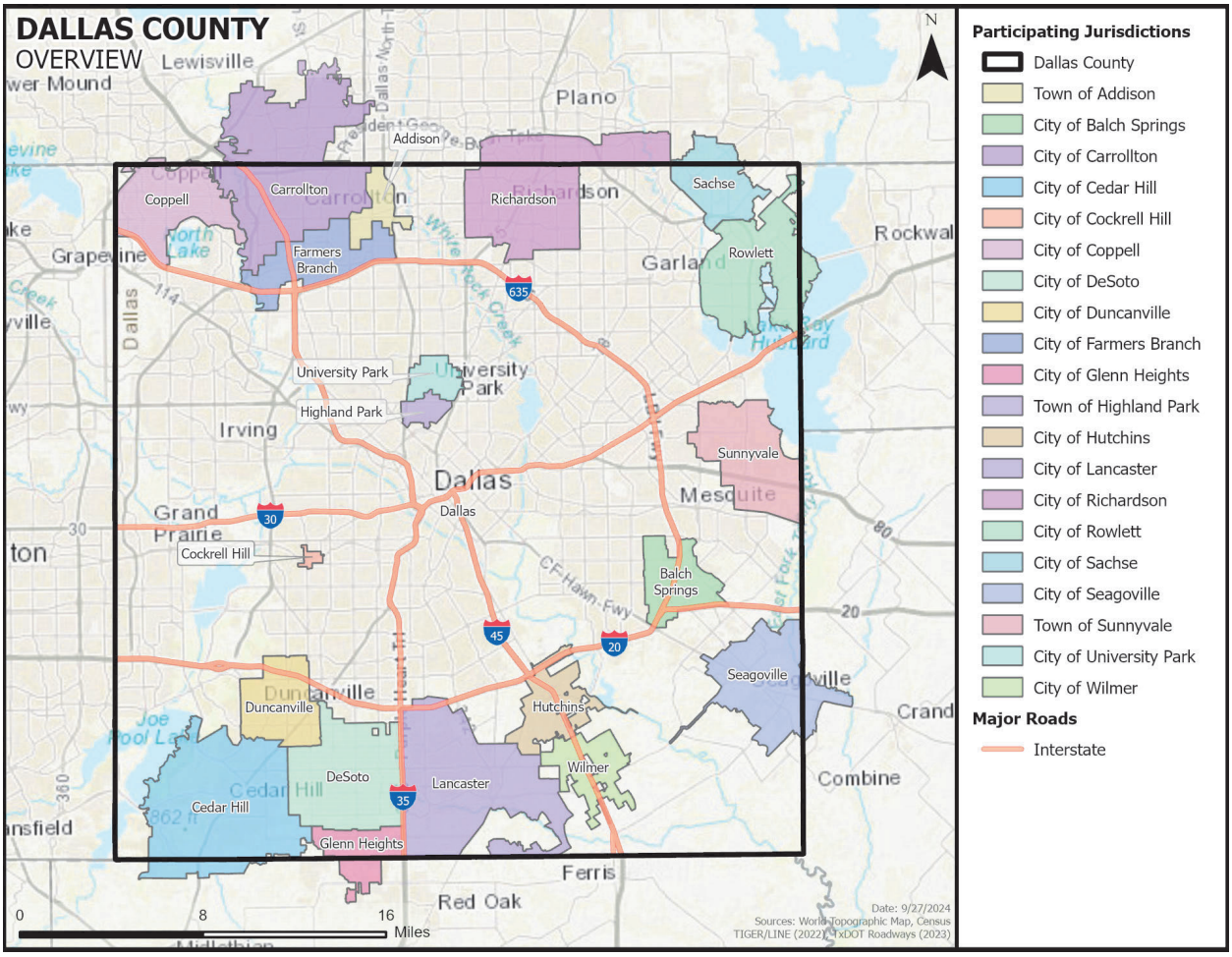


Table 3-1 below lists the jurisdictions in Dallas County that participated in the Dallas County Hazard Mitigation Action Plan Update 2025.

Table 3-1. Participating Jurisdictions

PARTICIPATING JURISDICTIONS		
Dallas County	City of DeSoto	City of Richardson
Town of Addison	City of Duncanville	City of Rowlett
City of Balch Springs	City of Farmers Branch	City of Sachse
City of Carrollton	City of Glenn Heights	City of Seagoville
City of Cedar Hill	Town of Highland Park	Town of Sunnyvale
City of Cockrell Hill	City of Hutchins	City of University Park
City of Coppell	City of Lancaster	City of Wilmer

POPULATION AND DEMOGRAPHICS

According to the 2020 Census, Dallas County has an official population of 2,613,539 residents, a 10% increase since the 2010 census. Table 3-2 shows the population distribution in Dallas County and the participating jurisdictions in 2010, 2020 (Census population count), and 2022 (2022 American Community Survey (ACS) five-year estimates). Note that in some cases, the 2022 ACS estimates may differ from the 2020 census counts: the ACS estimates are used throughout this section for consistency.[2]

Table 3-2. Population Distribution by Jurisdiction[3]

JURISDICTION	TOTAL 2010 POPULATION	TOTAL 2020 POPULATION (Census)	TOTAL 2022 POPULATION (ACS Estimates)	PERCENT CHANGE 2010-2022
Dallas County[4]	2,368,139	2,613,539	2,604,053	10%
Town of Addison	13,056	16,661	17,206	32%
City of Balch Springs	23,728	27,685	27,332	15%
City of Carrollton	119,097	133,434	132,284	11%
City of Cedar Hill	45,028	49,148	48,733	8%
City of Cockrell Hill	4,193	3,815	3,799	-9%
City of Coppell	38,659	42,983	42,513	10%
City of DeSoto	49,047	56,145	55,882	14%
City of Duncanville	38,524	40,706	40,288	5%
City of Farmers Branch	28,616	35,991	35,985	25%
City of Glenn Heights	11,278	15,819	16,445	45%
Town of Highland Park	8,564	8,864	8,840	3%
City of Hutchins	5,338	5,607	5,633	5%
City of Lancaster	36,361	41,275	40,958	12%
City of Richardson	99,223	119,469	118,063	19%
City of Rowlett	56,199	62,535	63,291	19%
City of Sachse	20,329	27,103	27,829	37%

[2] Source: https://demographics.texas.gov/Data/Decennial/2010/, https://www.census.gov/en.html and https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2022/

[3] Some jurisdictions have boundaries that extend beyond Dallas County; data for those jurisdictions represents their total population both inside and outside the Dallas County line.

[4] County totals include the entire population within the county lines, including unincorporated areas and non-participating jurisdictions within the County.

JURISDICTION	TOTAL 2010 POPULATION	TOTAL 2020 POPULATION (Census)	TOTAL 2022 POPULATION (ACS Estimates)	PERCENT CHANGE 2010-2022
City of Seagoville	14,835	18,446	18,658	26%
Town of Sunnyvale	5,130	7,873	7,873	53%
City of University Park	23,068	25,278	25,179	9%
City of Wilmer	3,682	4,974	5,370	46%

Table 3-3 summarizes select characteristics of vulnerable or sensitive populations in Dallas County and the participating jurisdictions using data from the U.S. Census Bureau 2022 American Community Survey (ACS) five-year estimates. Between official U.S. Census population counts, the estimate uses a formula based on new residential building permits and household size. It is simply an estimate, and many variables are involved in achieving an accurate estimation of the number of people living in a given area at a given time.

Table 3-3. Populations at Greater Risk by Jurisdiction[5]

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
Dallas County[6]	290,461	182,349	264,190	364,567	440,684
Town of Addison	1,711	736	1,000	1,445	1,891
City of Balch Springs	2,659	2,008	3,721	3,116	5,512
City of Carrollton	17,122	6,820	10,950	8,995	19,892
City of Cedar Hill	5,384	2,867	5,750	4,776	3,866
City of Cockrell Hill	550	247	372	315	1,222
City of Coppell	4,206	2,656	2,367	1,105	2,899
City of DeSoto	8,490	3,030	7,477	4,582	2,805
City of Duncansville	6,485	2,387	4,802	4,069	4,951
City of Farmers Branch	4,336	2,094	2,573	3,167	6,473
City of Glenn Heights	1,206	902	2,383	1,677	854

[5] Some jurisdictions have boundaries that extend beyond Dallas County; data for those jurisdictions represents their total population both inside and outside the Dallas County line.
[6] County totals include the entire population within the county lines, including unincorporated areas and non-participating jurisdictions within the County.

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
Town of Highland Park	1,668	538	356	513	135
City of Hutchins	292	576	460	1,436	1,236
City of Lancaster	3,648	4,058	4,236	6,021	2,867
City of Richardson	14,931	7,510	9,972	12,751	11,935
City of Rowlett	7,416	3,890	6,004	4,684	4,152
City of Sachse	3,515	1,321	2,823	557	2,615
City of Seagoville	2,252	1,617	2,116	2,631	3,730
Town of Sunnyvale	1,146	275	732	567	243
City of University Park	2,228	1,451	844	1,209	286
City of Wilmer	673	581	712	961	976

POPULATION GROWTH

The official 2020 Dallas County population is 2,613,539. Overall, Dallas County experienced a population increase of 41% between 1990 and 2020, or 760,729 residents. Between 2010 and 2020, the City of Cockrell Hill (-9%) experienced a population decline, while other participating jurisdictions, including Dallas County, experienced population growth. Table 3-4 provides historical growth rates in Dallas County.

Table 3-4. Population Growth by Jurisdictions 1990-2020[7] [8]

JURISDICTIONS	1990	2000	2010	2020	POP CHANGE 1990-2020	PERCENT OF CHANGE	POP CHANGE 2010-2020	PERCENT OF CHANGE
Dallas County[9]	1,852,810	2,218,774	2,368,139	2,613,539	760,729	41%	245,400	10%
Town of Addison	8,783	14,166	13,056	16,661	7,878	90%	3,605	28%
City of Balch Springs	17,406	19,375	23,728	27,685	10,279	59%	3,957	17%
City of Carrollton	82,169	109,576	119,097	133,434	51,265	62%	14,337	12%

[7] U.S. Census Bureau

[8] Some jurisdictions have boundaries that extend beyond Dallas County; data for those jurisdictions represents their total population both inside and outside the Dallas County line.

[9] County totals include the entire population within the county lines, including unincorporated areas and non-participating jurisdictions within the County.

JURISDICTIONS	1990	2000	2010	2020	POP CHANGE 1990-2020	PERCENT OF CHANGE	POP CHANGE 2010-2020	PERCENT OF CHANGE
City of Cedar Hill	19,976	32,093	45,028	49,148	29,172	146%	4,120	9%
City of Cockrell Hill	3,746	4,443	4,193	3,815	69	2%	-378	-9%
City of Coppell	16,881	35,958	38,659	42,983	26,102	155%	4,324	11%
City of DeSoto	30,544	37,646	49,047	56,145	25,601	84%	7,098	14%
City of Duncanville	35,748	36,081	38,524	40,706	4,958	14%	2,182	6%
City of Farmers Branch	24,250	27,508	28,616	35,991	11,741	48%	7,375	26%
City of Glenn Heights	4,564	7,224	11,278	15,819	11,255	247%	4,541	40%
Town of Highland Park	8,739	8,842	8,564	8,864	125	1%	300	4%
City of Hutchins	2,719	2,805	5,338	5,607	2,888	106%	269	5%
City of Lancaster	22,117	25,894	36,361	41,275	19,158	87%	4,914	14%
City of Richardson	74,840	91,802	99,223	119,469	44,629	60%	20,246	20%
City of Rowlett	23,260	44,503	56,199	62,535	39,275	169%	6,336	11%
City of Sachse	5,346	9,751	20,329	27,103	21,757	407%	6,774	33%
City of Seagoville	8,969	10,823	14,835	18,446	9,477	106%	3,611	24%
City of Sunnyvale	2,228	2,693	5,130	7,893	5,665	254%	2,763	54%
City of University Park	22,259	23,324	23,068	25,278	3,019	14%	2,210	10%
City of Wilmer	2,479	3,393	3,682	4,974	2,495	101%	1,292	35%

ECONOMIC IMPACT

Building and maintaining infrastructure depends on the economy, and therefore, protecting infrastructure from risk due to natural hazards in the planning area is important to the participating jurisdictions within Dallas County. Whether it's expanding culverts under a road that washes out during flash flooding, shuttering a fire station, or flood-proofing a wastewater facility, infrastructure must be mitigated from natural hazards in order to continue providing essential utility and emergency response services in a fast-growing planning area.

Based on the American Community Survey 2022 estimates, 69 percent of the population 16 years and over is employed in the labor force. The per capita income is $39,172 and the median household income countywide is $70,732. It is estimated that 35 percent of households have incomes below $50,000. Families with incomes below the poverty level in 2022 made up 11

percent of all families. Of families that have children under 18 years old, 16 percent are below the poverty level.

Tables 3-5 and 3-6 show the various occupations and industries within Dallas County, according to the 2022 estimates by the American Community Survey.

Table 3-5. Occupations of Employed Population in Dallas County[10]

OCCUPATION	ESTIMATE	PERCENT
Civilian employed population 16 years and over	1,319,521	
Management, business, science, and arts occupations	498,409	37.80%
Sales and office occupations	277,592	21.00%
Service occupations	209,615	15.90%
Production, transportation, and material moving occupations	184,733	14.00%
Natural resources, construction, and maintenance occupations	149,172	11.30%

Table 3-6. Industries of Employed Population in Dallas County[11]

INDUSTRY	ESTIMATE	PERCENT
Civilian employed population 16 years and over	1,319,521	
Educational services, and health care, and social assistance	236,409	17.90%
Professional, scientific, and management, and administrative and waste management services	197,900	15%
Retail trade	141,224	10.7%
Construction	138,126	10.5%
Finance and insurance, and real estate and rental and leasing	118,402	9%
Arts, entertainment, and recreation, and accommodation and food services	116,223	8.8%
Manufacturing	106,369	8.1%
Transportation and warehousing, and utilities	94,793	7.2%
Other services, except public administration	65,750	5%
Wholesale trade	38,726	2.9%

[10] 2022 American Community Survey 5-Year Estimates Data Profiles.
[11] 2022 American Community Survey 5-Year Estimates Data Profiles.

INDUSTRY	ESTIMATE	PERCENT
Public administration	30,971	2.3%
Information	26,741	2%
Agriculture, forestry, fishing and hunting, and mining	7,887	0.60%

NATURAL, CULTURAL, AND HISTORIC RESOURCES

Dallas County is comprised of 873.06 square miles of land that is mostly flat and heavy Blackland Prairie, with elevations that range from 382 to 850 feet above sea level. The eastern two-thirds and the western portion of the County are slightly acidic clay-like soils, with loamy topsoil. The remainder of the County is covered in alkaline and loamy soil. The prairie is lined with tall grasses while oak and pecan trees line the streams and mesquites. Gravel and sand are mined from the Trinity floodplain, cement is made from the local soft limestone, and bricks are manufactured from the local clay. The County averages thirty-six inches of rainfall a year to aid the 235-day growing season. Temperatures range from 95°F in July to 36°F in January.

In Downtown Dallas, the Elm Fork, and West Fork of the Trinity River meet. The Trinity River and its tributaries drain Dallas County. The tributaries include White Rock, Mountain, Fivemile, Tenmile, Muddy, Duck, Turtle, and Mesquite Creeks. These creeks feed the reservoirs for municipal and recreational purposes, including Lake Ray Hubbard, Lake North, Joe Pool, Mountain Creek, and White Rock Lakes.

Outdoor recreation opportunities are widely available in Dallas County. Currently, Dallas County has twenty locations where residents and visitors can enjoy nature preserves through their parks and open space program. Cedar Hill has the Cedar Hill State Park which has access to Joe Pool Lake and farm tours. Visitors to the park can participate in hiking, camping, biking, swimming, and fishing. The park has 350 campsites that are enjoyed by, the approximate, 338,000 annual visitors. The Town of Highland Park is known for its outdoor spaces and has a tree program that offers information on tree planting in the area. The seven parks, swimming pool, and tennis court offer outdoor recreation and special events for outdoor enthusiasts. The City of University Park has thirteen parks that can be visited or reserved for special events. In addition to outdoor recreation, there are also museums, stockyards, and aquariums that showcase the rich history of the area.

To further understand natural resources that may be vulnerable to a hazard event and those that need consideration when implementing mitigation activities, it is important to identify at-risk species (i.e., endangered species) in the planning area. A federally endangered species is any species of fish, plant life, or wildlife that is in danger of extinction throughout all or most of its range. A threatened species is a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Both endangered and threatened species are protected by federal law, and any future hazard mitigation projects are subject to these laws. Candidate species are plants and animals that have been proposed as endangered or threatened but are not currently listed.

According to the U.S. Fish and Wildlife Service, as of September 2024, there are nine federally endangered, threatened, or candidate species in Dallas County, listed in Table 3-7. Additionally,

one species is listed as being resolved (plains spotted skunk), one is listed as under review (western chicken turtle), and three species are listed as in recovery (bald eagle, least tern, and black-capped vireo).

Table 3-7. Endangered Species in Dallas County[12]

TYPE of SPECIES	COMMON NAME	SCIENTIFIC NAME	SPECIES STATUS
Insects	Monarch butterfly	Danaus plexippus	Candidate
Birds	Golden-cheeked warbler	Septophaga chrysoparia	Endangered
Birds	Whooping crane	Grus americana	Endangered
Clams	Texas heelsplitter	Potamilus amphichaenus	Proposed Endangered
Mammals	Tricolored bat	Perimyotis subflavus	Proposed Endangered
Clams	Texas fawnsfoot	Truncilla macrodon	Threatened
Birds	Rufa red knot	Calidris canutus rufa	Threatened
Birds	Piping plover	Charadrius melodus	Threatened
Reptiles	Alligator snapping turtle	Macrochelys temminckii	Proposed Threatened

Dallas County's designated historic buildings and sites preserve a rich history. The county has 152 buildings and sites on the National Register of Historic Places. Historic buildings are vulnerable to natural hazards as their construction pre-dates modern building codes. There are also historic preservation considerations and requirements for historic structures when they are included in mitigation or recovery projects.

EXISTING LAND USE AND DEVELOPMENT TRENDS

A zoning ordinance sets forth regulations and standards related to the extent of land and structure uses that are allowed in certain areas. A zoning map shows the areas within a community where the various zoning districts and standards are located and gives an overall picture of what types of development are located in a community and how a community intends to continue to grow. All participating jurisdictions have zoning ordinances in place.

A review of building permits can also give a picture of the built environment and the number of buildings being constructed in the county and each jurisdiction. Table 3-8 lists the number of residential buildings and total units authorized through a permit from each jurisdiction, where data was available, between 2019 and 2023. The data includes total buildings and total units permitted. Permits are reported annually in September, and the data includes that from 2019 through 2023 to demonstrate growth. Of the residential building permits issued in this period, approximately 97 percent were single family buildings and 3 percent were multi-family buildings. However, the multi-

[12] Source: https://ecos.fws.gov/ecp/report/species-listings-by-current-range-county?fips=48113

family buildings did contain 42 percent of the individual housing units permitted during this time. Housing type can also be an indication of an individual's ability to recover from a disaster.

Table 3-8. Building Permits, by Jurisdiction, 2019-2023[13]

JURISDICTION	2019		2020		2021		2022		2023	
	Total Buildings	Total Units	Total Buildings	Total Units	Total Buildings	Total Units	Total Buildings	Total Units	Total Buildings	Total Units
Town of Addison	7	197	17	413	31	31	22	22	7	7
City of Balch Springs	45	45	7	7	9	9	40	42	94	94
City of Carrollton	349	349	207	463	328	467	171	171	38	803
City of Cedar Hill	82	225	100	101	74	74	253	259	274	274
City of Cockrell Hill	1	1	1	1	3	3	2	2	3	3
City of Coppell	36	36	33	33	20	20	11	11	4	4
City of DeSoto	143	251	245	245	282	283	143	143	172	180
City of Duncanville	4	4	5	5	6	6	4	4	3	3
City of Farmers Branch	266	1,582	229	229	309	309	121	588	75	75
City of Glenn Heights	367	367	423	423	444	444	199	199	240	240
Town of Highland Park	27	48	31	31	30	30	27	28	27	27
City of Hutchins	55	55	18	18	16	16	211	211	54	54
City of Lancaster	222	222	71	71	37	37	120	120	76	76
City of Richardson	72	315	45	45	42	751	92	92	26	26
City of Rowlett	252	628	372	698	342	738	254	888	220	286
City of Sachse	45	45	168	759	404	596	232	719	159	159
City of Seagoville	215	215	219	219	269	269	109	109	90	90
City of Sunnyvale	106	106	119	119	134	134	72	72	96	96
City of University Park	61	94	71	84	68	72	72	93	56	56
City of Wilmer	50	257	71	85	72	122	68	104	0	0

[13] U.S. Census Bureau, Building Permit Survey, 1992-2021, https://www.census.gov/construction/bps/

JURISDICTION	2019		2020		2021		2022		2023	
	Total Buildings	Total Units	Total Buildings	Total Units	Total Buildings	Total Units	Total Buildings	Total Units	Total Buildings	Total Units
Dallas County[14]	3,508	12,012	3,334	6,584	5,116	14,394	3,949	13,402	3,723	10,735
Planning Area Total	**5,913**	**17,054**	**5,786**	**10,633**	**8,036**	**18,805**	**6,172**	**17,279**	**5,437**	**13,288**

Certain types of housing found in the Dallas County planning area are more vulnerable than typical site-built, newly constructed residential structures. This includes mobile or manufactured homes, of which 16,390 (2 percent of total housing stock) are in the planning area. Additionally, single-family residences (SFR) built before 1980 are typically built to lower or less stringent construction standards than newer construction, making these homes more susceptible to damage during hazard events. These older homes comprise 47 percent (approximately 492,078 structures) of housing stock in the planning area. Table 3-9 includes housing inventory data for the participating jurisdictions per the 2022 American Community Survey five-year estimates.

Table 3-9. Housing Inventory and Vulnerable Structures, By Jurisdiction[15]

JURISDICTION	TOTAL HOUSING UNITS	BUILT PRIOR TO 1980	MOBILE HOME
Dallas County[16]	1,040,669	492,078	16,390
Town of Addison	10,576	1,549	0
City of Balch Springs	8,865	3,734	389
City of Carrollton	52,646	14,956	137
City of Cedar Hill	16,662	2,149	73
City of Cockrell Hill	1,285	1,146	25
City of Coppell	16,006	1,119	233
City of DeSoto	21,593	4,124	495
City of Duncanville	14,632	8,681	26
City of Farmers Branch	16,313	7,337	27
City of Glenn Heights	5,350	549	749
Town of Highland Park	3,696	2,006	0
City of Hutchins	1,399	463	355

[14] County totals include all building permits within the county lines, including unincorporated areas and non-participating jurisdictions within the County.
[15] The Housing Inventory and Vulnerable Structures are based off the 2022 American Community Survey 5-Year Estimates Data Profiles.
[16] County totals include all housing units within the county lines, including unincorporated areas and non-participating jurisdictions within the County.

JURISDICTION	TOTAL HOUSING UNITS	BUILT PRIOR TO 1980	MOBILE HOME
City of Lancaster	14,865	4,723	243
City of Richardson	47,777	21,448	0[17]
City of Rowlett	22,102	2,539	392
City of Sachse	9,758	393	170
City of Seagoville	5,603	1,716	579
City of Sunnyvale	2,694	228	0
City of University Park	7,799	3,088	6
City of Wilmer	1,870	490	812

CHANGES IN VULNERABILITY

The Dallas County planning area experienced an overall population increase of 10% between 2010 and 2020. The American Community Survey estimates the 2022 total housing units for the planning area to be 1,040,669. The total building permits issued between 2019 and 2023 represent approximately 3% of the total housing units available in the planning area. The overall population increase, combined with the increase in housing units, indicates an increase in vulnerability to all hazards in terms of populations and the built environment. Changes in vulnerability vary by jurisdiction based on each jurisdiction's trends in population and development (Table 3-10).

Table 3-10. Changes in Vulnerability, by Jurisdiction

JURISDICTION	POPULATION TREND	HOUSING TREND	OVERALL VULNERABILITY CHANGES
Town of Addison	Increasing	Slight Increase	Increasing
City of Balch Springs	Increasing	Slight Increase	Increasing
City of Carrollton	Increasing	Increasing	Increasing
City of Cedar Hill	Slight Increase	Increasing	Increasing
City of Cockrell Hill	Decreasing	Stagnant	Slight Decrease
City of Coppell	Increasing	Slight Increase	Increasing
City of DeSoto	Increasing	Increasing	Increasing

[17] The Housing Inventory and Vulnerable Structures are based off the 2022 American Community Survey 5-Year Estimates Data Profiles in which 73 structures were identified for the City. During review of the Plan the City indicated they do not have mobile homes within city-limits that they are aware of.

JURISDICTION	POPULATION TREND	HOUSING TREND	OVERALL VULNERABILITY CHANGES
City of Duncanville	Slight Increase	Slight Increase	Slight Increase
City of Farmers Branch	Slight Increase	Slight Increase	Increasing
City of Glenn Heights	Increasing	Increasing	Increasing
Town of Highland Park	Increasing	Slight Increase	Slight Increase
City of Hutchins	Increasing	Slight Increase	Slight Increase
City of Lancaster	Increasing	Slight Increase	Increasing
City of Richardson	Increasing	Increasing	Increasing
City of Rowlett	Increasing	Increasing	Increasing
City of Sachse	Increasing	Increasing	Increasing
City of Seagoville	Increasing	Slight Increase	Increasing
City of Sunnyvale	Increasing	Slight Increase	Increasing
City of University Park	Slight Increase	Slight Increase	Slight Increase
City of Wilmer	Increasing	Slight Increase	Increasing
Dallas County	**Increasing**	**Increasing**	**Increasing**

Changes in vulnerability are applicable to all natural hazards except when discussing dam failure as vulnerability for this hazard is discussed in relation to changes in the estimated inundation areas for profiled dams. Five of the eighteen dams profiled in Section 5 have seen an increase in vulnerability due to population increases and new development in the estimated inundation areas. These dams include the Mountain Creek Dam, Rockwall-Forney Dam, Joe Pool Dam, Lewisville, Dam, and the Grapevine Dam. There is no known increase in vulnerability in the estimated inundation areas for the remaining dams profiled in the plan. While flood and wildfire hazards feature geographical boundaries, increases in population and building inventory can increase overall vulnerability for these hazards even when the trends occur outside of the known hazard boundary. Development decreases permeable surface areas and increases runoff, increasing flood risk. As population density increases, the Wildland Urban Interface (WUI) typically increases. WUI growth often results in more wildfire ignitions, which puts more houses and lives at risk.

FUTURE GROWTH AND DEVELOPMENT

To better understand how future growth and development in Dallas County might affect hazard vulnerability, it is useful to consider population growth, occupied and vacant land, the potential for future development in hazard areas, and current planning and growth management efforts. This section includes an analysis of the projected population change and economic impacts.

Population projections from 2010 to 2050 are listed in Table 3-11, provided by the Office of the State Demographer, Texas State Data Center, and the Institute for Demographic and Socioeconomic Research. Population projections are based on a 0.5 scenario growth rate, which is 50 percent of the population growth rate from 2000-2010. This information is only available at the county level; however, the population projection shows an increase in population density for the county, which would mean overall growth for the county.

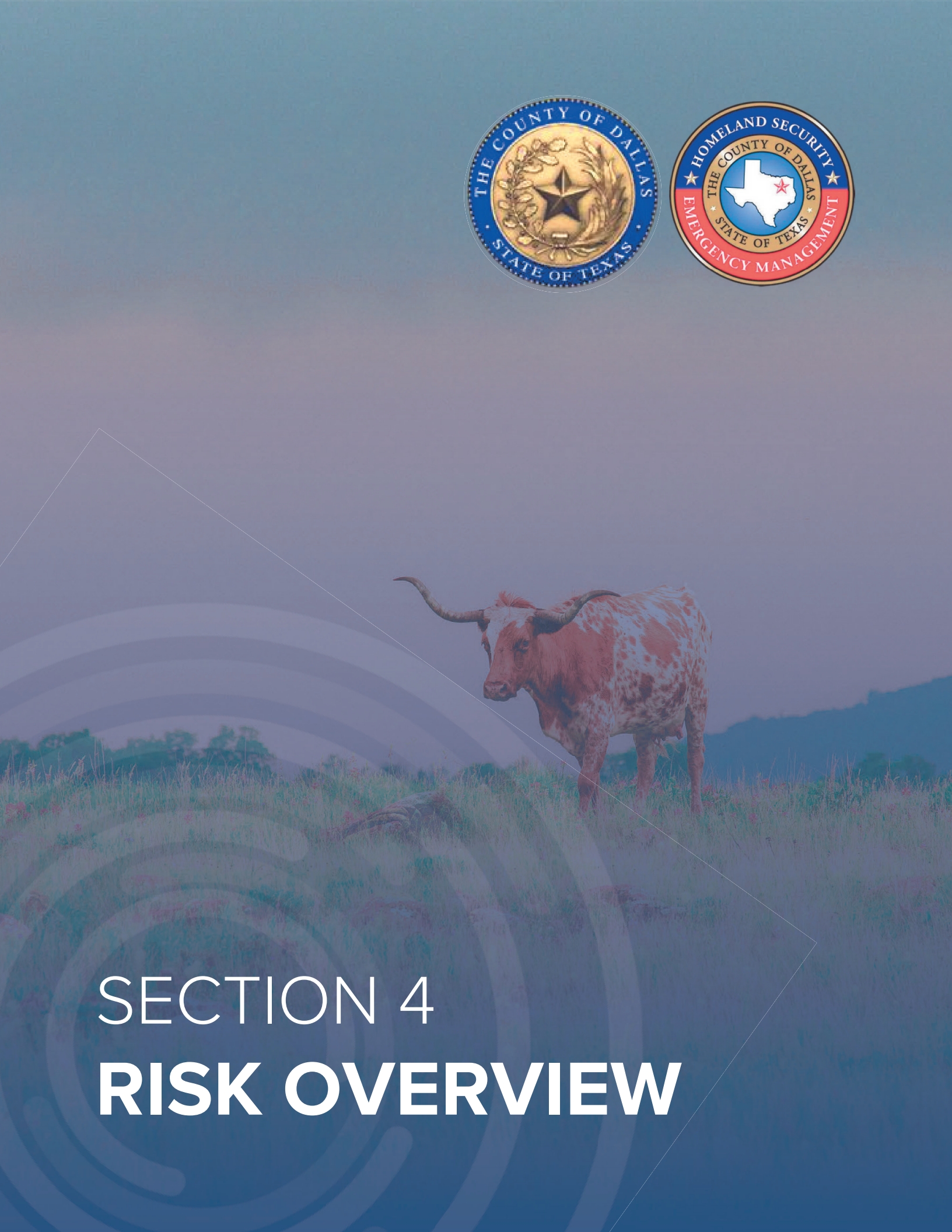
Table 3-11. Dallas County Population Projections[18]

LAND AREA (SQ MI)	2010		2020		2030		2040		2050	
	POPULATION									
	Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)
873.6	2,368,139	2,710	2,613,539	2,991	2,790,940	3,194	2,904,469	3,324	2,960,764	3,389

Comprehensive Plans are guiding documents in a community that set forth a vision, goals, policies, and guidelines to direct future physical, social, and economic development within a jurisdiction. They are part of a continuous process to provide an environment for citizens and consider the general desire of the community to conserve, preserve, and protect the natural environment of their jurisdiction. These plans guide staff, decision-makers, and citizens in making decisions that affect the community with an understanding of the long-term effects.

With the exception of Dallas County, all of the participating jurisdictions within the planning area have or are updating their Comprehensive Plan. These plans contain the future vision for each participating jurisdiction and recommendations on areas such as growth and community character, updated infrastructure and critical services, land use and development, economic development, zoning opportunities, mobility, and community facilities and services. Refer to the Capability Assessment in Appendix F for a complete list of the plans, ordinances, and other resources for all participating jurisdictions.

[18] Office of the State Demographer, Texas State Data Center, and the Institute for Demographic and Socioeconomic Research



SECTION 4
RISK OVERVIEW

SECTION 4: RISK OVERVIEW

Hazard Description 1
Disaster Declaration History 4
Natural Hazards and Climate Change 6
Overview of Hazard Analysis 8
Hazard Ranking 10

HAZARD DESCRIPTION

Section 4 is the first phase of the Risk Assessment, providing background information for the hazard identification process and descriptions of the hazards identified. The Risk Assessment continues with Sections 5 through 15, which include hazard descriptions and vulnerability assessments.

Upon a review of the full range of natural hazards suggested under FEMA planning guidance, participating jurisdictions within Dallas County identified 11 natural hazards that are addressed in the Hazard Mitigation Plan Update, and were identified as significant, as shown in Table 4-1. The hazards were identified through input from Planning Team members and a review of the current 2023 State of Texas Hazard Mitigation Plan (State Plan). Readily available online information from reputable sources such as federal and state agencies was also evaluated and utilized to supplement information as needed.

In general, there are three main categories of natural hazards: atmospheric, hydrologic, and technological. Atmospheric hazards are events or incidents associated with weather-generated phenomena. The following have been identified as significant for the planning area: extreme heat, hail, lightning, thunderstorm wind, tornado, and winter storm (Table 4-1).

Hydrologic hazards are events or incidents associated with water-related damage and account for over 75 percent of federal disaster declarations in the United States. Hydrologic hazards identified as significant for the planning area include flood and drought.

Technological hazards refer to the origins of incidents that can arise from human activities, such as the construction and maintenance of dams. They are distinct from natural hazards primarily because they originate from human activity. The risks presented by natural hazards may be increased or decreased due to human activity. However, they are not inherently human-induced. Therefore, dam failure is classified as a quasi-technological hazard and referred to as “technological” in Table 4-1 for description purposes.

For the Risk Assessment, the wildfire and earthquake hazard are considered “other” since these hazards are not considered atmospheric, hydrologic, or technological.

Table 4-1. Hazard Descriptions

HAZARD	DESCRIPTION
ATMOSPHERIC	
Extreme Heat	Extreme heat is the condition whereby temperatures hover ten degrees or more above the average high temperature in a region for an extended period of time.
Hail	Hailstorms are a potentially damaging outgrowth of severe thunderstorms. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to the rapid rising of warm air into the upper atmosphere and subsequent cooling of the air mass.
Lightning	Lightning is a sudden electrostatic discharge that occurs during an electrical storm. This discharge occurs between electrically charged regions of a cloud, between two clouds, or between a cloud and the ground.
Thunderstorm Wind	A thunderstorm occurs when an observer hears thunder. Radar observers use the intensity of the radar echo to distinguish between rain showers and thunderstorms. Lightning detection networks routinely track cloud-to-ground flashes, and therefore thunderstorms.
Tornado	A tornado is a violently rotating column of air that has contact with the ground and is often visible as a funnel cloud. Its vortex rotates cyclonically with wind speeds ranging from as low as 40 mph to as high as 300 mph. The destruction caused by tornadoes ranges from light to catastrophic, depending on the location, intensity, size, and duration of the storm.
Winter Storm	Severe winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Blizzards, the most dangerous of all winter storms, combine low temperatures, heavy snowfall, and winds of at least 35 mph, reducing visibility to only a few yards. Ice storms occur when moisture falls and freezes immediately upon impact on trees, power lines, communication towers, structures, roads, and other hard surfaces. Winter storms and ice storms can down trees, cause widespread power outages, damage property, and cause fatalities and injuries to human life.
HYDROLOGIC	
Drought	A prolonged period of less than normal precipitation such that the lack of water causes a serious hydrologic imbalance. Common effects of drought include crop failure, water supply shortages, and fish and wildlife mortality.

HAZARD	DESCRIPTION
Flood	The accumulation of water within a body of water, which results in the overflow of excess water onto adjacent lands, usually floodplains. The floodplain is the land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body that is susceptible to flooding. Most floods fall into the following three categories: riverine flooding, coastal flooding, and shallow flooding.
OTHER	
Earthquake	An earthquake is the sudden, rapid, shaking of the earth, caused by the breaking and shifting of subterranean rock as it releases strain that has accumulated over a long time. Initial mild shaking may strengthen and become violent within seconds.
Wildfire	A wildfire is an uncontrolled fire burning in an area of vegetative fuels such as grasslands, brush, or woodlands. Heavier fuels with high continuity, steep slopes, high temperatures, low humidity, low rainfall, and high winds all work to increase the risk for people and property located within wildfire hazard areas or along the urban/wildland interface. Wildfires are part of the natural management of forest ecosystems, but most are caused by human factors.
TECHNOLOGICAL	
Dam Failure	Dam failure is the collapse, breach, or other failure of a dam structure resulting in downstream flooding. In the event of a dam failure, the energy of the water stored behind even a small dam is capable of causing loss of life and severe property damage if development exists downstream of the dam.

Hazards that were not considered significant and were not included in the Plan Update are located in Table 4-2, along with the evaluation process used for determining the significance of each of these hazards. Hazards not identified for inclusion at this time may be addressed during future evaluations and updates.

Table 4-2. Other Hazards Deferred

HAZARD CONSIDERED	REASON FOR DETERMINATION
Coastal Erosion	The planning area is not located on the coast. Therefore, coastal erosion does not pose a risk.
Land Subsidence	The planning area has no historical land subsidence occurrences, and it is in an area where occurrences are considered rare. Land subsidence has not impacted critical structures, systems, populations, or other community assets or vital services in the past, and none is expected in the future.

HAZARD CONSIDERED	REASON FOR DETERMINATION
Expansive Soils	There are no historical occurrences of expansive soils in the planning area, and it is in an area where occurrences are considered rare. There is no history of impact on critical structures, systems, populations, or other community assets or vital services due to expansive soils, and none is expected in the future.
Hurricane/Tropical Storm	The planning area is not located within 200 miles of the Gulf Coast and is not subject to direct hurricane wind impacts. The remnants of tropical systems passing across the planning area may cause significant thunderstorm winds, lightning, and excessive rainfall. Impacts associated with these historical events are covered under thunderstorm wind, lightning, or flood hazard profiles.

DISASTER DECLARATION HISTORY

One method of understanding hazards that pose a risk to Dallas County is to identify past hazard events that triggered federal or state disaster declarations. Federal and state declarations may be granted when the severity and magnitude of an event surpass the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. Table 4-3 list state and federal disaster declarations received by Dallas County. Many of the disaster events were regional or statewide.

Between 1953 and 2024, Dallas County received 28 federal disaster declarations. Out of the 28 federally declared disasters, the largest share (8) was related to hurricanes[1], followed by declarations for severe storms (6), fire (4), flood (4), biological (2), severe ice storm (2), drought (1), and other (1).

In addition to the 28 federally declared disasters, there have been 26 U.S. Department of Agriculture (USDA) Secretarial disaster designations between 2012 and 2023. The Secretary of Agriculture is authorized to designate counties as disaster areas to make emergency loans available to producers suffering losses in those counties and in counties that are contiguous to a designated county.[2] Many of the 26 USDA designations for Dallas County listed multiple factors that caused the disaster area designation. The leading cause was drought, which was included in 17 designations. Other factors listed include excessive heat (6 designations), high wind (5), fire / wildfire (5), insects (5), excessive rain (5), and flooding (3).

[1] Dallas County does not experience direct impacts from hurricanes. Tropical storm and hurricane disaster declarations typically include multiple inland counties due to the excessive precipitation, thunderstorm wind, and lightning associated with the remnants of tropical systems as they track inland before dissipating.

[2] United States Department of Agriculture https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/FactSheets/emergency_disaster_designation_declaration_process-factsheet.pdf

Table 4-3. Disaster Declaration History of Dallas County, 1953-2024

YEAR	DECLARATION TITLE	HAZARD	DECLARATION TYPE	DISASTER No.
1966	Severe Storms, Flooding	Flood	DR	DR-218
1979	Storms, Flash Floods	Flood	DR	DR-595
1989	Severe Storms, Tornadoes, Flooding	Severe Storm	DR	DR-828
1990	Flooding, Severe Storm, Tornado	Severe Storm	DR	DR-863
1991	Severe Storm, Thunderstorms	Flood	DR	DR-930
1993	Extreme Fire Hazard	Drought	EM	EM-3113
1994	Severe Storms, Tornadoes	Severe Storm	DR	DR-1026
1996	Fire Emergency	Fire	EM	EM-3117
1998	Tropical Storm Charley	Severe Storm	DR	DR-1239
1999	Extreme Fire Hazard	Fire	EM	EM-3142
2003	Loss of Space Shuttle Columbia	Other	EM	EM-3171
2005	Hurricane Katrina	Hurricane	EM	EM-3216
2005	Hurricane Rita	Hurricane	EM	EM-3261
2005	Hurricane Rita	Hurricane	DR	DR-1606
2006	Extreme Wildfire Threat	Fire	DR	DR-1624
2007	Hurricane Dean	Hurricane	EM	EM-3277
2008	Wildfires in Texas	Fire	EM	EM-3284
2008	Hurricane Gustav	Hurricane	EM	EM-3290
2008	Hurricane Ike	Hurricane	EM	EM-2194
2015	Severe Storms, Tornadoes, Straight-Line Winds, and Flooding	Severe Storm	DR	DR-4223
2016	Severe Winter Storms, Tornadoes, Straight-Line Winds, and Flooding	Severe Storm	DR	DR-4255
2017	Hurricane Harvey	Hurricane	DR	DR-4332
2020	Covid-19	Biological	EM	EM-3458

YEAR	DECLARATION TITLE	HAZARD	DECLARATION TYPE	DISASTER No.
2020	Covid-19 Pandemic	Biological	DR	DR-4485
2020	Tropical Storms Marco and Laura	Hurricane	EM	EM-3540
2021	Severe Winter Storms	Severe Ice Storm	EM	EM-3554
2021	Severe Winter Storms	Severe Ice Storm	DR	DR-4586
2024	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Flood	DR	DR-4781

NATURAL HAZARDS AND CLIMATE CHANGE

Climate change is defined as a long-term shift in temperature and weather patterns. These shifts can increase or decrease the risk of natural hazards. Global climate change is expected to exacerbate the risks of certain types of natural hazards impacted by rising sea levels, warmer ocean temperatures, higher humidity, the possibility of stronger storms, and an increase in wind and flood damage due to storm surges. Texas is considered one of the more vulnerable states in the U.S. to both abrupt climate changes and the impact of gradual climate changes on the natural and built environments.

Climate change is expected to lead to an increase in average temperatures as well as an increase in the frequency, duration, and intensity of extreme heat events. With no reductions in emissions worldwide, the state of Texas is projected to experience an additional 30 to 60 days per year above 100°F than what is experienced now.[3]

The State Climatologist's *Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036* identifies ongoing and likely future trends through 2036 based on analysis of historic observations of temperatures, precipitation, and extreme weather. Table 4-4 highlights future trends in extreme weather from the report.

[3] Kloesel, K., B. Bartush, J. Banner, D. Brown, J. Lemery, X. Lin, C. Loeffler, G. McManus, E. Mullens, J. Nielsen-Gammon, M. Shafer, C. Sorensen, S. Sperry, D. Wildcat, and J. Ziolkowska, 2018: Southern Great Plains. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 987–1035. doi: 10.7930/NCA4.2018.CH23. https://nca2018.globalchange.gov/chapter/23/

Table 4-4. Future Trends in Extreme Weather in Texas[45]

HAZARDS	EXPECTED TRENDS
Extreme Temperatures	• The average annual surface temperature in 2036 is expected to be 3.0°F warmer than the 1950-1999 average and 1.8°F warmer than the 1991-2020 average. • Nearly double the number of 100°F days by 2036 compared to 2001-2020. • Higher frequency of 100°F days in urban areas. • The number of nighttime temperatures below 32°F are expected to decrease. • The number of frost days per year are expected to decrease. • The coolest days of the summer are expected to continue becoming warmer. • The number of heatwaves per year and number of days per year classified as heatwaves are expected to increase.
Precipitation	• Precipitation has increased by 10 percent or more in eastern Texas, but little trend is present in western Texas. • Precipitation trends to 2036 are likely to be dominated by natural variability. • Extreme precipitation is expected to increase in intensity on average statewide by 6-10 percent compared to the 1950-1999 averages and 2-3 percent relative to the 2001-2020 averages. • This translates to an increase in the frequency of extreme rain of 30-50 percent relative to the climatological expected frequency in 1950-1999 and 10-15 percent relative to 2001-2020. • Annual precipitation is projected to increase while the number of extreme precipitation (>2") will remain relatively consistent.
Drought	• Increasing temperatures, rainfall variability, and other factors will decrease water availability, but impact changes will vary strongly across applications. • Impact trends to be highly sector-specific, with the impacts possibly smaller for agriculture than for surface water supply.
Flood	• No long-term river flooding trend has been identified in the observations, nor is such a trend projected at this point, except perhaps for the most extreme floods and areas with normally high rainfall. • Urban flooding is projected to increase, both as a simple matter of urban population increase and because of the projected increase of precipitation intensity, which drives flooding in fast-response drainages like those usually found in urban areas.

[4] Nielsen-Gammon, John, Holman, Sara, Buley, Austin and Jorgensen, Savannah. Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, 2021 Update. Texas A&M University Office of the Texas State Climatologist. October 7, 2021. https://climatexas.tamu.edu/files/ClimateReport-1900to2036-2021Update

[5] University of Texas at Austin, February 2023, Austin Future Climate, Climate Change Predictions for the City of Austin 2022, Technical Report.

HAZARDS	EXPECTED TRENDS
	• The climate-driven trend in urban flood frequency should be similar to the climate-driven trend in extreme precipitation frequency: 30-50 percent in 2036 relative to 1950-1999 and 10-15 percent relative to 2001-2020. • Areas already experiencing flooding are likely to see an increase in the frequency and magnitude of events.
Winter Weather	• As the climate warms, the likelihood of winter weather decreases. • Both extreme cold and snowfall either become less frequent or are expected to do so. • Widespread snowfall events in Texas, such as the one that took place in February 2021, are extremely rare. • Fewer cold spells are projected to occur per year, but the length of cold spells will be longer when they do occur.
Thunderstorms (Wind, Hail, Lightning)	• Historical trend data is unreliable. • Indirect evidence supports an increase in the number of days capable of producing severe thunderstorms and an increase in the frequency of very large hail in early springtime. Still, these possible trends are too uncertain to quantify.
Wildfire	• Weather and climate drivers of wildfire risk are projected to increase the risk of wildfires throughout the state, primarily due to increased drying rates and fuel load.

OVERVIEW OF HAZARD ANALYSIS

The methodologies utilized to develop the Risk Assessment are a historical analysis and a statistical approach. Both methodologies provide an estimate of potential impact by using a common, systematic framework for evaluation.

Records retrieved from the National Centers for Environmental Information (NCEI) and the National Oceanic and Atmospheric Administration (NOAA) were reported for participating jurisdictions within Dallas County. The remaining records identifying the occurrence of hazard events in the planning area and the maximum recorded magnitude of each event were also evaluated.

Geographic information system (GIS) technology was used to identify and assess risks for Dallas County and evaluate community assets and their vulnerability to hazards.

The four general parameters that are described for each hazard in the Risk Assessment include frequency of return, approximate annualized losses, a description of general vulnerability, and a statement of the hazard's impact.

The frequency of return was calculated by dividing the number of events in the recorded time period for each hazard by the overall time period that the resource database was recording events. Frequency of return statements are defined in Table 4-5, and impact statements are defined in Table 4-6 below.

Table 4-5. Frequency of Return Statements

PROBABILITY	DESCRIPTION
Highly Likely	Event is probable in the next year.
Likely	Event is probable in the next three years.
Occasional	Event is probable in the next five years.
Unlikely	Event is probable in the next ten years.

Table 4-6. Impact Statements

POTENTIAL SEVERITY	DESCRIPTION
Substantial	Multiple deaths. Complete shutdown of facilities for 30 days or more. More than 50 percent of property destroyed or with major damage.
Major	Injuries and illnesses resulting in permanent disability. Complete shutdown of critical facilities between one and four weeks. More than 25 percent of property destroyed or with major damage.
Minor	Injuries and illnesses do not result in permanent disability. Complete shutdown of critical facilities for up to one week. More than 10 percent of property destroyed or with major damage.
Limited	Injuries and 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.

Each of the hazard profiles includes a description of a general Vulnerability Assessment. Vulnerability is the total of assets that are subject to damage from a hazard based on historic recorded damages. Assets in the region were inventoried and defined in hazard zones where appropriate. The total amount of damage, including property and crop damages, for each hazard is divided by the total number of assets (building value totals) in that community to determine the percentage of damage that each hazard can cause to the community. Risk and consequences will be addressed and covered within each hazard profile under the Vulnerability and Impact section as well as under the Assessment of Impact sections, where applicable.

To better understand how future growth and development in the Dallas County region might affect hazard vulnerability, it is useful to consider population growth, occupied and vacant land, the potential for future development in hazard areas, and current planning and growth management efforts. Hazard vulnerability for all participating jurisdictions within Dallas County was reviewed based on recent development changes that occurred throughout the planning area. The population of Dallas County has grown by 10 percent between 2010 and 2020, according to the

U.S. Census Bureau. Therefore, the vulnerability to the population, infrastructure, and buildings has increased for hazards that do not have a geographical boundary.

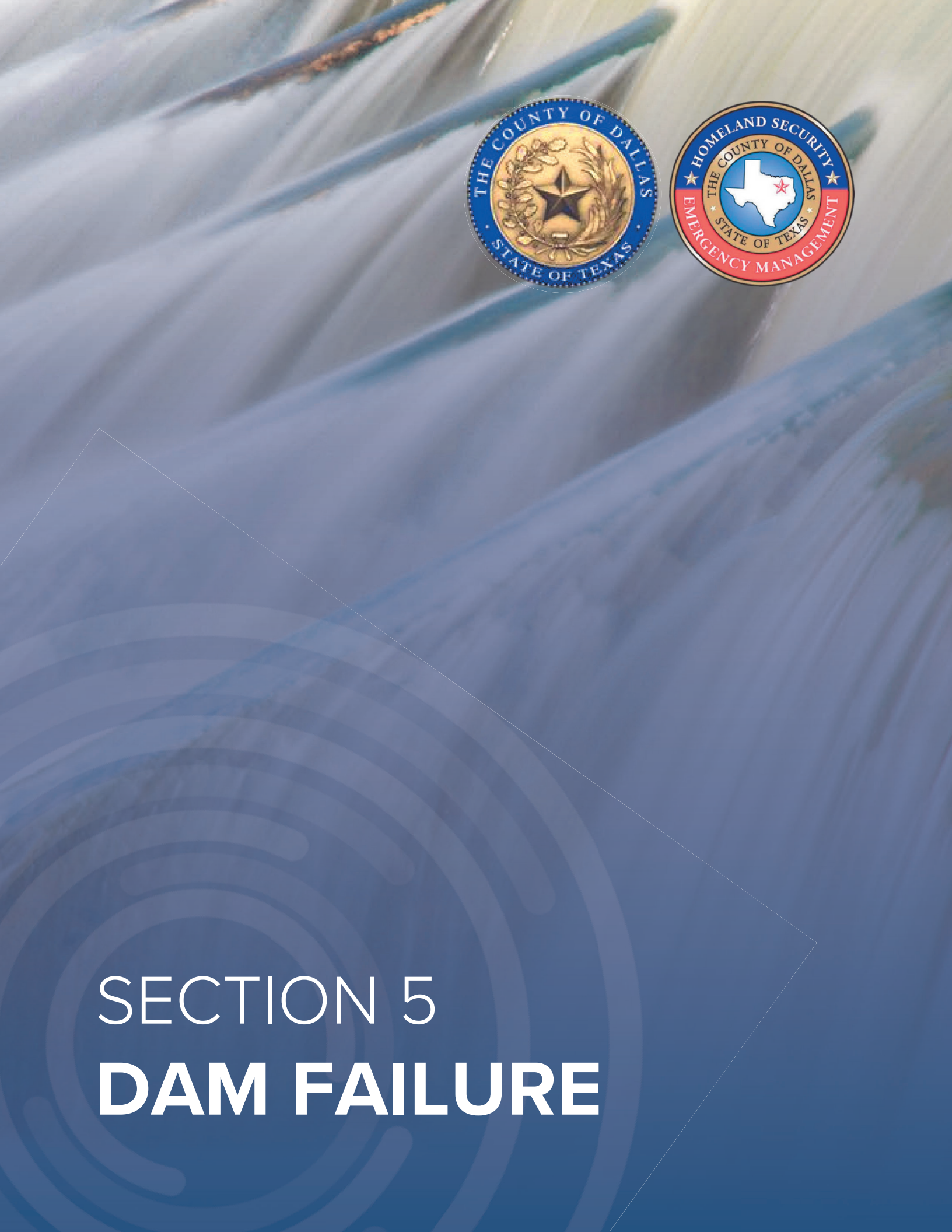
Once loss estimates and vulnerability were known, an impact statement was applied to relate the potential impact of the hazard on the assets within the area of impact.

HAZARD RANKING

During the 2024 planning process, the Planning Team conducted a risk ranking exercise to get input from the Planning Team and stakeholders. Table 4-7 portrays the results of the risk assessment analysis, including the frequency of occurrence and potential severity and the Planning Team's self-assessment for hazard ranking based on local knowledge of past hazard events and impacts for each identified hazard. The definitions for frequency of occurrence and potential severity can be found in Table 4-5 and Table 4-6.

Table 4-7. Hazard Risk Ranking

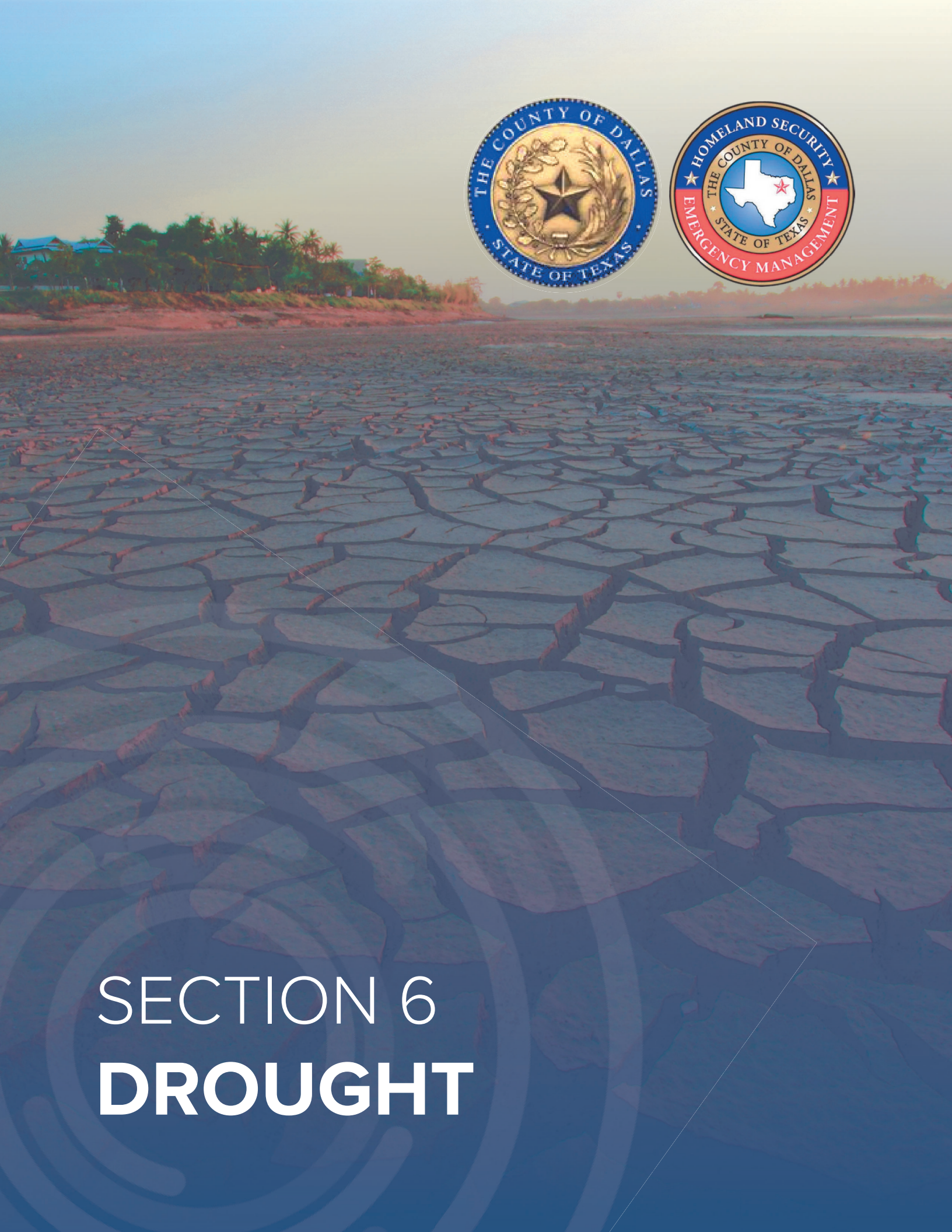
HAZARD	FREQUENCY OF OCCURRING	POTENTIAL SEVERITY	RANKING
NATURAL HAZARDS			
Extreme Heat	Highly Likely	Substantial	High
Flood	Highly Likely	Substantial	High
Hail	Highly Likely	Limited	High
Lightning	Highly Likely	Substantial	High
Thunderstorm Wind	Highly Likely	Substantial	High
Tornado	Highly Likely	Substantial	High
Wildfire	Highly Likely	Minor	High
Winter Storm	Highly Likely	Substantial	High
Dam Failure	Unlikely	Limited	Low
Drought	Highly Likely	Minor	Low
Earthquake	Unlikely	Limited	Low



SECTION 5
DAM FAILURE

SECTION 5: DAM FAILURE

Portions of the Dallas County Hazard Mitigation Plan are considered confidential and not for release to the public. The information in this section is covered under Privacy Act of 1974 (5 U.S.C. Section 552a).



SECTION 6
DROUGHT

SECTION 6: DROUGHT

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HAZARD DESCRIPTION

Drought is a period of time without substantial rainfall that persists from one year to the next. Drought is a normal part of virtually all climatic regions, including areas with high and low average rainfall. Drought is the consequence of anticipated natural precipitation reduction over an extended period of time, usually a season or more in length. Droughts can be classified as meteorological, hydrologic, agricultural, and socioeconomic. Table 6-1 presents definitions for these different types of droughts.

Droughts are one of the most complex of all natural hazards as it is difficult to determine their precise beginning or end. In addition, droughts can lead to other hazards such as extreme heat and wildfires. Their impact on wildlife and area farming is enormous, often killing crops, grazing land, edible plants, and even in severe cases, trees. A secondary hazard to drought is wildfire because dying vegetation serves as a prime ignition source. Therefore, a heat wave combined with a drought is a very dangerous situation.

Table 6-1. Drought Classification Definitions[1]

METEOROLOGICAL DROUGHT	The degree of dryness or departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
HYDROLOGIC DROUGHT	The effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
AGRICULTURAL DROUGHT	Soil moisture deficiencies relative to water demands of plant life, usually crops.
SOCIOECONOMIC DROUGHT	The effect of demands for water exceeding the supply as a result of a weather-related supply shortfall.

LOCATION

Droughts occur regularly throughout Texas, including Dallas County and all participating jurisdictions, and are considered a normal condition. However, they can vary greatly in terms of their intensity and duration. The U.S. Drought Monitor, produced through a partnership between

[1] Source: Multi-Hazard Identification and Risk Assessment: A Cornerstone of the National Mitigation Strategy, FEMA

the National Drought Mitigation Center at the University of Nebraska-Lincoln, U.S. Department of Agriculture and the National Oceanic and Atmospheric Administration, shows the planning area is currently experiencing abnormally dry to moderate drought conditions (Figure 6-1) but has experienced a range of conditions from normal to exceptional drought conditions over the last decade (Figure 6-2). There is no distinct geographic boundary to drought; therefore, it can occur anywhere throughout the Dallas County planning area, including all participating jurisdictions.

Figure 6-1. U.S. Drought Monitor, September 2024

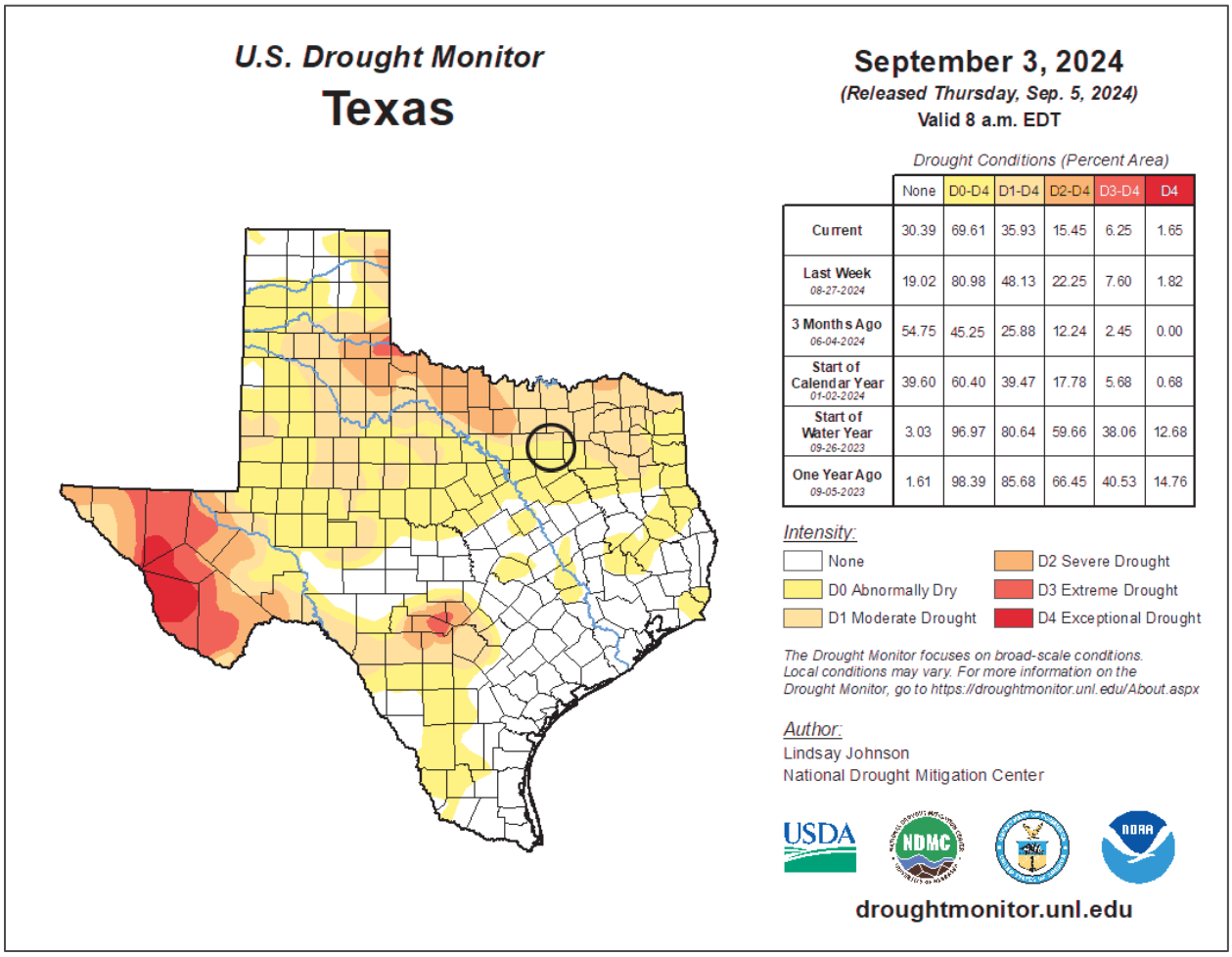
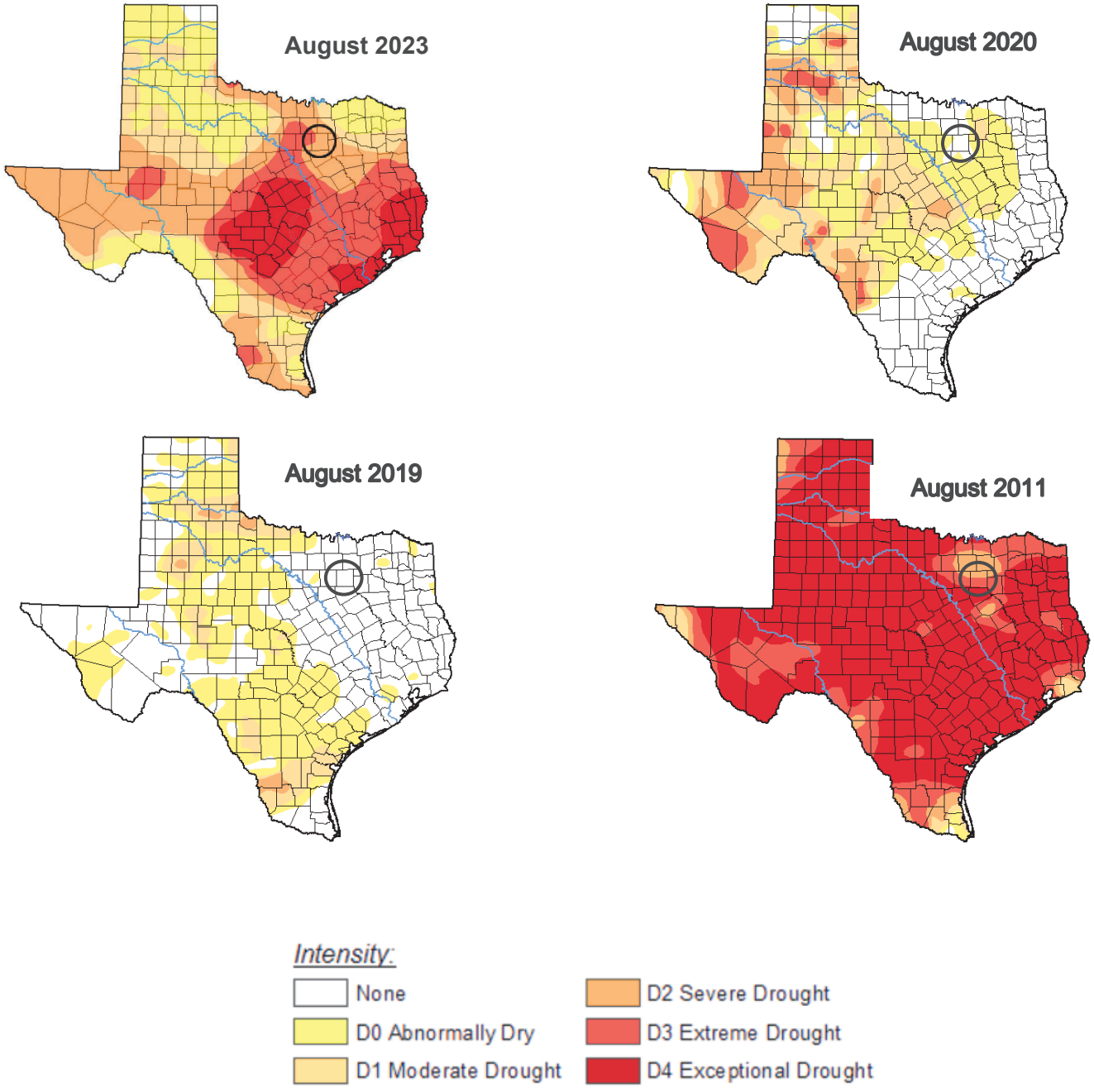


Figure 6-2. U.S. Drought Monitor, August 2011, August 2019, August 2022, August 2023



EXTENT

The Palmer Drought Index is used to measure the extent of drought by measuring the duration and intensity of long-term drought-inducing circulation patterns. Long-term drought is cumulative, with the intensity of drought during the current month dependent upon the current weather patterns plus the cumulative patterns of previous months. The hydrological impacts of drought (e.g., reservoir levels, groundwater levels, etc.) take longer to develop. Table 6-2 depicts magnitude of drought, while Table 6-3 describes the classification descriptions.

Table 6-2. Palmer Drought Index

DROUGHT INDEX	DROUGHT CONDITION CLASSIFICATIONS						
	Extreme	Severe	Moderate	Normal	Moderately Moist	Very Moist	Extremely Moist
Z Index	-2.75 and below	-2.00 to -2.74	-1.25 to -1.99	-1.24 to +.99	+1.00 to +2.49	+2.50 to +3.49	n/a
Meteorological	-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
Hydrological	-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

Table 6-3. Palmer Drought Category Descriptions[2]

CATEGORY	DESCRIPTION	POSSIBLE IMPACTS	PALMER DROUGHT INDEX
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures; fire risk above average. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.	-1.0 to -1.9
D1	Moderate Drought	Some damage to crops, pastures; fire risk high; streams, reservoirs, or wells low, some water shortages developing or imminent, voluntary water use restrictions requested.	-2.0 to -2.9
D2	Severe Drought	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed.	-3.0 to -3.9
D3	Extreme Drought	Major crop/pasture losses; extreme fire danger; widespread water shortages or restrictions.	-4.0 to -4.9
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells, creating water emergencies.	-5.0 or less

[2] Source: National Drought Mitigation Center

SECTION 6: DROUGHT

Drought is monitored nationwide by the National Drought Mitigation Center (NDMC). Indicators are used to describe broad scale drought conditions across the U.S. and correspond to the intensity of drought.

Based on the historical occurrences for drought and the location of the Dallas County planning area, the area can anticipate the full range of drought from abnormally dry to exceptional drought, or D0 to D4, based on the Palmer Drought Category. The entire planning area has experienced exceptional drought conditions. This is the highest level of drought severity and the most extreme drought conditions the planning area can anticipate in the future.

HISTORICAL OCCURRENCES

The Dallas County planning area may experience an extreme drought in any given year. According to the U.S. Drought Monitor, between January 2000 and June 2024, the Dallas County planning area spent a total of 700 weeks (56%) in some level of drought as defined as Abnormally Dry (D0) or worse conditions. The longest drought period lasted 151 weeks during the same reporting period. Dallas County has received 30 USDA disaster declarations for drought from 2012 through 2024.

Figure 6-3. Dallas County Drought Intensity, January 2000 - June 2024[3]

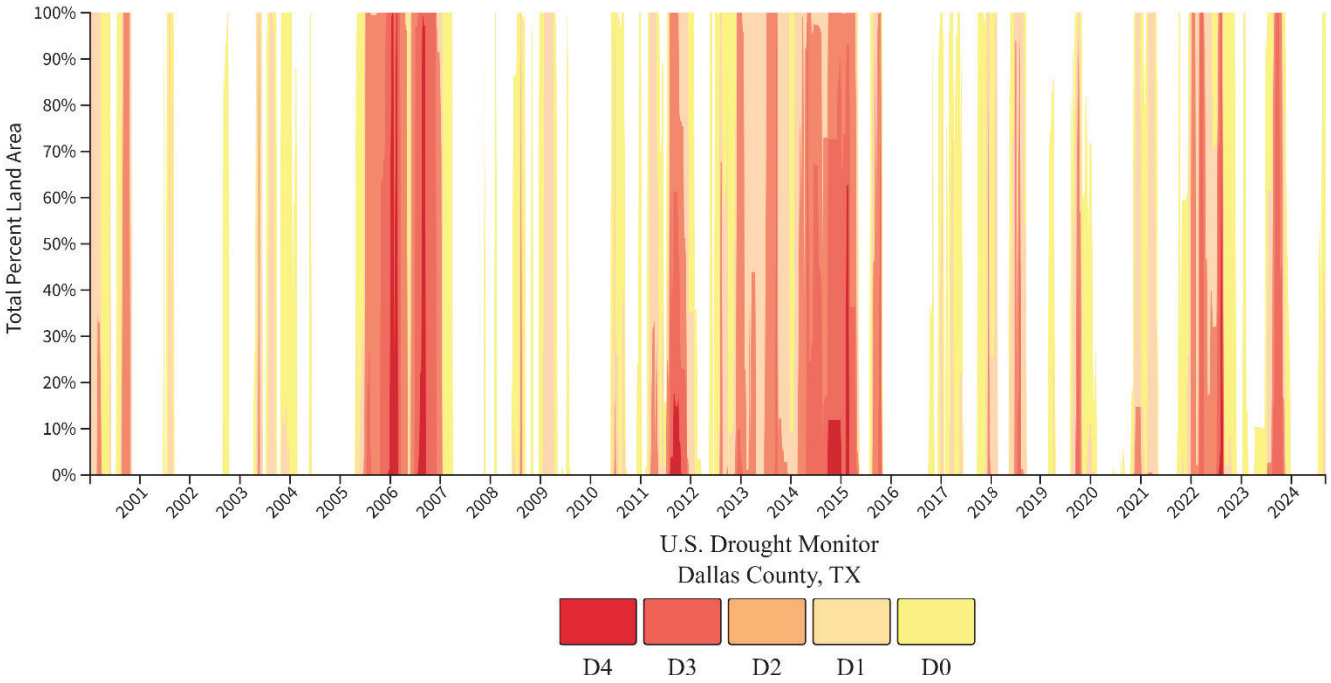


Table 6-4 lists historical events that have occurred in Dallas County as reported in the National Centers for Environmental Information Storm Events Database (NCEI). A total of 69 drought impacts were reported in the NCEI over 26 unique drought periods impacting Dallas County from January 2000 through June 2024. Historical drought impacts reported in the NCEI database for

[3] U.S. Drought Monitor

the Dallas County planning area, including all participating jurisdictions, over the 24.5-year reporting period has resulted in more than $2.9 million (2024 dollars) in reported property and crop damages.

Historical drought information shows drought activity across a multi-county forecast area for each event, the appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by the event. Historical drought data is provided on a county-wide basis per the NCEI Storm Events database.

Table 6-4. Historical Drought Events, January 2000 – June 2024[4]

JURISDICTION	DATE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	10/1/2006	0	0	$768,900	$768,900
Dallas County	11/1/2006	0	0	$0	$1,232,100
Dallas County	4/1/2011	0	0	$0	$6,900
Dallas County	8/1/2011	0	0	$0	$13,700
Dallas County	9/1/2011	0	0	$0	$34,200
Dallas County	10/1/2011	0	0	$0	$6,900
Dallas County	12/1/2012	0	0	$0	$2,800
Dallas County	1/1/2013	0	0	$0	$1,400
Dallas County	4/1/2013	0	0	$0	$2,700
Dallas County	6/25/2013	0	0	$0	$2,700
Dallas County	7/1/2013	0	0	$0	$2,700
Dallas County	8/1/2013	0	0	$6,700	$6,700
Dallas County	9/1/2013	0	0	$0	$5,400
Dallas County	2/25/2014	0	0	$0	$1,400
Dallas County	3/1/2014	0	0	$0	$5,300
Dallas County	4/1/2014	0	0	$0	$4,000
Dallas County	5/1/2014	0	0	$0	$4,000
Dallas County	6/1/2014	0	0	$0	$2,700
Dallas County	7/1/2014	0	0	$0	$4,000

[4] Only those events with reported injuries, fatalities, or damages were included in the table.

JURISDICTION	DATE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	8/1/2014	0	0	$0	$1,400
Dallas County	9/1/2014	0	0	$6,600	$0
Dallas County	10/1/2014	0	0	$0	$6,600
Dallas County	11/1/2014	0	0	$0	$2,700
Dallas County	12/1/2014	0	0	$0	$8,000
Dallas County	1/1/2015	0	0	$0	$2,700
Dallas County	2/1/2015	0	0	$0	$2,700
Dallas County	3/1/2015	0	0	$0	$4,000
Dallas County	4/1/2015	0	0	$0	$1,400
Dallas County	9/1/2015	0	0	$0	$1,400
Dallas County	10/1/2015	0	0	$2,700	$0
Dallas County	12/1/2017	0	0	$0	$1,300
Dallas County	8/1/2018	0	0	$0	$1,300
Dallas County	9/24/2019	0	0	$0	$1,300
TOTALS		**0**	**0**	**$784,900**	**$2,143,300**

Table 6-5. Historical Drought Events Summary, January 2000 – June 2024

JURISDICTION	DROUGHT IMPACTS	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	69	0	0	$784,900	$2,143,300

Based on the historical drought events for the Dallas County planning area 14 drought impacts were reported over 5 unique drought periods since the 2020 Plan.

SIGNIFICANT EVENTS

Dallas County – June 2005 – November 2006

During this drought, all north Texas was classified in either extreme drought (D3) through 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 this January was 68 degrees, a full 14 degrees above normal.

Wildfires continued to be a major problem in January of 2006, with a burn ban in place in every county. A quarter of a million acres burned across Texas in the first half of the month, more than

all of 2005 combined. The ongoing drought combined with strong winds and low humidity to create a volatile fire situation in Texas.

Hydrological and agricultural impacts worsened over the past month due to the lack of rainfall. Most water reservoirs across north Texas were 60 percent to 85 percent 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 of 2006. Only half of the state's hay crops were acceptable 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.

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.

Dallas County – August 2011 – October 2011
According to the US Drought Monitor, the county was classified under severe drought (D2) conditions at the beginning of August in 2011. With little to no rain, conditions worsened, and the county was classified in extreme drought (D3) by the end of the month. This carried on through September. The county received very little rainfall and conditions did not improve. Lakes and ponds remained low and water restrictions remained in place across the region, even in communities which received very beneficial rainfall. All 46 counties in north Texas had burn bans at the end of the month. Dallas County was between D2 and D3 drought conditions throughout the three impacted months.

Dallas County – January 2022 – August 2022
Exceptional (D4) to severe (D2) drought conditions affected the entire Dallas County planning area from January to August of 2022. Despite a few instances of soaking rains, drought continued to plague much of the region as precipitation was low. According to reports in the NCEI database, the drought prompted a significant spike in cattle sales across North and Central Texas, as both hay and water were low in supply. In July, a small grass fire in the City of Balch Springs destroyed 9 homes and damaged 17 more.

PROBABILITY OF FUTURE EVENTS

Based on available records of historic events, there have been 69 reported drought impacts in the NCEI over 26 drought periods (ranging in length from 4 weeks to 151 weeks) within a 24.5-year reporting period, which provides a probability of approximately one event per year. This frequency supports a “Highly Likely” probability of future events for the Dallas County planning area. The impact of climate change could produce longer, more severe droughts, exacerbating the current drought impacts.

VULNERABILITY AND IMPACT

Loss estimates were based on 24.5 years of statistical data from the NCEI and the U.S. Drought Monitor. A drought event frequency-impact was then developed to determine an impact profile on agriculture products and estimate potential losses due to drought in the area. All existing and future buildings, facilities, and populations are exposed to this hazard and could potentially be impacted. However, drought impacts are mostly experienced in water shortages, breaks in water lines, or crop and livestock losses on agricultural lands and typically have minimal impact on buildings.

The Dallas County Planning Team identified the following critical facilities as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by drought events. For a comprehensive list by participating jurisdiction, please see Appendix C.

Table 6-6. Critical Facilities Vulnerable to Drought Events

CRITICAL FACILITIES	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS, Hospitals)	• Increased law enforcement activities may be required to enforce water restrictions. • Firefighters may have limited water resources to aid in firefighting and suppression activities, increasing risk to lives and property. • Potential for increased number of emergency calls as drought events can lead to cascading hazard events such as wildfires and flash flooding.
Airport, Academic Institutions, Community Residential Facilities, Day Care Facilities, Evacuation Centers & Shelters, Governmental Facilities	• Strain on staff as drought may cause health problems related to low water flows and poor water quality. • Water main breaks due to soil shrinking and swelling cycles could lead to facility closures. • Building foundations may crack due to soil shrinking and swelling cycles. • Operations dependent on water supply may be adversely impacted. • Economic disruptions due to cracked foundations and infrastructure damages as a result of soil shrinking and swelling cycles.
Commercial Suppliers (food, gas, etc.)	• Operations dependent on water supply may be adversely impacted. • Economic disruptions due to cracked foundations and infrastructure damages as a result of soil shrinking and swelling cycles.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Potential for increased number of emergency calls as drought events can lead to cascading hazard events such as wildfires and flash flooding. • Water main breaks due to soil shrinking and swelling cycles could lead to facility closures. • Operations dependent on water supply may be adversely impacted.

Even with the planning area relying on multiple water utility providers as well as local and private service, high demand can still deplete these resources during extreme drought conditions. As resources are depleted, potable water is in short supply and overall water quality can suffer, elevating health concerns for all residents but especially vulnerable populations – typically children, the elderly, and the ill. In addition, potable water is used for drinking, sanitation, patient care, sterilization, equipment, heating and cooling systems, and many other essential functions in medical facilities.

The average person will survive only a few days without potable water, and this timeframe can be drastically shortened for those people with more fragile health – typically children, the elderly, and people with disabilities. During summer drought, or hot and dry conditions, elderly persons, small children, infants, those with disabilities, or who do not have adequate cooling units in their homes may become more vulnerable to injury and/or death. In addition, people who speak a language other than English may face increased vulnerability due to language barriers that limit their access to important information such as weather-related warnings and instructions regarding safety measures. The population over 65 in the Dallas County planning area is estimated at 11 percent of the total population and children under the age of 5 are estimated at 7 percent. Individuals with a disability are estimated at 10 percent of the total population. In addition, an estimated 14 percent of the planning area population live below the poverty level and 17 percent of the populations speaks a language other than English (Table 6-7).

Table 6-7. Populations at Greater Risk by Participating Jurisdiction

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
Dallas County	290,461	182,349	264,190	364,567	440,684
Town of Addison	1,711	736	1,000	1,445	1,891
City of Balch Springs	2,659	2,008	3,721	3,116	5,512
City of Carrollton	17,122	6,820	10,950	8,995	19,892
City of Cedar Hill	5,384	2,867	5,750	4,776	3,866
City of Cockrell Hill	550	247	372	315	1,222
City of Coppell	4,206	2,656	2,367	1,105	2,899
City of DeSoto	8,490	3,030	7,477	4,582	2,805
City of Duncansville	6,485	2,387	4,802	4,069	4,951
City of Farmers Branch	4,336	2,094	2,573	3,167	6,473
City of Glenn Heights	1,206	902	2,383	1,677	854
Town of Highland Park	1,668	538	356	513	135

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
City of Hutchins	292	576	460	1,436	1,236
City of Lancaster	3,648	4,058	4,236	6,021	2,867
City of Richardson	14,931	7,510	9,972	12,751	11,935
City of Rowlett	7,416	3,890	6,004	4,684	4,152
City of Sachse	3,515	1,321	2,823	557	2,615
City of Seagoville	2,252	1,617	2,116	2,631	3,730
Town of Sunnyvale	1,146	275	732	567	243
City of University Park	2,228	1,451	844	1,209	286
City of Wilmer	673	581	712	961	976

The planning area is also vulnerable to food shortages when drought conditions exist, and potable water is in short supply. Potable water is used for drinking, sanitation, patient care, sterilization, equipment, heating and cooling systems, and many other essential functions in medical facilities. All residents in the Dallas County planning area could be adversely affected by drought conditions, which could limit water supplies and present health threats.

The economic impact of droughts can be significant as they produce a complex web of impacts that spans many sectors of the economy and reach well beyond the area experiencing physical drought. This complexity exists because water is integral to our ability to produce goods and provide services. If droughts extend over several years, the direct and indirect economic impact can be significant.

Crop production can also suffer greatly during extreme drought conditions, limiting fresh local food supplies, driving up costs, and negatively impacting the local economy. Drought conditions could adversely affect the agricultural industry throughout the Dallas County planning area.

Impacts of past droughts experienced in the Dallas County planning area, including participating jurisdictions, have not resulted in injuries or fatalities supporting a “Minor” severity of impact meaning injuries and/or illnesses do not result in permanent disability, shutdown of facilities and services for up to one week, and more than 10 percent of property is impacted. The estimated losses due to drought over the 24.5-year reporting period in the Dallas County planning area are $2,928,200 with an estimated annual loss estimate of $122,000 (Table 6-8).

Table 6-8. Estimated Annualized Losses for Dallas County

JURISDICTION	TOTAL PROPERTY & CROP LOSS (2024 dollars)	ANNUAL LOSS ESTIMATES (2024 dollars)
Dallas County	$2,928,200	$122,000

ASSESSMENT OF IMPACTS

The Drought Impact Reporter was developed in 2005 by the University of Nebraska-Lincoln to provide a national database of drought impacts. Droughts can have an impact on agriculture, business and industry; energy; fire; plants and wildlife; relief, response, and restrictions; society and public health; tourism and recreation; and water supply and quality. The reports are submitted from individuals to Federal, State, and local agencies, as well as the general public. Table 6-9 lists the drought impacts to Dallas County from 2005 to 2024 based on reports received by the Drought Impact Reporter.

Table 6-9. Drought Impacts, 2005-2024[5]

DROUGHT IMPACTS 2005-2024	
Agriculture	67
Business & Industry	5
Energy	2
Fire	12
Plants & Wildlife	53
Relief, Response & Restrictions	17
Society & Public Health	9
Tourism & Recreation	3
Water Supply & Quality	53

Drought has the potential to impact people in the Dallas County planning area. While it is rare that drought, in and of itself, leads to a direct risk to the health and safety of people in the U.S., severe water shortages could result in inadequate supply for human needs. Dallas County is a central part of the Dallas-Fort Worth (DFW) metropolitan area. The DFW metroplex is known as one of the fastest growing areas across the country. This level of future growth can cause concern for the current water infrastructure and demand for the planning area. Severe drought conditions can be frequently associated with a variety of impacts, including:

- Dry clay soil can lead to water main lines shifting and breaking. Often repair to water lines includes shutting off water to multiple homes at one time.

[5] Drought impacts reported from January 2005 through September 2024.

- The number of health-related low-flow issues (e.g., diminished sewage flows, increased pollution concentrations, reduced firefighting capacity, and cross-connection contamination) will increase as the drought intensifies.
- Public safety from forest / range / wildfires will increase as water availability and/or pressure decreases.
- Respiratory ailments may increase as the air quality decreases.
- There may be an increase in disease due to wildlife concentrations (e.g., rabies, Rocky Mountain spotted fever, Lyme disease).
- Residents may disagree with the County and participating Cities over water use / water rights, creating conflict.
- Political conflicts may increase between municipalities, counties, states, and regions.
- Water management conflicts may arise between competing interests.
- Increased law enforcement activities may be required to enforce water restrictions.
- Severe water shortages could result in inadequate supply for human needs as well as lower quality of water for consumption.
- Firefighters may have limited water resources to aid in firefighting and suppression activities, increasing risk to lives and property.
- During drought there is an increased risk for wildfires and dust storms.
- The community may need increased operational costs to enforce water restriction or rationing.
- Prolonged drought can lead to increases in illness and disease related to drought.
- Utility providers can see decreases in revenue as water supplies diminish.
- Utilities providers may cut back energy generation and service to their customers to prioritize critical service needs.
- Hydroelectric power generation facilities and infrastructure would have significantly diminished generation capability. Dams simply cannot produce as much electricity from low water levels as they can from high water levels.
- Fish and wildlife food and habitat will be reduced or degraded over time during a drought and disease will increase, especially for aquatic life.
- Wildlife will move to more sustainable locations creating higher concentrations of wildlife in smaller areas, increasing vulnerability, and further depleting limited natural resources.
- There are 9 federally endangered, threatened or candidate species in Dallas County. Severe and prolonged drought can result in the reduction of a species or cause the extinction of a species altogether.
- Plant life will suffer from long-term drought. Wind and erosion will also pose a threat to plant life as soil quality will decline. The urban tree canopy, including county and city parks, are vulnerable to the impacts of prolonged drought.
- Dry and dead vegetation will increase the risk of wildfire.
- Drought poses a significant risk to annual and perennial crop production and overall crop quality leading to higher food costs.
- Drought-related declines in production may lead to an increase in unemployment.
- Drought may limit livestock grazing resulting in decreased livestock weight, potential increased livestock mortality, and increased cost for feed.
- Negatively impacted water suppliers may face increased costs resulting from the transport water or develop supplemental water resources.
- Long term drought may negatively impact future economic development.

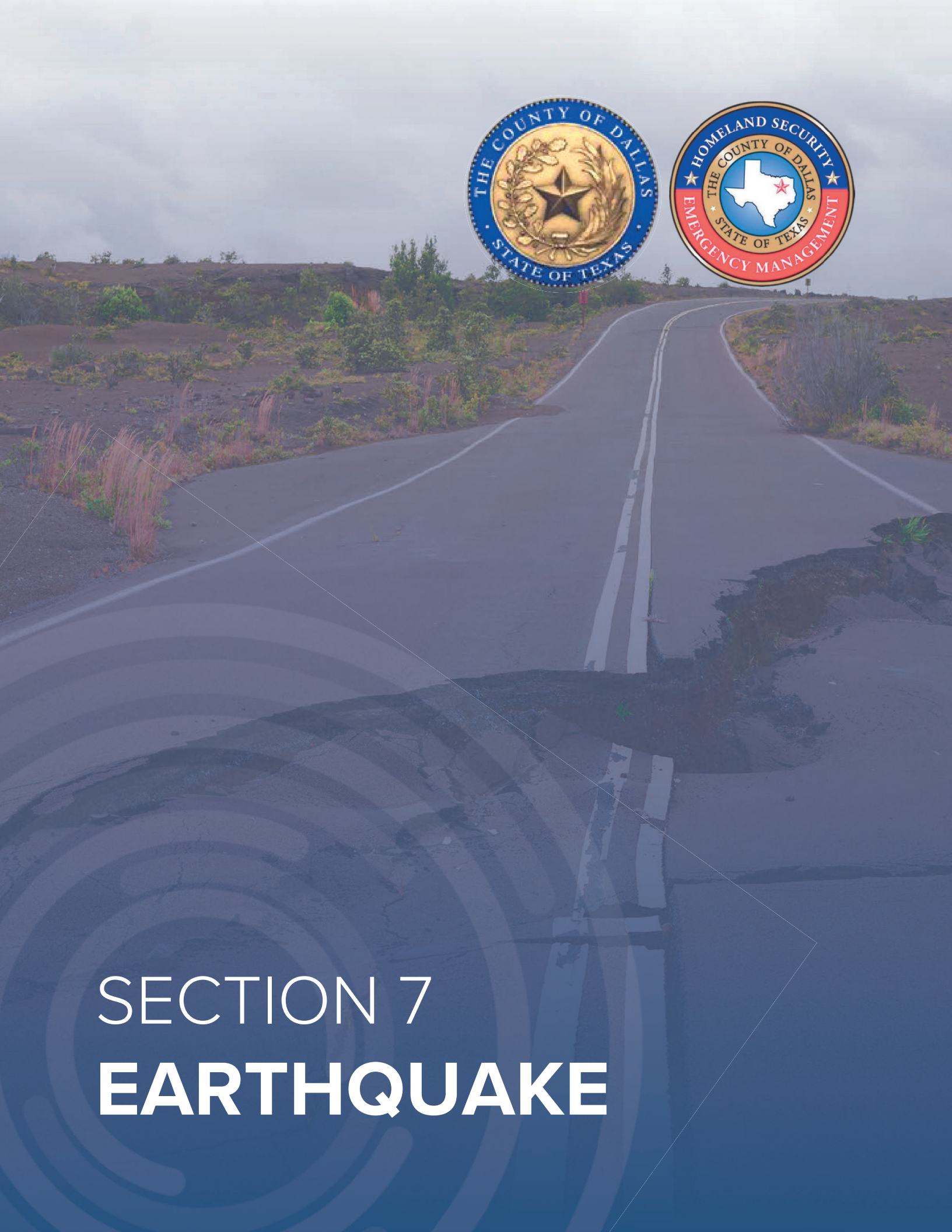
The overall extent of damage caused by periods of drought is dependent on its extent and duration. The level of preparedness and pre-event planning done by the community, local businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a drought event.

CLIMATE CHANGE CONSIDERATIONS

With the range of factors influencing drought conditions, it is impossible to make quantitative statewide projections of drought trends; however, many factors point toward increased drought severity. Drought will continue to be driven largely by precipitation variability over multiple decades, with long-term precipitation trends expected to be relatively small. Other factors that contribute to the severity of droughts, such as increased temperatures or improved vegetation Water Use Efficiency (WUE), can affect water availability. These impacts could cause drought impact trends to be highly sector-specific, with the impacts possibly smaller for agriculture than for surface water supply.[6]

The Dallas County planning area can anticipate an increased likelihood of droughts in the future due to a potential estimated increase in the number of dry days in the Dallas County area. In addition, it is projected that future changes to Dallas County will include increased temperatures, which according to the U.S. Climate Explorer, the planning area may experience a 6°F increase in the average extreme heat temperatures. Historically, extreme temperatures averaged 101°F in Dallas County, but between 2035 and 2064 the average will be 107°F, increasing the severity and frequency of drought events. Extreme heat projections may be even higher but are dependent on overall future emissions.

[6] Cleaveland, M. K., T. H. Votteler, D. K. Stahle, R. C. Casteel, and J. L. Banner, 2011: Extended Chronology of Drought in South Central, Southeastern and West Texas. Texas Water Journal, 2, 54-96, as cited in as cited in Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, Texas A&M University Office of the Texas State Climatologist, 2021 update.



SECTION 7
EARTHQUAKE

SECTION 7: EARTHQUAKE

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HAZARD DESCRIPTION

An earthquake is the sudden movement of the Earth's surface caused by the release of stress accumulated within or along the edge of the Earth's tectonic plates, volcanic eruption, or by a manmade explosion. The majority of earthquakes occur along faults; however, earthquakes can occur within plate interiors. Over geologic time, plates move and plate boundaries change, pushing weakened boundary regions to the interior part of the plates. These areas of weakness within the continents can cause earthquakes in response to stresses that originate at the edges of the plate or in the deeper crust.

Earthquake locations are described by the focal depth and geographic position of the epicenter. The focal depth of an earthquake is the depth from the Earth's surface to the region where an earthquake's energy originates (the focus or hypocenter). The epicenter is the point on the Earth's surface directly above the hypocenter. Earthquakes usually occur without warning, with their effects impacting great distances away from the epicenter.

According to the U.S. Geological Society (USGS) Earthquake Hazards Program, an earthquake hazard is anything associated with an earthquake that may influence an individual's normal activities. Table 7-1 describes definition of examples.

Table 7-1. Definitions of Earthquake Hazards[1]

HAZARD	DESCRIPTION
Surface Faulting	Displacement that reaches the earth's surface during slip along a fault. Commonly occurs with shallow earthquakes, those with an epicenter less than 20 kilometers.
Ground Motion (shaking)	The movement of the earth's surface from earthquakes or explosions. Ground motion or shaking is produced by waves that are generated by sudden slip on a fault or sudden pressure at the explosive source and travel through the earth and along its surface.
Landslide	A movement of surface material down a slope.

[1] Source: USGS, 2012

HAZARD	DESCRIPTION
Liquefaction	A process by which water-saturated sediment temporarily loses strength and acts as a fluid, like when you wiggle your toes in the wet sand near the water at the beach. This effect can be caused by earthquake shaking.
Tectonic Deformation	A change in the original shape of a material due to stress and strain.
Tsunami	A sea wave of local or distant origin that results from large-scale seafloor displacements associated with large earthquakes, major submarine slides, or exploding volcanic islands.
Seiche	The sloshing of a closed body of water from earthquake shaking.

LOCATION

Earthquake hazard areas are mapped by the USGS's National Seismic Hazard Model (NSHM). Figure 7-1 shows the most recent 2023 iteration of this USGS model. The NSHM defines the potential for earthquake ground shaking for various probability levels across the United States. The 2023 NSHM is an update to the previous 2018 version, and compiles data and findings from a number of sources including earthquake catalogs, geodetic- and geologic-based fault and deformation models, and ground motion models (GMMs), among others.[2] The map shows the percent chance that a given area will experience a category VI (or stronger) earthquake in 100 years, as defined by the Modified Mercalli Intensity (MMI) Scale (Table 7-3). The likelihood of a significant earthquake event is signified by the color-coding on the map. Densely populated areas are also highlighted on the map (purple and black dotting) to indicate areas of elevated vulnerability in relation to higher seismic risk. The Dallas County planning area, as identified in Figure 7-1, is located in a relatively low hazard area, with a between 5 and 25 percent chance of experiencing a strong earthquake every 100 years.

[2] A comprehensive overview of the modelling process can be found at the USGS website, https://www.usgs.gov/programs/earthquake-hazards/science/2023-50-state-long-term-national-seismic-hazard-model-0#overview

Figure 7-1. U.S. Map of Peak Ground Acceleration[3]

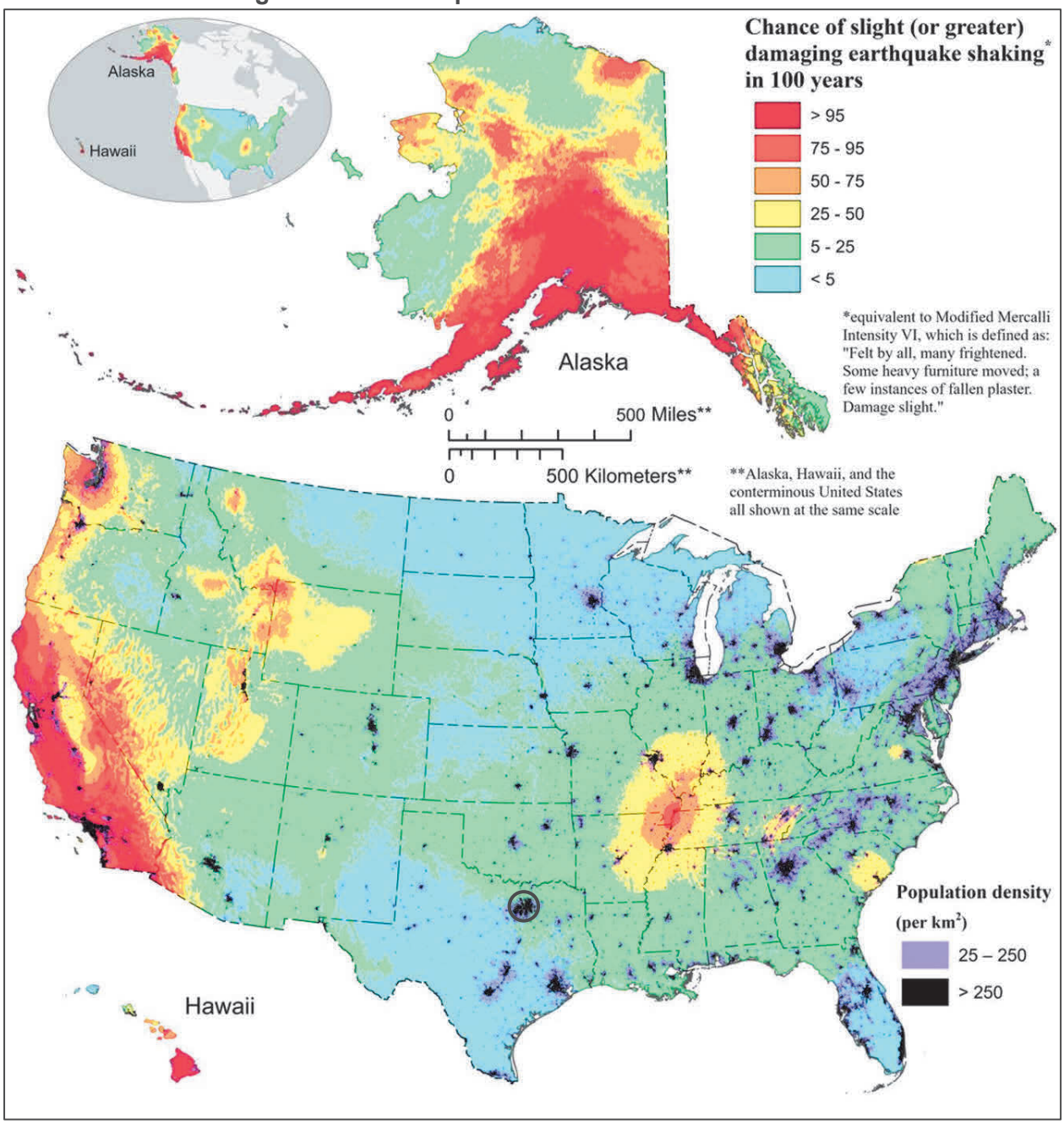
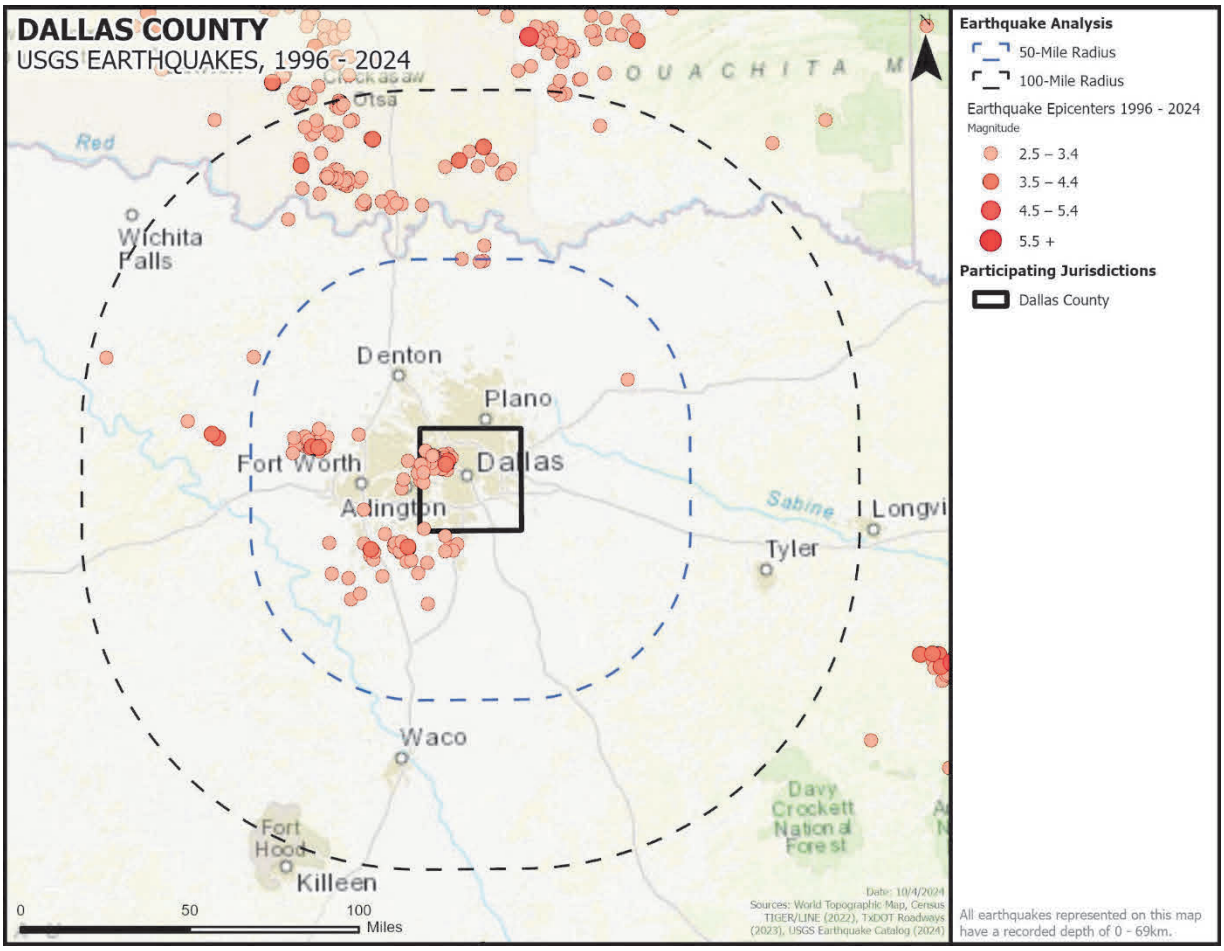


Figure 7-2 maps historic earthquake events in and around the Dallas County planning area, including participating jurisdictions, from January 1996 through June 2024, per data available in the USGS Earthquake Catalog database.

[3] The Dallas County planning area is indicated by the black circle.

Figure 7-2. Historic Earthquake Events in Dallas County, 1996-2024



EXTENT

Earthquakes are measured in terms of magnitude and intensity. The prevalent magnitude measurement in use today is based on the Moment Magnitude Scale (MMS). MMS measures the movement of rock along the fault. It accurately measures larger earthquakes, which can last for minutes, affect a much larger area, and cause more damage. Magnitudes are based on a logarithmic scale (base 10), meaning that for each whole number you go up on the magnitude scale, the amplitude of the ground motion recorded by a seismograph goes up ten times. Using this scale, a magnitude 5 earthquake would result in ten times the level of ground shaking as a magnitude 4 earthquake (and about 32 times as much energy would be released).[4] The USGS reports earthquake magnitudes above 4.0 as “moment magnitude,” often described in the press as "Richter” magnitude. Table 7-2 shows the magnitude levels for the current Richter/Moment Magnitude scale.

[4] (n.d.). How Do We Measure Earthquake Magnitude? Michigan Tech. https://www.mtu.edu/geo/community/seismology/learn/earthquake-measure/#:~:text=The%20moment%20magnitude%20scale%20is,the%20earthquake%20at%20multiple%20stations.

Table 7-2. Richter / Moment Magnitude Scale[5]

MAGNITUDE	CATEGORY	DESCRIPTION OF EFFECTS	EVENTS PER YEAR
< 3.0	Micro	Usually not felt, but can be recorded by seismograph	+100,000
3.0 – 3.9	Minor	Often felt, but causes no damage	12,000 - 100,000
4.0 – 4.9	Light	Felt by all, minor breakage of objects	2,000 - 12,000
5.0 – 5.9	Moderate	Some damage to weak structures	200 – 2,000
6.0 – 6.9	Strong	Moderate damage in populated areas	20 – 200
7.0 – 7.9	Major	Serious damage over large areas with loss of life expected	3 – 20
> 7.9	Great	Severe destruction and loss of life over large areas	Less than 3

Earthquake Intensity measurement is an on-the-ground description. The measurement qualitatively explains the severity of earthquake shaking and its effects on people and their environment. Intensity measurements will differ depending on each location's proximity to the epicenter or point on the surface of the earth directly above the focus where the earthquake started. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and total destruction. There can be multiple intensity measurements associated with an earthquake as opposed to one magnitude measurement.[6] The Modified Mercalli Intensity value assigned to a specific site after an earthquake has a more meaningful measure of severity to the nonscientist than the magnitude because intensity refers to the effects actually experienced at a specific location. The scale provides the intensity of the earthquake in values ranging from I to X. Table 7-3 describes the typical effects and Intensities associated with earthquakes of various magnitudes. The intensity and effects depend on multiple factors (earthquake depth, epicenter location, site geology, population density, to name a few) and can vary widely.

[5] (n.d.). Earthquakes. Britannica. https://www.britannica.com/science/earthquake-geology
[6] Wood, H. O., and Neumann, Frank (1931). Modified Mercalli Intensity Scale of 1931: Seismological Society of America Bulletin, v. 21, no. 4, p. 277-283.

Table 7-3. Magnitude and Modified Mercalli Intensity (MMI) Scale[7]

INTENSITY	CATEGORY	DESCRIPTION OF EFFECTS	CORRESPONDING RICHTER MAGNITUDE
I	Not Felt	Not felt except by a very few under especially favorable conditions	< 2.0
I	Not Felt	Felt only by a few persons at rest, especially on upper floors of buildings.	2.0 – 2.9
II – III	Weak	Felt quite noticeably by persons indoors, with shaking of indoor objects. Rarely causes damages.	3.0 – 3.9
IV – V	Light to Moderate	Noticeable shaking of indoor objects and rattling noises. Felt by most people in the affected area. Generally, no to minimal damage	4.0 – 4.9
VI – VII	Strong to Very Strong	Significant damages to poorly constructed buildings. Limited to moderate damages to well-built structures.	5.0 – 5.9
VIII – IX	Severe to Violent	Damage slight in specially designed structures; considerable damage in ordinary buildings with partial collapse. Damage great in poorly built structures.	6.0 – 6.9
VIII +	Severe to Extreme	Damage considerable in specially designed structures. Damage substantial to most buildings, with partial or complete collapse. Felt across great distances with major damage mostly limited to 250 km from Epicenter.	7.0 – 7.9
VIII – IX	Severe to Violent	Major damage to buildings, structures likely to be destroyed; will cause moderate to heavy damage to sturdy or earthquake-resistant buildings; damaging in large areas; felt in extremely large regions.	8.0 – 8.9
VIII +	Severe to Extreme	At or near total destruction. Severe damage or collapse to all buildings; heavy damage and shaking extends to distant locations and permanent changes in ground topography.	9.0+

[7] Source: USGS

Taking into consideration the possible extent of an earthquake for the area, by reviewing Tables 7-2 and 7-3 in conjunction with no significant previous occurrences, as depicted in Figure 7-2, the Dallas County planning area experiences on average less than 3.0 magnitude or Levels II-III (weak impact) on the Modified Mercalli intensity scale. It is worth noting that one earthquake event in nearby Johnson County reached a magnitude of 4.0 in 2015, which is at the low end of Level IV (Light to Moderate) on the Modified Mercalli intensity scale. This is the greatest extent the entire planning area can anticipate in the future, based on historic records.

HISTORICAL OCCURRENCES

According to USGS, and the National Geophysical Data Center (NGDC), there are no "significant" earthquakes on record for the State of Texas and the entire Dallas County planning area, including participating jurisdictions, from 2150 B.C. to present. A significant earthquake, as defined by NGDC, is one that has caused at least moderate damage (approximately $1 million or more), has resulted in 10 or more deaths, has registered as a magnitude 7.5 or greater, has registered as Modified Mercalli Intensity (MMI) Scale X or greater, or generated a tsunami. None of these criteria have been met by any seismic activity known to have impacted the planning area.

From January 1996 through June 2024, 57 earthquake events have been reported within the Dallas County planning area, ranging in magnitudes from 2.5 to 3.6, or Level I (not felt) to Level III (weak) on the MMI Scale. No known damages are associated with any of these events, with many of them likely not felt by the population in the planning area. All but one of these events occurred in the northwestern quarter of the Dallas County planning area, with the one exception located in the far southwest corner near the City of Cedar Hill. Table 7-4 includes a summary of historical earthquake events that have occurred in Dallas County as well as those within a 50-mile and 100-mile radius of the county.

Table 7-4. Historical Earthquake Event Summary, 1996-2024

JURISDICTION	NUMBER OF EVENTS	MAXIMUM EXTENT	INJURIES & FATALITIES	PROPERTY & CROP DAMAGE
Dallas County	57	3.6	0	$0
50-Mile Radius	123	4.0	0	$0
100-Mile Radius	211	4.0	0	$0

PROBABILITY OF FUTURE EVENTS

Earthquake Hazard Maps show the distribution of earthquake shaking levels that have a certain probability of occurring over a given period. According to the USGS, the entire Dallas County planning area has between a 5 and 25 percent chance of a slightly damaging (or greater) earthquake within 100 years. While the probability of minor earthquake activity that does not result in damages or impacts to the planning area is highly likely, with a minor event probable within the next year, a "significant" earthquake of 7.5 magnitude or greater affecting the planning area is considered "Unlikely", meaning that an event is probable in the next 10 years.

VULNERABILITY AND IMPACT

Little warning is usually associated with earthquakes and can impact areas a great distance away from the epicenter. The amount of damage depends on the density of population, buildings, and infrastructure in the affected area. Some places may be more vulnerable than others based on soil type, building age, and building codes in the Dallas County planning area.

The Dallas County Planning Team identified the following critical facilities as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by earthquake events. For a comprehensive list by participating jurisdiction, please see Appendix C.

Table 7-5. Critical Facilities Vulnerable to an Earthquake

CRITICAL FACILITIES	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers	• Emergency operations and services may be significantly impacted due to power outages, damaged facilities, fires and/or loss of communications. Impact can impede emergency response vehicle access to areas. • Power outages could disrupt communications, delaying emergency response times. • Extended power outages may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities	• Power outages could disrupt critical care. • Backup power sources could be damaged. • Evacuations may be necessary due to extended power outages or other associated damages to facilities. • Economic disruption due to power outages negatively impact airport services as well as area businesses reliant on airport operations.
Commercial Supplier (food, fuel, etc.)	• Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Essential supplies like medicines, water, food, and equipment deliveries may be delayed.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Emergency operations and critical services may be significantly impacted due to power outages, damaged facilities, and/or loss of communications. Impact can impede emergency service vehicle access to areas. • Power outages could disrupt communications, delaying emergency response times further straining the capacity and resources of emergency service personnel.

With no significant historical events recorded, neither annualized loss-estimates nor a breakdown of potential dollar losses of critical facilities and infrastructure from earthquakes are available. The

potential severity of impact from an earthquake for the entire Dallas County planning area, including participating jurisdictions, is classified as “Limited”, meaning injuries and illnesses are treatable with first aid, less than 10 percent of infrastructure would be damaged or destroyed, and critical facilities being shut down for less than 24 hours.

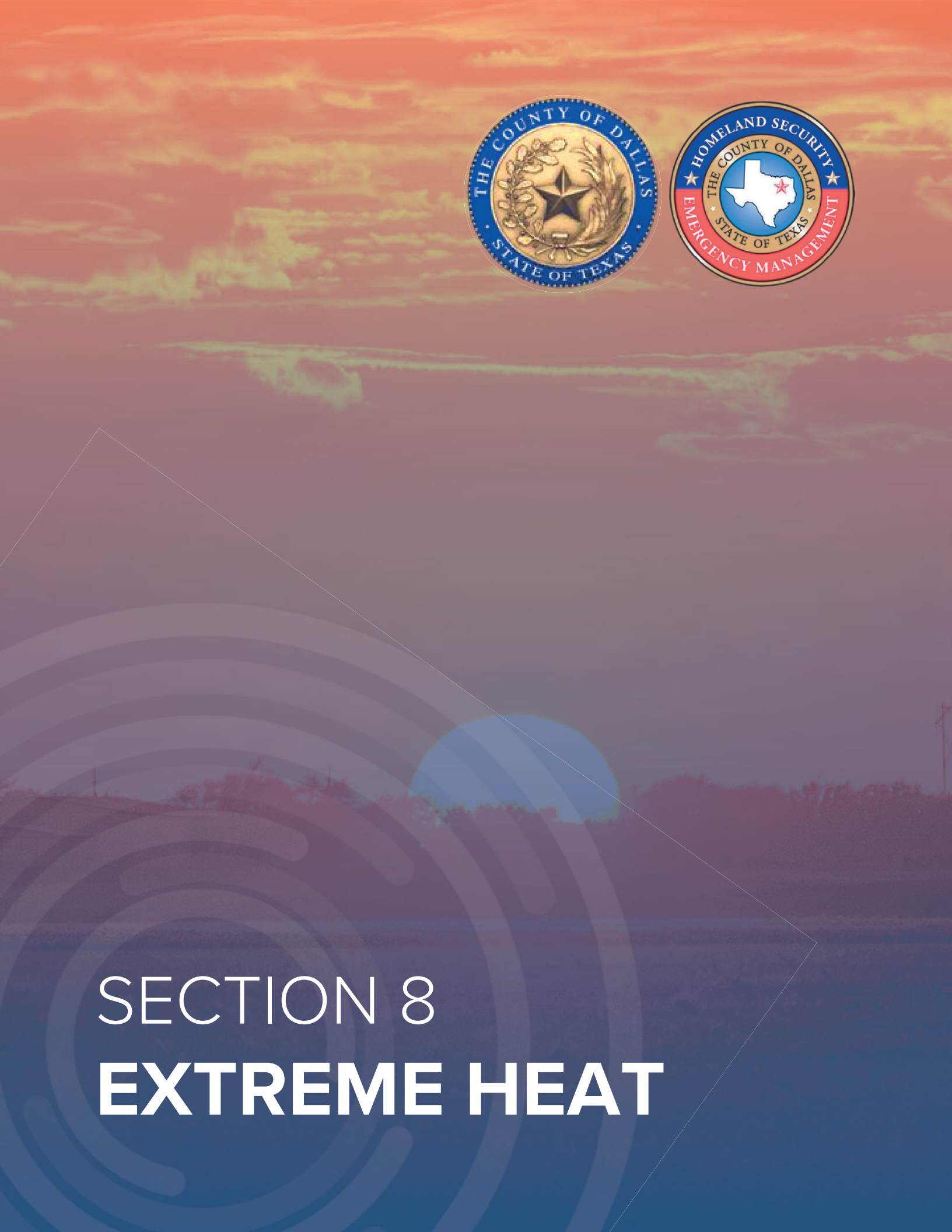
CLIMATE CHANGE CONSIDERATIONS

Damaging earthquakes are rare within the State of Texas, including the Dallas County planning area. Changing conditions of weather patterns and climate change has not been established as having a direct impact on earthquake intensity or frequency.

According to the USGS, statistically there is an approximately equal distribution of earthquakes in all cold weather, hot weather, rainy weather, etc. Very large low-pressure changes associated with major storm systems, like typhoons and hurricanes, are known to trigger episodes of fault slip or slow earthquakes in the Earth’s crust and may also play a role in triggering some damaging earthquakes. However, the numbers are small and are not statistically significant.[8]

Climate change is assumed to have no impact on the probability or intensity of potential earthquakes in the planning area.

[8] (n.d.). *Natural Hazards*. United Stated Geological Survey. https://www.usgs.gov/faqs/there-earthquake-weather



SECTION 8
EXTREME HEAT

SECTION 8: EXTREME HEAT

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HAZARD DESCRIPTION



Extreme heat is a prolonged period of excessively high temperatures and exceptionally humid conditions. Extreme heat during the summer months is a common occurrence throughout the State of Texas, and the Dallas County planning area is no exception. The County typically experiences extended heat waves or an extended period of extreme heat and is often accompanied by high humidity.

Although heat can damage buildings and facilities, it presents a more significant threat to the safety and welfare of citizens. The major human risks associated with extreme heat include heat cramps; sunburn; dehydration; fatigue; heat exhaustion; and even heat stroke. The most vulnerable population to heat casualties are children and the elderly or infirmed who frequently live on low fixed incomes and cannot afford to run air-conditioning on a regular basis. This population is sometimes isolated, with no immediate family or friends to look out for their well-being.

Critical infrastructure can also be damaged or impacted by extreme heat. High temperatures may cause a rise in electricity consumption as homes, schools, and businesses try to regulate the temperature. This may lead to energy shortages and possible blackouts.

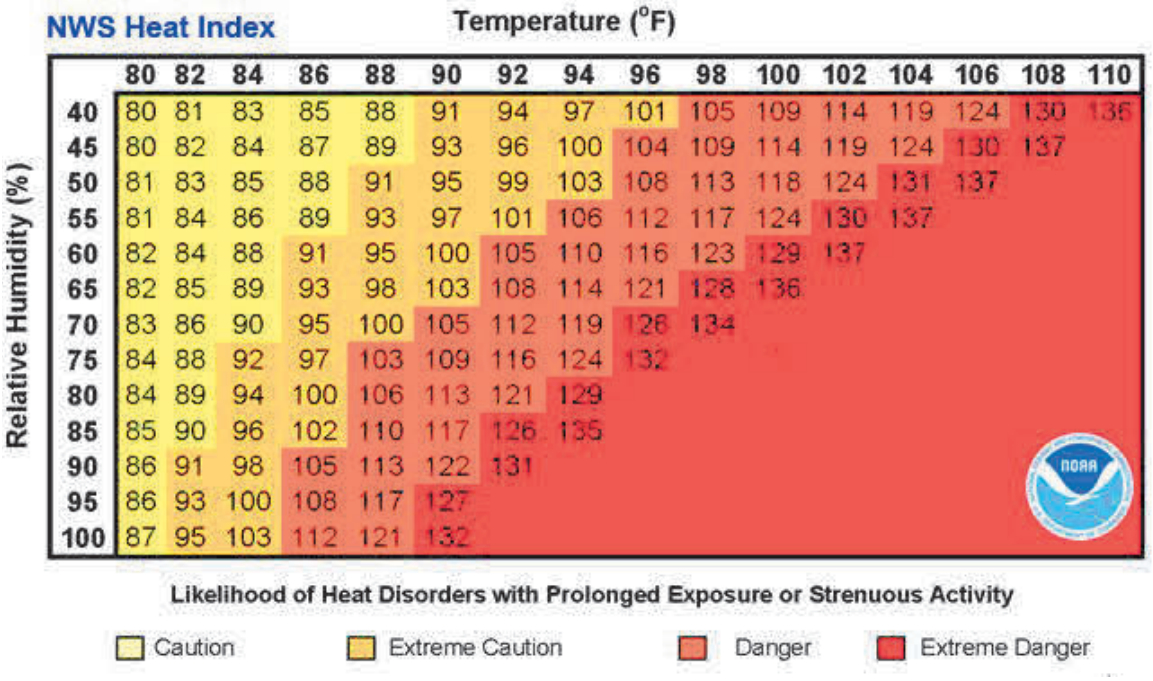
LOCATION

Extreme heat events can occur throughout the Dallas County planning area as there is no specific geographic boundary to the extreme heat hazard. Extreme heat could occur anywhere within the Dallas County planning area, including all participating jurisdictions.

EXTENT

The magnitude or intensity of an extreme heat event is measured according to temperature in relation to the percentage of humidity. According to the National Oceanic Atmospheric Administration (NOAA), this relationship is referred to as the “Heat Index” and is depicted in Figure 8-1. This index measures how hot it feels outside when humidity is combined with high temperatures.

Figure 8-1. Extent Scale for Extreme Heat[1]



The index in Figure 8-1 displays varying categories of caution depending on the relative humidity combined with the temperature. For example, when the temperature is at 90 degrees Fahrenheit (°F) or lower, caution should be exercised if the humidity level is at or above 40 percent.

The shaded zones on the chart indicate varying symptoms or disorders that could occur depending on the magnitude or intensity of the event. “Caution” is the first category of intensity, and it indicates when fatigue due to heat exposure is possible. “Extreme Caution” indicates that sunstroke, muscle cramps, or heat exhaustion are possible, and a “Danger” level means that these symptoms are likely. “Extreme Danger” indicates that heat stroke is likely. The National Weather Service (NWS) initiates alerts based on the Heat Index as shown in Table 8-1.

Table 8-1. Heat Index and Warnings

CATEGORY	HEAT INDEX	POSSIBLE HEAT DISORDERS	WARNING TYPE
Extreme Danger	125°F and higher	Heat stroke or sun stroke likely.	An Excessive Heat Warning is issued if the Heat Index rises above 105°F at least 3 hours during the day or above 80°F at night.
Danger	103 – 124°F	Sunstroke, muscle cramps, and/or heat exhaustion are likely. Heatstroke possible with prolonged exposure and/or physical activity.	An Excessive Heat Warning is issued if the Heat Index rises above 105°F at least 3 hours during the day or above 80°F at night.

[1] Source: NOAA

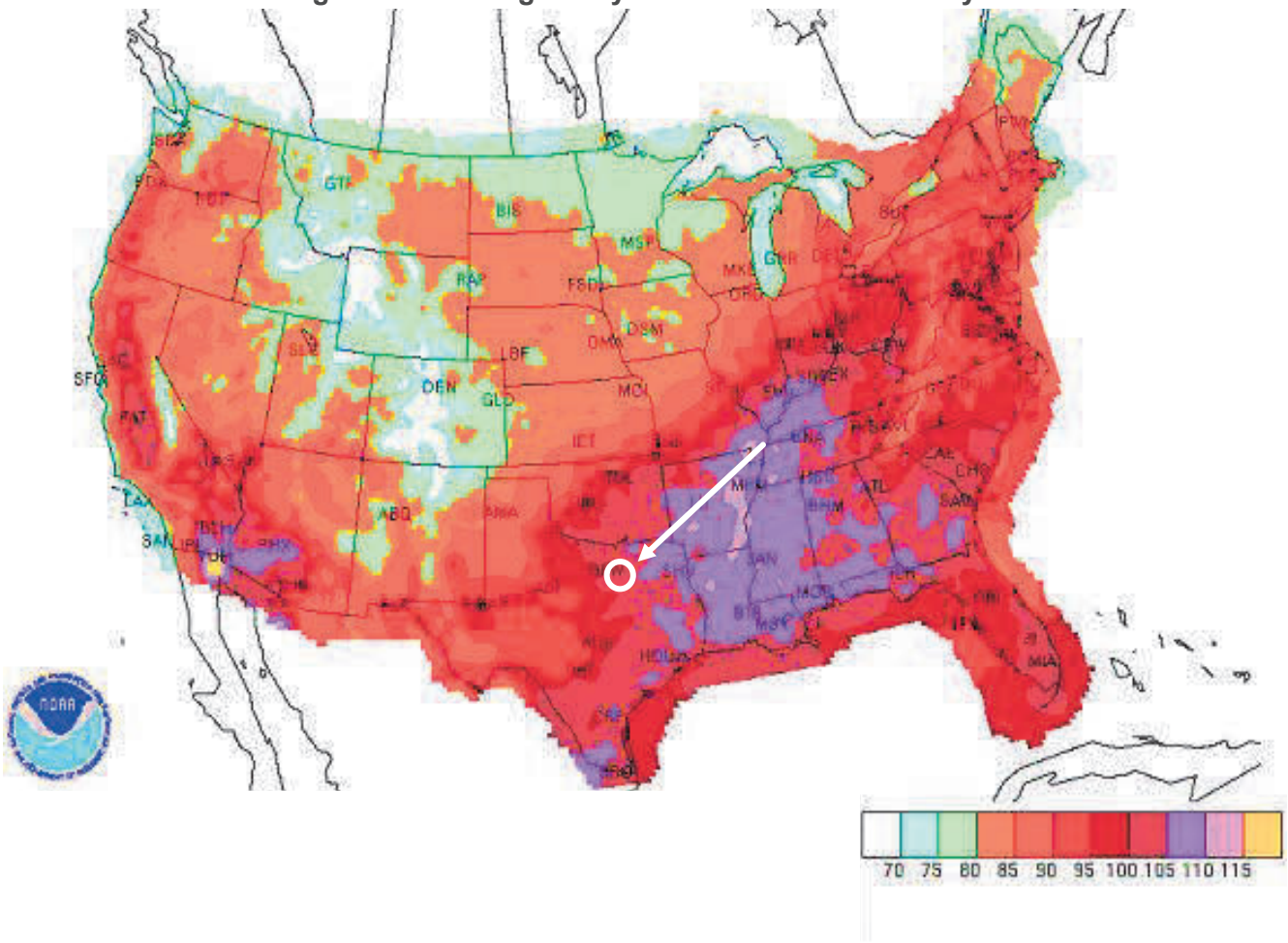
CATEGORY	HEAT INDEX	POSSIBLE HEAT DISORDERS	WARNING TYPE
Extreme Caution	90 – 103°F	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.	A Heat Advisory will be issued to warn that the Heat Index may exceed 105°F.
Caution	80 – 90°F	Fatigue is possible with prolonged exposure and/or physical activity.	A Heat Advisory will be issued to warn that the Heat Index may exceed 105°F.

The Dallas County planning area is comprised of 909 square miles of the primarily flat, heavy Blackland Prairie. Elevations in the county range from 382 to 850 feet above sea level. The Elm Fork and West Fork of the Trinity River meet near downtown Dallas. The county is drained by the Trinity River and its tributaries, including White Rock, Mountain, Fivemile, Tenmile, Muddy, Duck, Turtle, and Mesquite creeks. These streams feed reservoirs for municipal water and recreational use, including Lake Ray Hubbard, North Lake, Joe Pool, Mountain Creek and White Rock Lakes. Temperatures range from an average low of 39° to an average high of 96° F. The average rainfall is thirty-six inches a year. The growing season lasts 235 days.

Due to its geography and its warm, sunny, and humid subtropical climate, the Dallas County planning area can expect an extreme heat event each summer. Citizens, especially children and the elderly should exercise caution by staying out of the heat for prolonged periods when a heat advisory or excessive heat warning is issued. In addition, those working or remaining outdoors for extended periods of time are at greater risk.

Figure 8-2 displays the daily maximum heat index as derived from NOAA based on data compiled from 1838 to 2015. The white circle shows the Dallas County planning area. The planning area is represented in brown across the County. The brown color indicates an average daily heat index of 100°F to 105°F. Therefore, Dallas County could experience dangerous heat from 100°F to 105°F and should mitigate to the extent of “Extreme Caution” and “Danger,” which can include sunstroke, muscle cramps, heat exhaustion and potential heat stroke. This is the average maximum temperature the planning area can anticipate based on historical events.

Figure 8-2. Average Daily Maximum Heat Index Days[2]



HISTORICAL OCCURRENCES

The National Centers for Environmental Information (NCEI) Storm Events database is a national data source organized under the National Oceanic and Atmospheric Administration (NOAA). The NCEI is the largest archive available for historic storm events data. Previous occurrences for extreme heat are derived from the NCEI database, which identifies extreme heat events at the county level for each event. There have been 67 extreme heat events recorded in the NCEI for the Dallas County planning area over the 28.5-year reporting period (Table 8-2). Historical extreme heat information, as provided by the NCEI, shows extreme heat activity across a multi-county forecast area for each event, the appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by the event.

[2] NRDC and the white circle indicates the Dallas County planning area.

SECTION 8: EXTREME HEAT

Historical extreme heat data for the Dallas County planning area are provided on a County-wide basis per the NCEI database from January 1996 through May 2024. No property or crop damages were reported. Events with reported deaths and injuries are listed below. Only extreme heat events that have been reported have been factored into this Risk Assessment. It is highly likely additional extreme heat occurrences have gone unreported before and during the recording period. Due to the limited number of reported events, average high temperatures have been analyzed in order to determine the probability of future events.

Table 8-2. Historical Extreme Heat Events, January 1996 – May 2024[3]

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	7/1/1996	2	0	0	0
Dallas County	7/19/1997	2	0	0	0
Dallas County	6/1/1998	1	0	0	0
Dallas County	7/1/1998	23	0	0	0
Dallas County	8/3/1998	5	0	0	0
Dallas County	8/1/1999	3	0	0	0
Dallas County	7/1/2000	8	0	0	0
Dallas County	8/1/2000	3	0	0	0
Dallas County	9/1/2000	4	0	0	0
Dallas County	7/14/2006	1	0	0	0
Dallas County	7/27/2006	1	0	0	0
Dallas County	8/13/2007	1	0	0	0
Dallas County	7/23/2008	1	0	0	0
Dallas County	7/28/2008	2	0	0	0
Dallas County	8/1/2008	4	0	0	0
Dallas County	6/23/2009	1	0	0	0
Dallas County	6/20/2010	1	0	0	0
Dallas County	6/13/2011	3	140	0	0
Dallas County	7/1/2011	9	223	0	0
Dallas County	8/1/2011	4	130	0	0
Dallas County	8/6/2011	3	210	0	0

[3] NOAA, NCEI Storm Events Database

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	7/20/2012	1	0	0	0
Dallas County	5/17/2013	1	0	0	0
Dallas County	7/18/2015	1	0	0	0
Dallas County	6/15/2016	0	1	0	0
Dallas County	6/16/2016	0	7	0	0
Dallas County	6/16/2016	1	0	0	0
Dallas County	7/18/2016	1	0	0	0
Dallas County	7/24/2016	1	0	0	0
Dallas County	8/1/2023	0	467	0	0
Dallas County	8/17/2023	0	806	0	0
Dallas County	9/5/2023	0	114	0	0
Dallas County	9/23/2023	0	17	0	0
TOTALS		**88**	**2,115**	**$0**	**$0**

Table 8-3. Historical Extreme Heat Events Summary, January 1996 – May 2024

JURISDICTION	NUMBER OF EVENTS	DEATH	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	67	88	2,115	$0	$0

Based on the list of historical extreme heat events for the Dallas County planning area, 30 events were reported to the NCEI since the 2020 Plan.

SIGNIFICANT EVENTS

July 1998 – Dallas County

A prolonged excessive heat event continued across north Texas in July. This heat wave was the result of existing drought conditions combined with a persistent upper level ridge of high pressure. For the month of July, Dallas-Fort Worth International Airport (DFW) recorded an average high of 102°F, which was the second warmest for the month on record and the fourth warmest ever. DFW reported 28 days with high temperatures at or above 100°F. During July, the heat wave claimed at least 32 lives in north Texas, with most of the fatalities occurring in the Dallas-Fort Worth metroplex. Most of the fatalities were elderly, and many fatalities listed other complicating factors, such as heart disease and hypertension. Below are some of the listings of these fatalities.

- A 58 year old man was found dead in his home in the Pleasant Grove area of Dallas. The cause of death was hyperthermia, with arthritis listed as a contributing factor.
- A 39 year old man collapsed and died while working on his car. Hyperthermia was listed as a contributing factor.

- A 48 year old man was found in his east Dallas home suffering from hyperthermia and later died at a hospital. The cause of death was hyperthermia.

June - August 2011 – Dallas County
The summer heat in Texas really settled in around June 13, 2011, when temperatures region-wide began reaching triple digits on a daily basis. Much of the region was at or over 100°F. During this time period, a heat advisory was only in effect the 17th through the 18th. A total of three people died in Dallas County from heat related causes during the latter half of June. An additional 140 heat related injuries were reported for the planning area.

Triple digit temperatures were recorded 30 out of 31 days during the month of July. According to the medical examiner, a total of 9 people died as a result of the heat during this month. Most of the deceased were over the age of 65 and all but one was inside their homes. In addition, the medical examiner reported 223 cases of heat-related illness were treated in the county during the month. A heat advisory was in effect from the 11th through the 18th, and then again from the 23rd through the 31st.

Excessive Heat Warning conditions occurred across the region in early August and triple digit temperatures were recorded nearly every day during the month. In Dallas County, afternoon heat index values ranged from 110°F to 112°F in most locations. According to the medical examiner, seven people died as a result from the heat during the month of August, and approximately another 340 people were treated for heat-related illnesses or injuries. A heat advisory was in effect nearly every day after the excessive heat warning ended on the morning of the 6th.

August - September 2023 – Dallas County
During the month of August, temperatures either reached or exceeded 105°F and heat indices climbed over 110°F. In addition to the Heat Advisories in effect during this period, Excessive Heat Warnings were also needed at times. Dallas County Health officials reported 806 heat-related illnesses cases during the month of August.

Similarly, extreme heat conditions continued into the month of September. Temperatures either reached or exceeded 105°F and heat indices climbed over 110°F. Dallas County Health & Human Services reported 131 heat-related illnesses during this time period.

PROBABILITY OF FUTURE EVENTS

According to historical records, the Dallas County planning area has experienced 67 events in a 28.5-year[4] reporting period. Historical records in combination with an analysis of maximum average temperatures provides a probability of at least one event every year. This frequency supports a “Highly Likely” probability of future events.

VULNERABILITY AND IMPACT

While the entirety of the Dallas County planning area is exposed to extreme temperatures, existing buildings, infrastructure, and critical facilities are not likely to sustain significant damage from extreme heat events. Therefore, any estimated property losses associated with the extreme heat hazard are anticipated to be minimal across the area.

[4] Reporting period is rounded to the nearest half year.

SECTION 8: EXTREME HEAT

Every summer, the hazard of heat-related illness becomes a significant public health issue throughout much of the United States. Mortality rates increase during heat waves, and excessive heat is an important contributing factor to deaths from other causes, particularly among the elderly. Extreme temperatures present a significant threat to life and safety for the population of the County as a whole. Heat casualties, for example, are typically caused by a lack of adequate air-conditioning or heat exhaustion. The most vulnerable population to heat casualties are the elderly or infirmed who frequently live on fixed incomes and cannot afford to run air-conditioning on a regular basis. This population is sometimes isolated, with no immediate family or friends to look out for their well-being. Children may also be more vulnerable if left unattended in vehicles. Populations living below the poverty level are often unable to run air-conditioning on a regular basis and are limited in their ability to seek medical treatment.

The population over 65 in the Dallas County planning area is estimated at 11 percent of the total population and children under the age of 5 are estimated at 7 percent. Individuals with a disability are estimated at 10 percent of the total population. In addition, an estimated 14 percent of the planning area population live below the poverty level and 17 percent of the populations speaks a language other than English (Table 8-4). Vulnerable and underserved populations are disproportionately impacted by extreme heat events as they may be more susceptible to health risks and have less access to adequate health care. The population below the poverty level are less likely to be able to afford air conditioning during the hot summer months as well as less likely to have access to medical care. In addition, people who speak a language other than English may face increased vulnerability due to language barriers that limit their access to important information such as weather-related warnings and instructions regarding safety measures.

Table 8-4. Populations at Greater Risk by Participating Jurisdiction

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
Dallas County	290,461	182,349	264,190	364,567	440,684
Town of Addison	1,711	736	1,000	1,445	1,891
City of Balch Springs	2,659	2,008	3,721	3,116	5,512
City of Carrollton	17,122	6,820	10,950	8,995	19,892
City of Cedar Hill	5,384	2,867	5,750	4,776	3,866
City of Cockrell Hill	550	247	372	315	1,222
City of Coppell	4,206	2,656	2,367	1,105	2,899
City of DeSoto	8,490	3,030	7,477	4,582	2,805
City of Duncansville	6,485	2,387	4,802	4,069	4,951
City of Farmers Branch	4,336	2,094	2,573	3,167	6,473

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
City of Glenn Heights	1,206	902	2,383	1,677	854
Town of Highland Park	1,668	538	356	513	135
City of Hutchins	292	576	460	1,436	1,236
City of Lancaster	3,648	4,058	4,236	6,021	2,867
City of Richardson	14,931	7,510	9,972	12,751	11,935
City of Rowlett	7,416	3,890	6,004	4,684	4,152
City of Sachse	3,515	1,321	2,823	557	2,615
City of Seagoville	2,252	1,617	2,116	2,631	3,730
Town of Sunnyvale	1,146	275	732	567	243
City of University Park	2,228	1,451	844	1,209	286
City of Wilmer	673	581	712	961	976

Extremely high temperatures can have significant secondary impacts, leading to droughts, water shortages, increased fire danger, and prompt excessive demands for energy. The possibility of rolling blackouts increases with unseasonably high temperatures in what is a normally mild month with low power demands. Typically, more than 12 hours of warning time would be given before the onset of an extreme heat event.

In terms of vulnerability to structures, the impact from extreme heat is considered negligible. It is possible that critical facilities and infrastructure could be shut down for 24 hours if cooling units are running constantly, leading to a temporary power outage (Table 8-5). Less than ten percent of residential and commercial property could be damaged if extreme heat events lead to structure fires. Based on historical records, annualized property and crop losses for the Dallas County planning area are negligible. However, with 88 fatalities and 2,115 injuries over a 28.5-year period, the potential impact of excessive summer heat is considered “Substantial”, with multiple deaths and injuries possible depending on the extent and duration of the event.

The Dallas County Planning Team identified the following critical facilities as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by extreme heat events. The following critical facilities would be vulnerable to extreme heat events in the Dallas County planning area. For a comprehensive list by participating jurisdiction, please see Appendix C.

Table 8-5. Critical Facilities Vulnerable to Extreme Heat Events

CRITICAL FACILITIES	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS, Hospitals)	• Emergency operations, services and response times may be significantly impacted due to power outages, and/or loss of communications. • Exposure to heat can cause heat illnesses in first responders, especially for those in heavy equipment. • Roads may become impassable due to excessive heat causing asphalt roads to soften and concrete roads to shift or buckle impacting response times by emergency services. • Extended power outages due to increased usage may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.
Airport, Academic Institutions, Community Residential Facilities, Day Care Facilities, Evacuation Centers & Shelters, Governmental Facilities	• Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Power outages due to increased usage could disrupt critical care. • Backup power sources could be damaged. • Evacuations may be necessary due to extended power outages, breaks in water main lines or other associated damage to facilities. • Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Economic disruption due to power outages negatively impact airport services as well as area businesses reliant on airport operations.
Commercial Suppliers (food, gas, etc.)	• Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Essential supplies like medicines, water, food, and equipment deliveries may be delayed.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Emergency operations, services and response times may be significantly impacted due to power outages, and/or loss of communications. • Roads may become impassable due to excessive heat causing asphalt roads to soften and concrete roads to shift or buckle impacting response times by emergency services. • Breaks in water main lines or other associated damage to facilities.

ASSESSMENT OF IMPACTS

The greatest risk from extreme heat is to public health and safety. Extreme heat conditions can be frequently associated with a variety of impacts, including:

- Vulnerable populations, particularly the elderly (11 percent of total population), children under 5 (7 percent of total population), and those with a disability (10 percent of total population) can face serious or life-threatening health problems from exposure to extreme

heat including hyperthermia, heat cramps, heat exhaustion, and heat stroke (or sunstroke).

- Response personnel, including utility workers, public works personnel, and any other professions where individuals are required to work outside, are more subject to extreme heat related illnesses since their exposure would typically be greater.
- High energy demand periods can outpace the supply of energy, potentially creating the need for rolling brownouts which would elevate the risk of illness to vulnerable residents.
- Highways and roads may be damaged by excessive heat causing asphalt roads to soften and concrete roads to shift or buckle.
- Vehicle engines and cooling systems typically run harder during extreme heat events resulting in increases in mechanical failures.
- Extreme heat events during times of drought can exacerbate the environmental impacts associated with drought, decreasing water and air quality and further degrading wildlife habitat.
- Extreme heat increases ground-level ozone (smog), increasing the risk of respiratory illnesses.
- Negatively impacted water suppliers may face increased costs resulting from the transport of water resources or development of supplemental water resources.
- Tourism and recreational activities at places may be negatively impacted during extreme heat events, reducing seasonal revenue.
- Outdoor activities may see an increase in school injury or illness during extreme heat events.

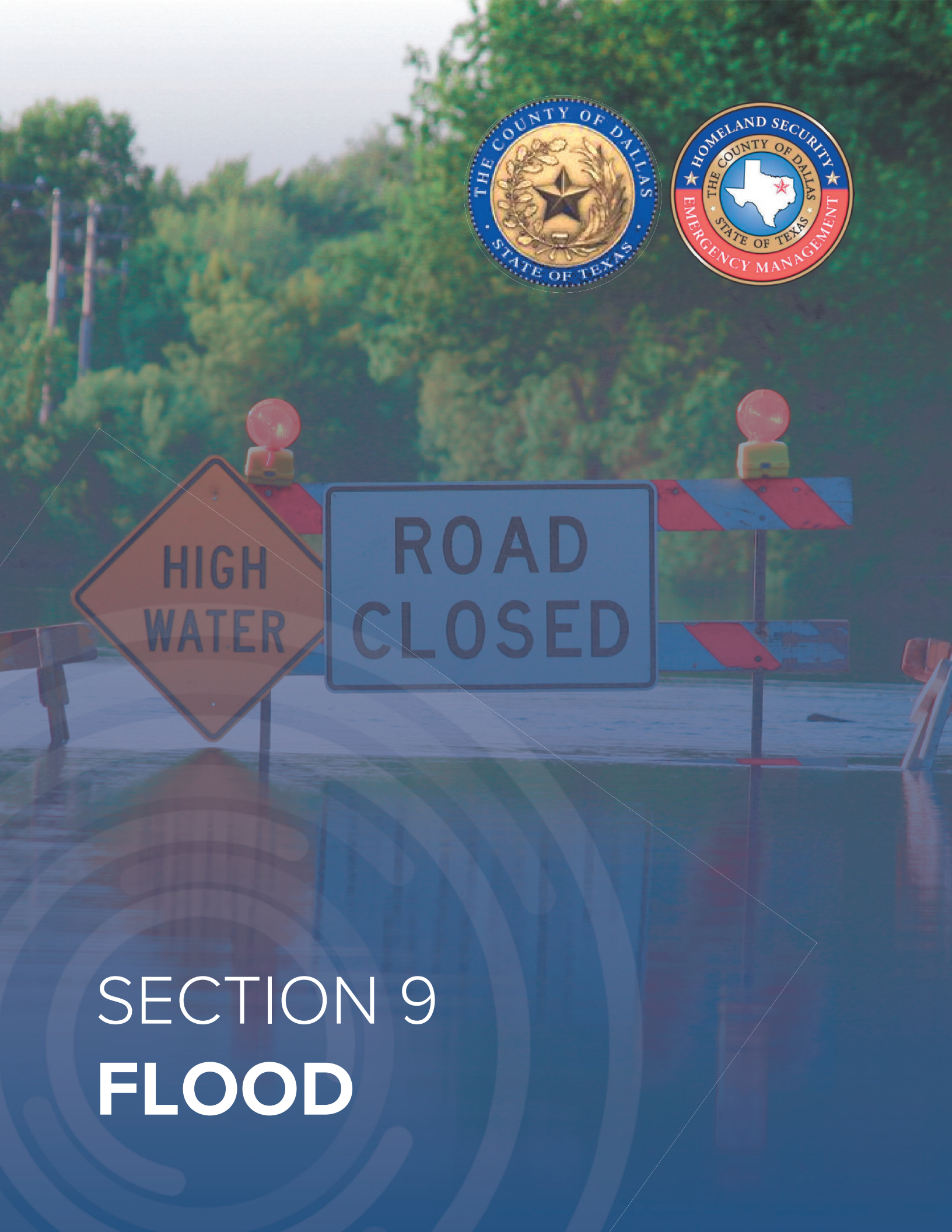
The economic and financial impacts of extreme heat on the community will depend on the duration of the event, demand for energy, drought associated with extreme heat, and many other factors. The level of preparedness and the amount of planning done by the community, local businesses, and citizens will impact the overall economic and financial conditions before, during, and after an extreme heat event.

CLIMATE CHANGE CONSIDERATIONS

Climate change is expected to lead to an increase in average temperatures as well as an increase in frequency, duration, and intensity of extreme heat events. With no reductions in emissions worldwide, the state of Texas is projected to experience an additional 30 to 60 days per year above 100°F than what is experienced now.[5]

In addition, it is projected that future changes to Dallas County will include increased temperatures, which according to the U.S. Climate Explorer, the planning area may experience a 6°F increase in the average extreme heat temperatures. Historically, extreme temperatures averaged 101°F in Dallas County, but between 2035 and 2064 the average will be 107°F, increasing the severity and frequency of extreme heat events. Extreme heat projections may be even higher but are dependent on overall future emissions.

[5] Nielsen-Gammon, John, Holman, Sara, Buley, Austin and Jorgensen, Savannah. Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, 2021 Update. Texas A&M University Office of the Texas State Climatologist. October 7, 2021. https://climatexas.tamu.edu/files/ClimateReport-1900to2036-2021Update



SECTION 9
FLOOD

SECTION 9: FLOOD

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HAZARD DESCRIPTION

Floods generally result from excessive precipitation. The severity of a flood event is determined by a combination of several major factors, including: stream and river basin topography and physiography; precipitation and weather patterns; recent soil moisture conditions; and the degree of vegetative clearing and impervious surfaces. Typically, floods are long-term events that may last for several days.

The primary types of general flooding are inland and coastal flooding. Due to Dallas County's inland location, only inland flooding is profiled in this section. Inland or riverine flooding is a result of excessive precipitation levels and water runoff volumes within the watershed of a stream or river. Inland or riverine flooding is overbank flooding of rivers and streams, typically resulting from large-scale weather systems that generate prolonged rainfall over a wide geographic area. Therefore, it is a naturally occurring and inevitable event. Some river floods occur seasonally when winter or spring rainfalls fill river basins with too much water, too quickly. Torrential rains from decaying hurricanes or tropical systems can also produce river flooding.

The Dallas County planning area is subject to extreme rainfall events, often in short durations, leading to dangerous flash flooding events. Floods are a natural and recurrent event and take place every year, in all seasons.

LOCATION

The Flood Insurance Rate Maps (FIRMs) prepared by FEMA provide an overview of flood risk but can also be used to identify the areas of the County that are vulnerable to flooding. FIRMs are used to regulate new development and to control the substantial improvement and repair of substantially damaged buildings. Flood Insurance Studies (FIS) are often developed in conjunction with FIRMs. The FIS typically contains a narrative of the flood history of a community and discusses the engineering methods used to develop the FIRMs. The FIS also contains flood profiles for studying flooding sources and can be used to determine Base Flood Elevations (BFEs) for some areas.

The FIS for Dallas County is dated March 21, 2019. This FIS is composed of nine volumes and compiles all previous flood information including data collected on numerous waterways. This study indicates that the principal flood problems are due to prolonged or successive storms that produce heavy rainfall during the spring and fall months.

The Digital Flood Insurance Rate Map (DFIRM) data provided by FEMA for Dallas County shows the following flood hazard areas:

- Zone A: Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance requirements and floodplain management standards apply.
- Zone AE: Areas subject to inundation by 1-percent-annual-chance shallow flooding. It is the base floodplain where BFEs are provided. AE zones are now used on new format FIRMs instead of A1-30 zones.
- Zone AO: Areas subject to inundation by 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone.
- Zone X: Moderate risk areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by a levee. No BFEs or base flood depths are shown within these zones.

Locations of flood zones in Dallas County based on the Digital Flood Insurance Rate Map (DFIRM) from FEMA are illustrated in Figures 9-1 to 9-21.

Figure 9-1. Estimated Flood Zones in Dallas County

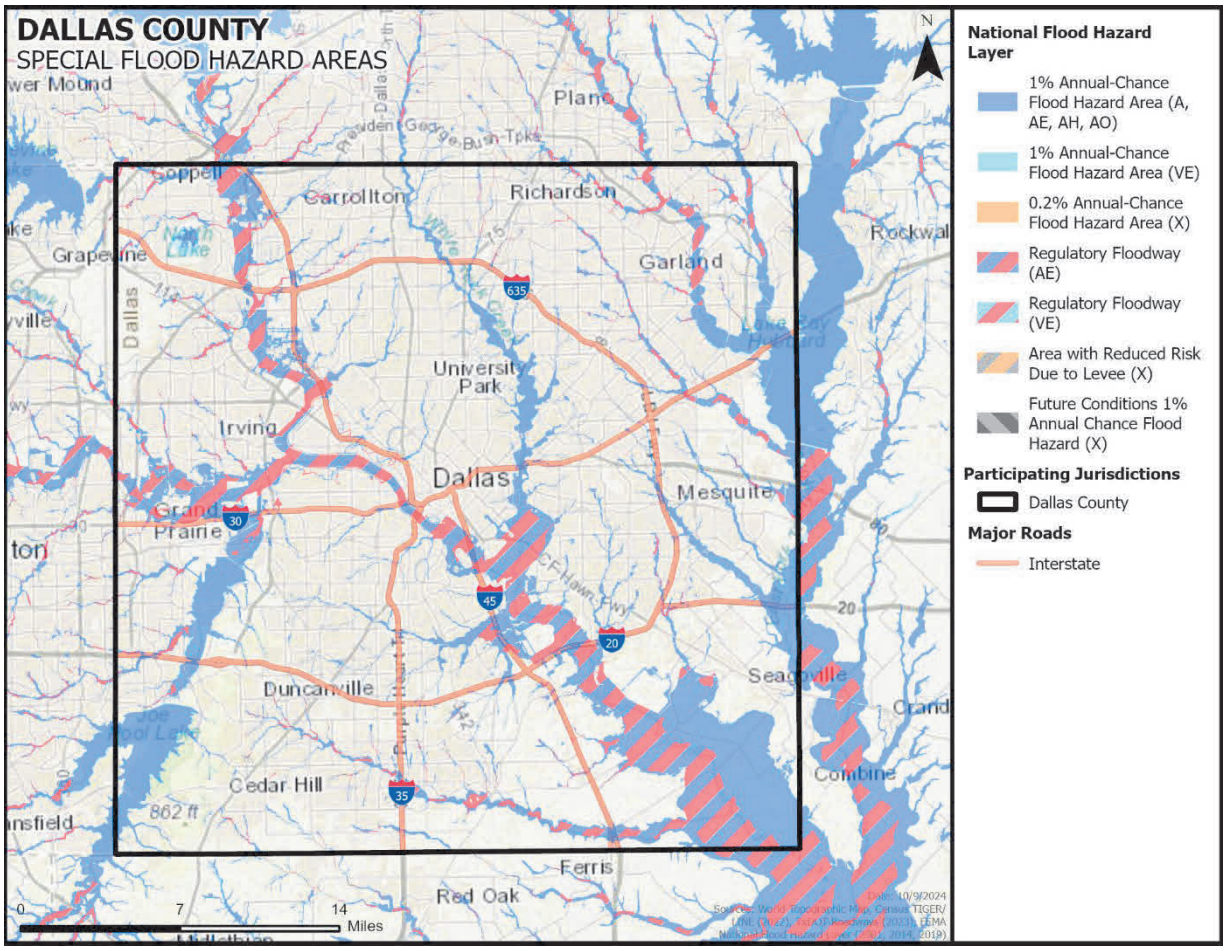


Figure 9-2. Estimated Flood Zones in the Town of Addison

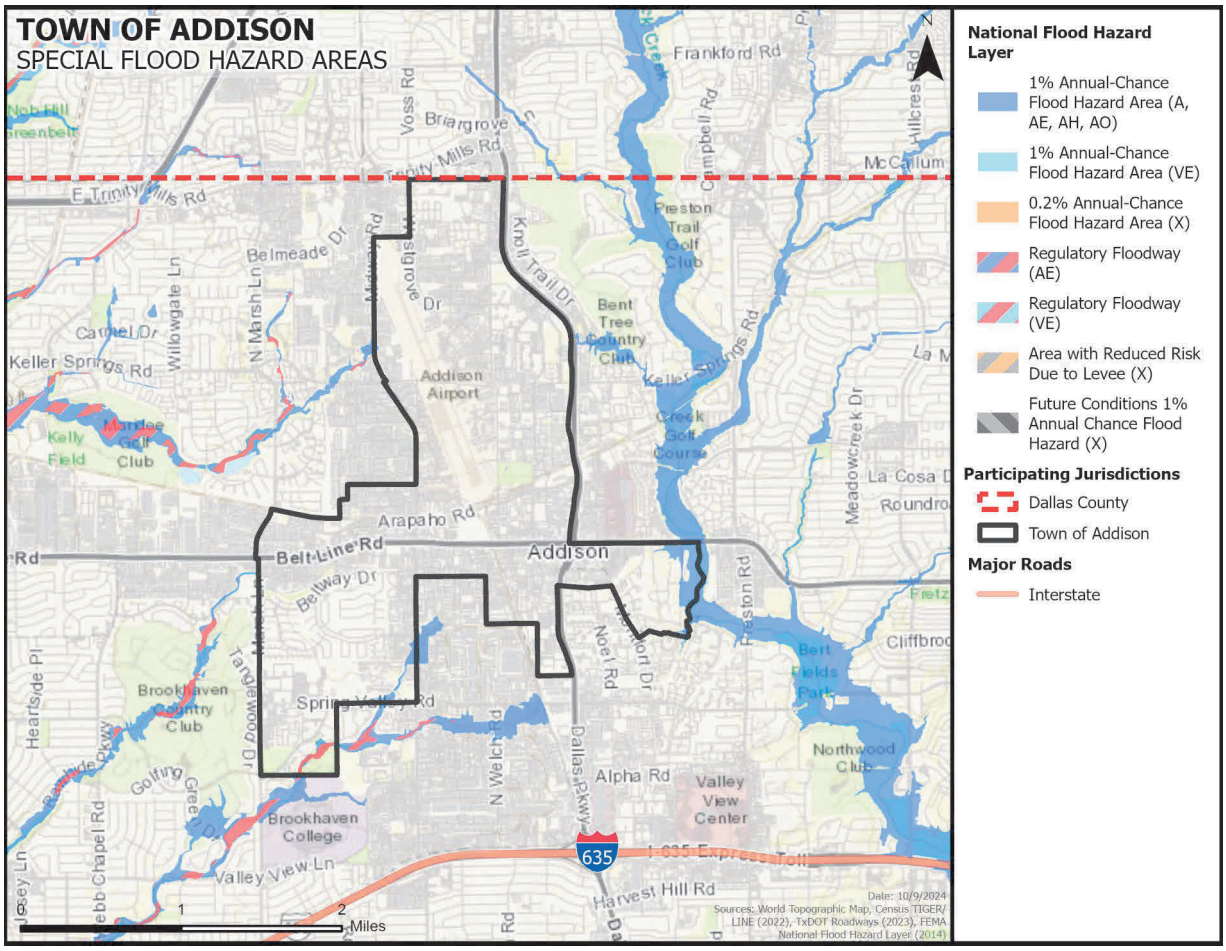


Figure 9-3. Estimated Flood Zones in the City of Balch Springs

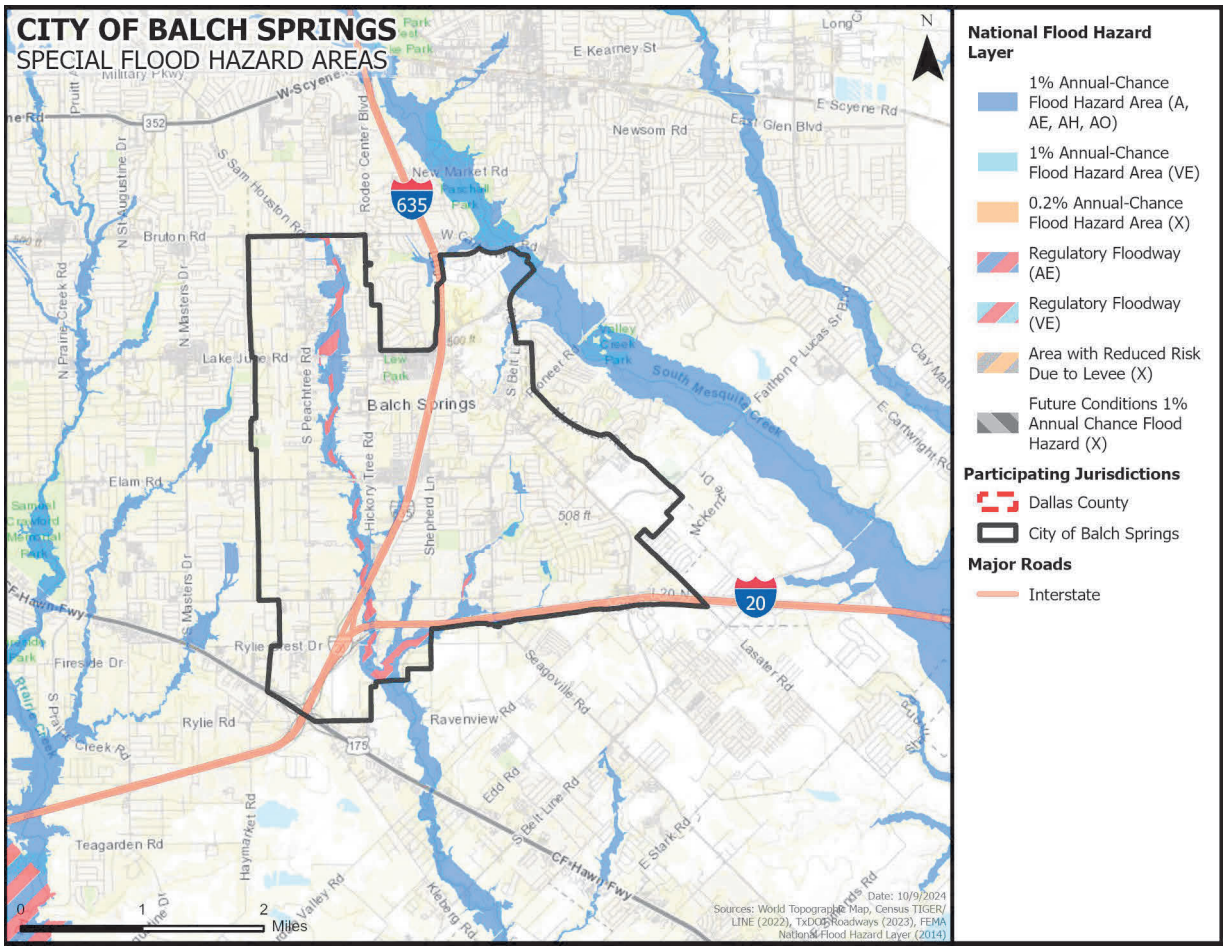


Figure 9-4. Estimated Flood Zones in the City of Carrollton

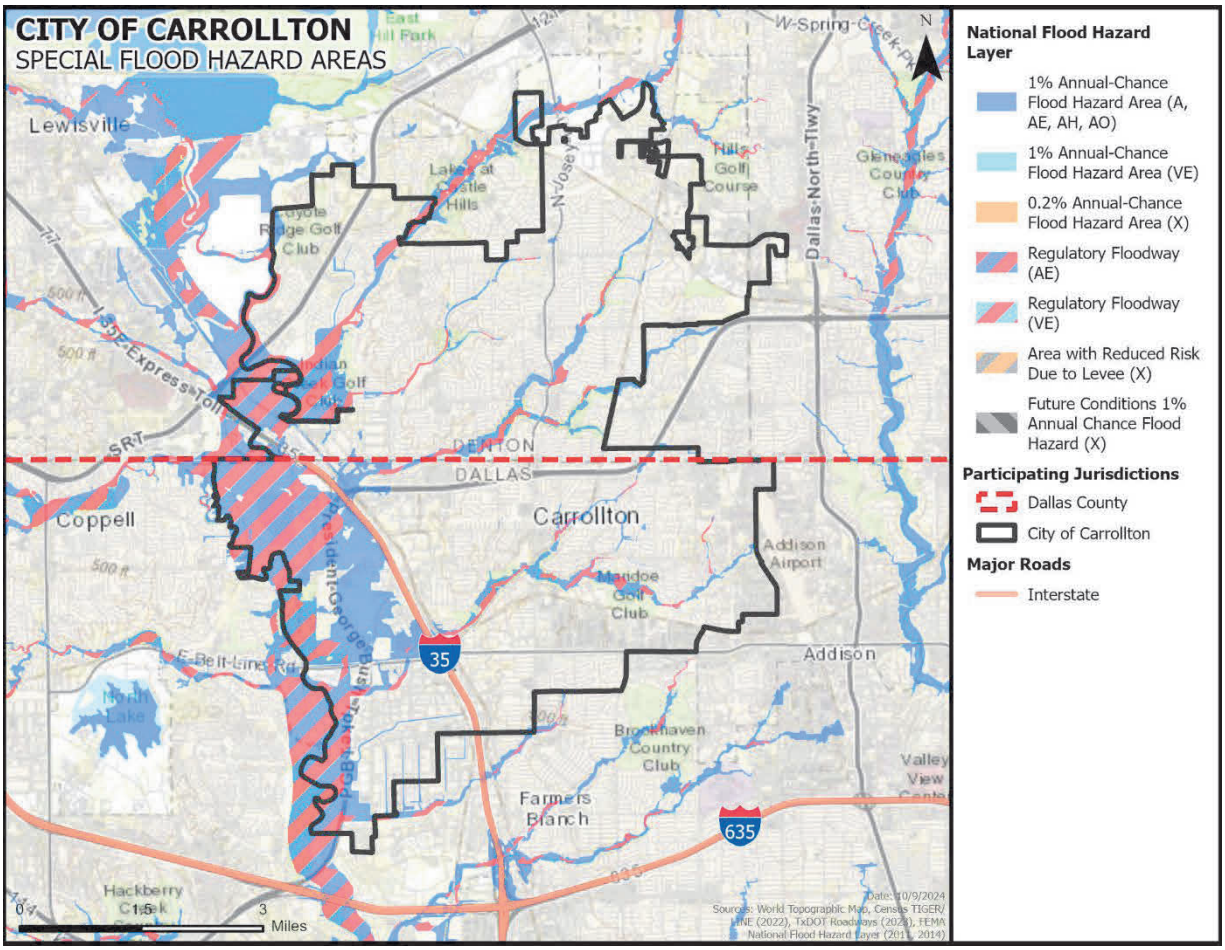


Figure 9-5. Estimated Flood Zones in the City of Cedar Hill

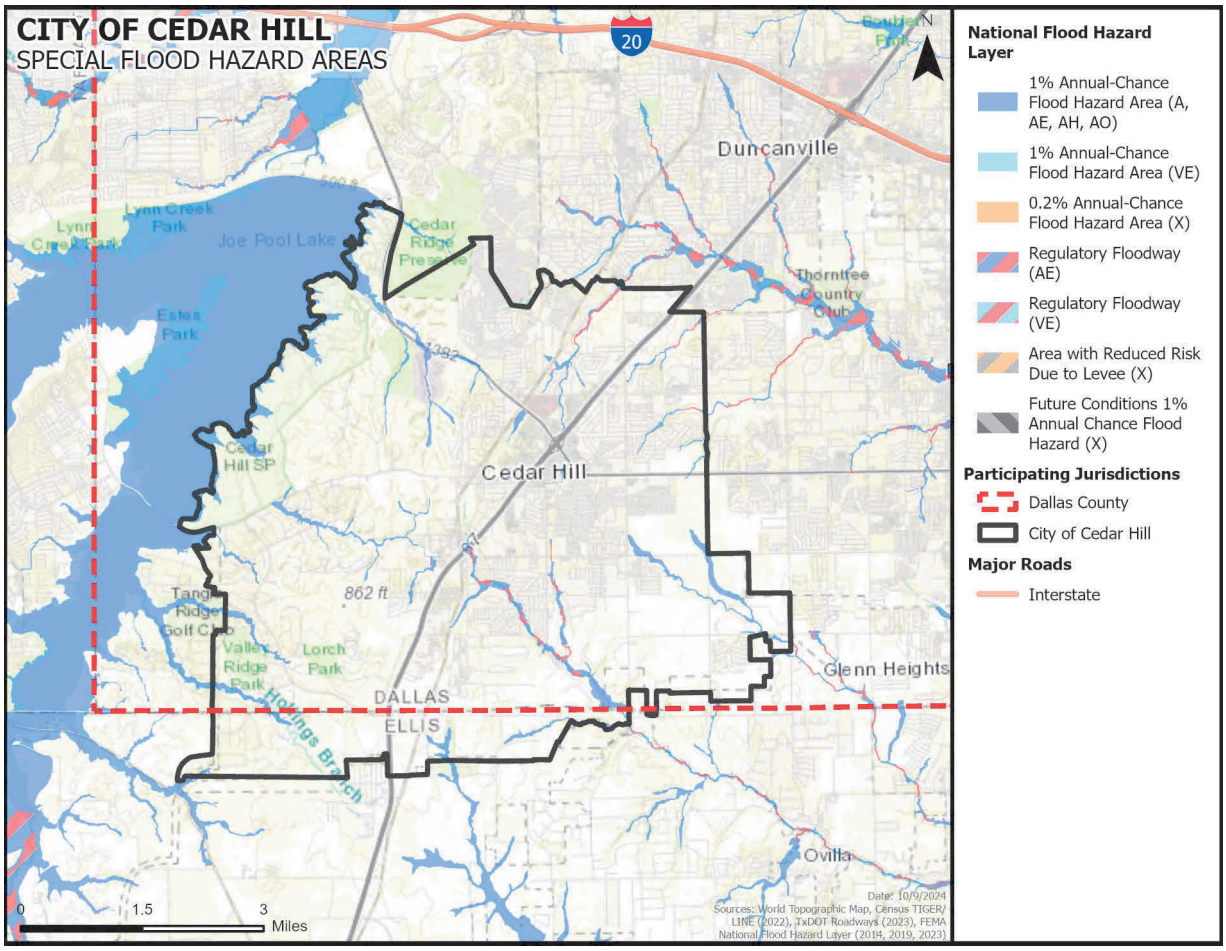


Figure 9-6. Estimated Flood Zones in the City of Cockrell Hill

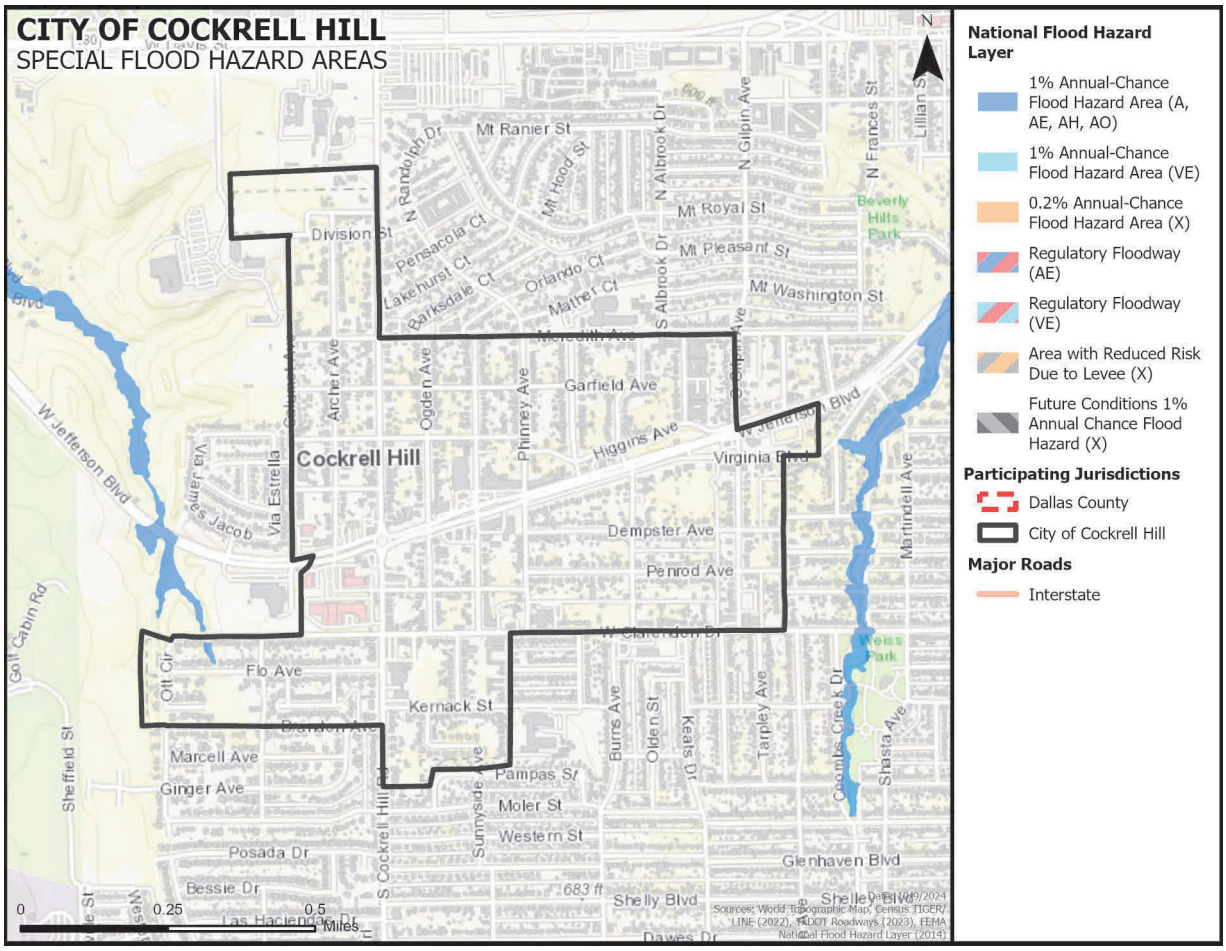


Figure 9-7. Estimated Flood Zones in the City of Coppell

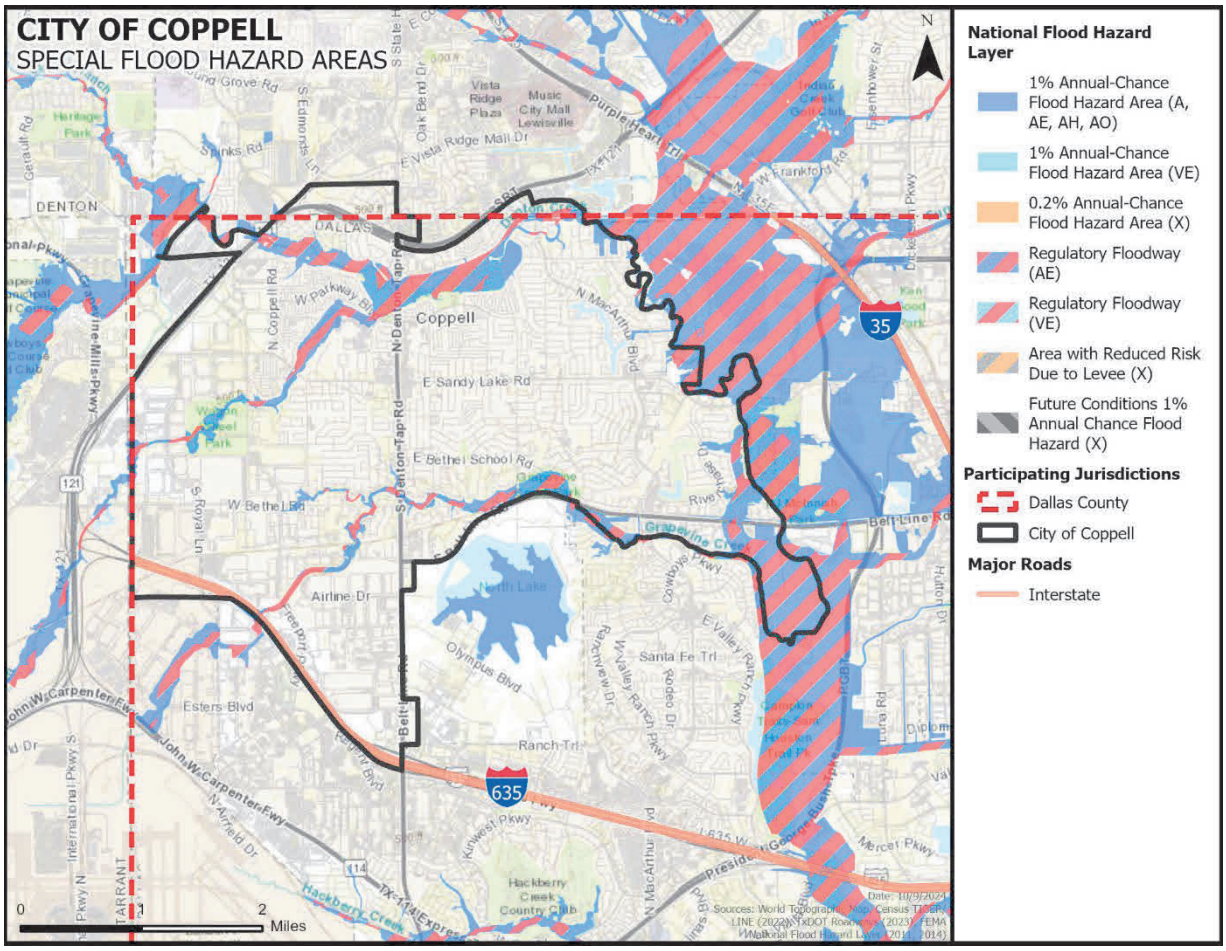


Figure 9-8. Estimated Flood Zones in the City of DeSoto

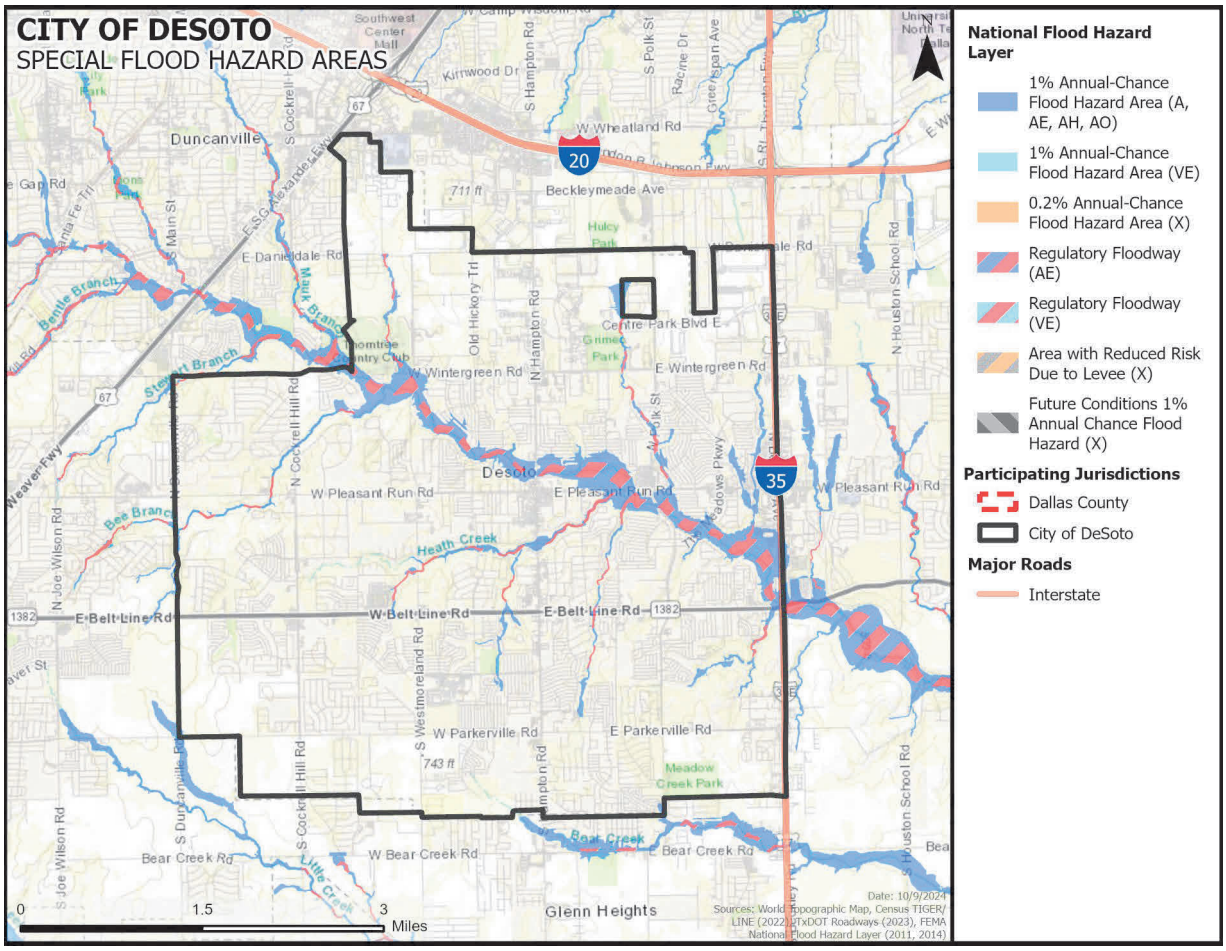


Figure 9-9. Estimated Flood Zones in the City of Duncanville

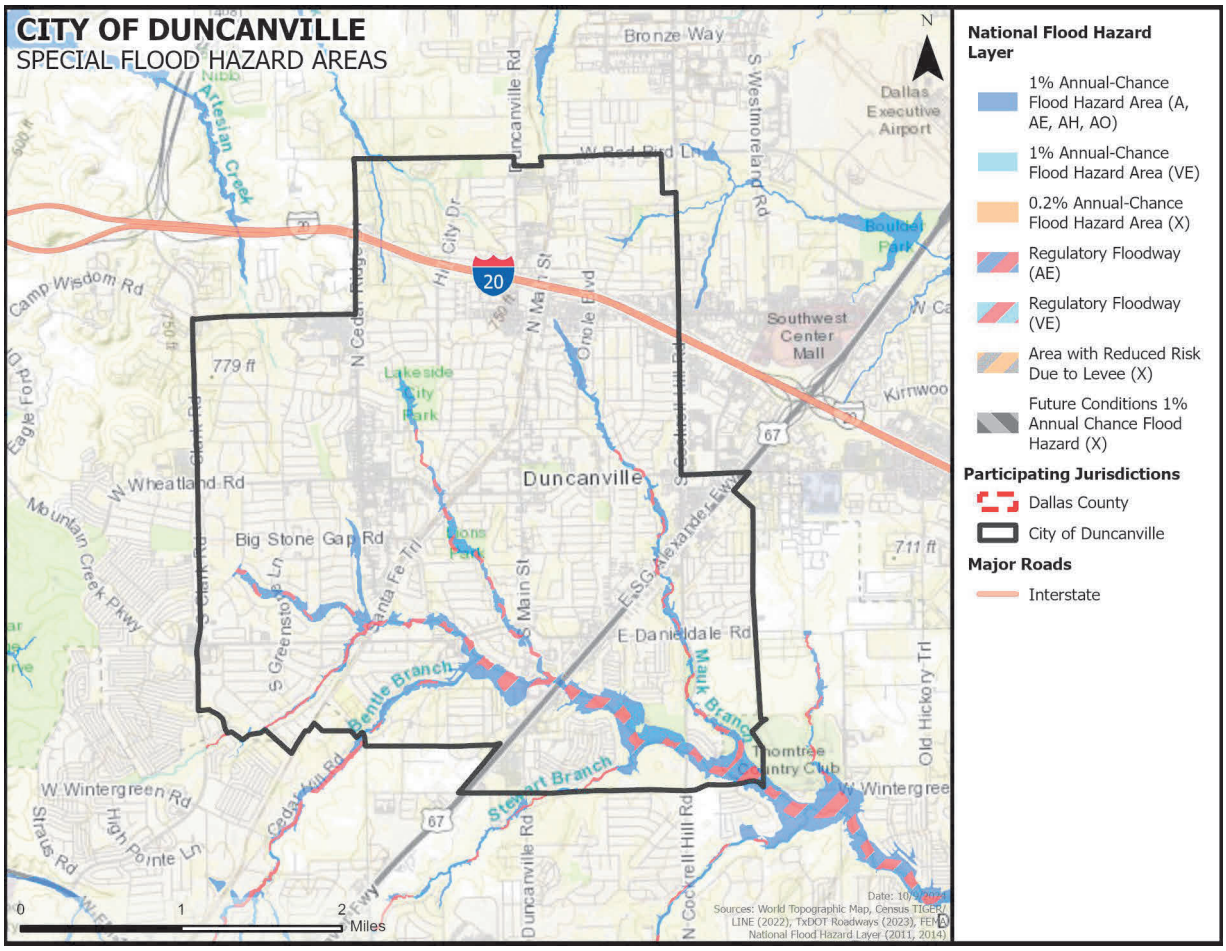


Figure 9-10. Estimated Flood Zones in the City of Farmers Branch

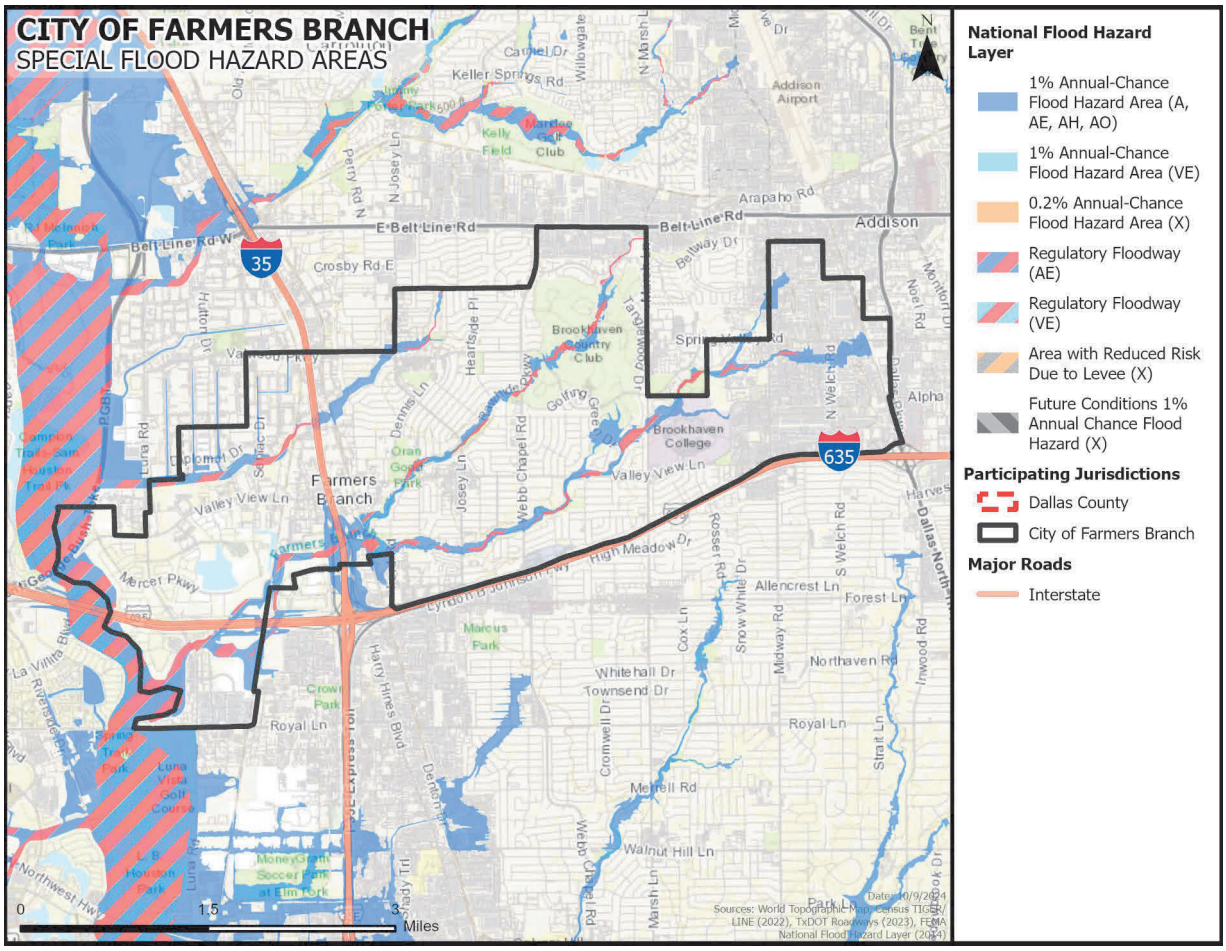


Figure 9-11. Estimated Flood Zones in the City of Glenn Heights

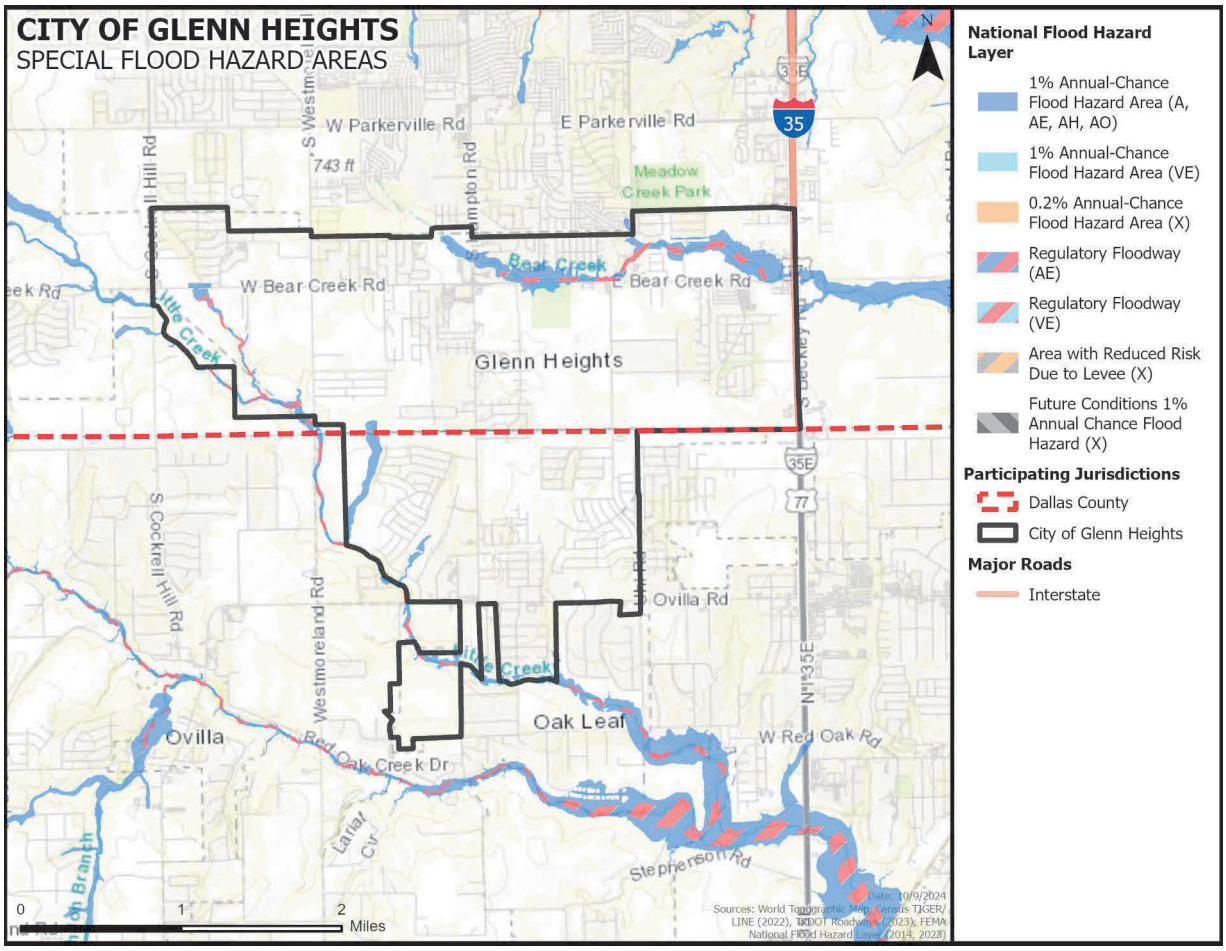


Figure 9-12. Estimated Flood Zones in the Town of Highland Park

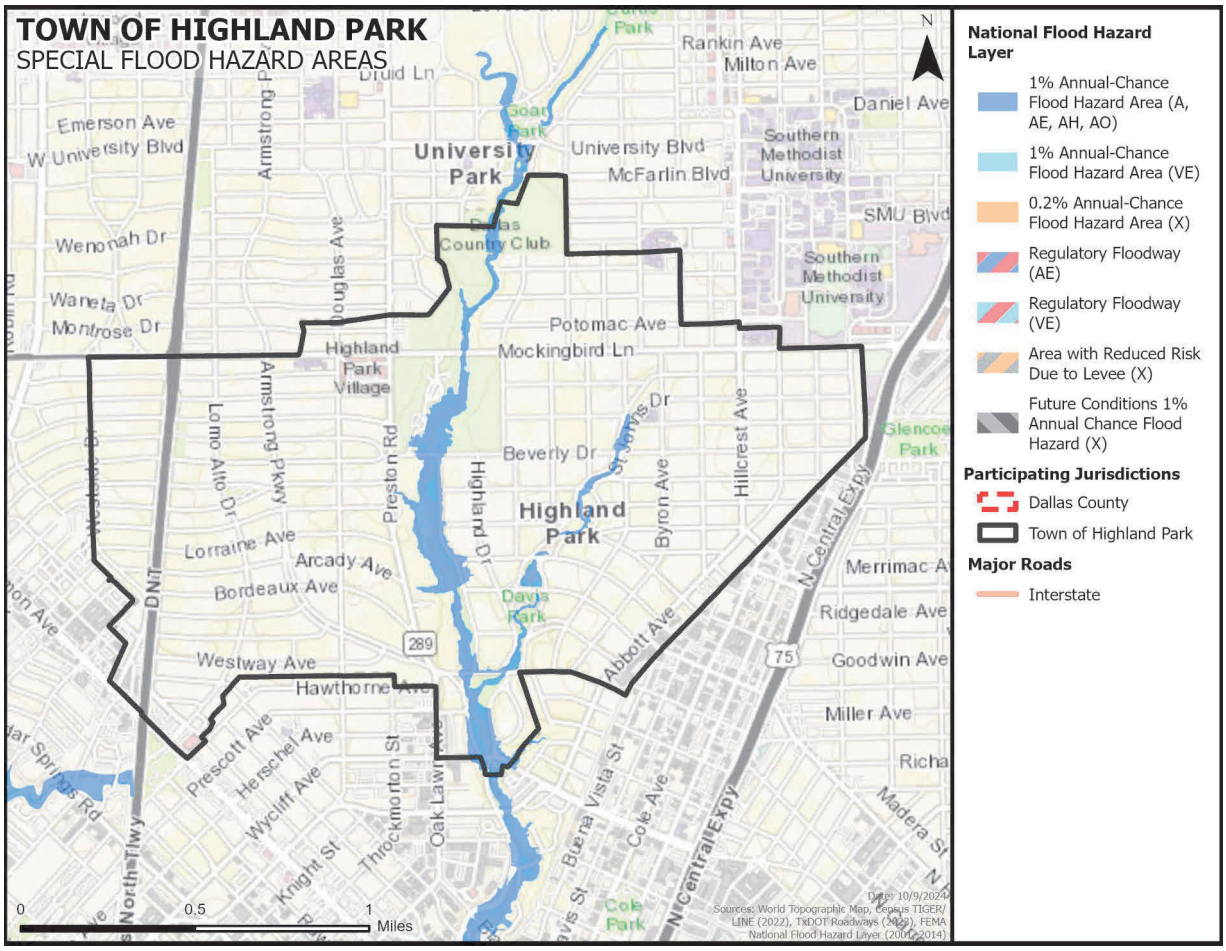


Figure 9-13. Estimated Flood Zones in the City of Hutchins

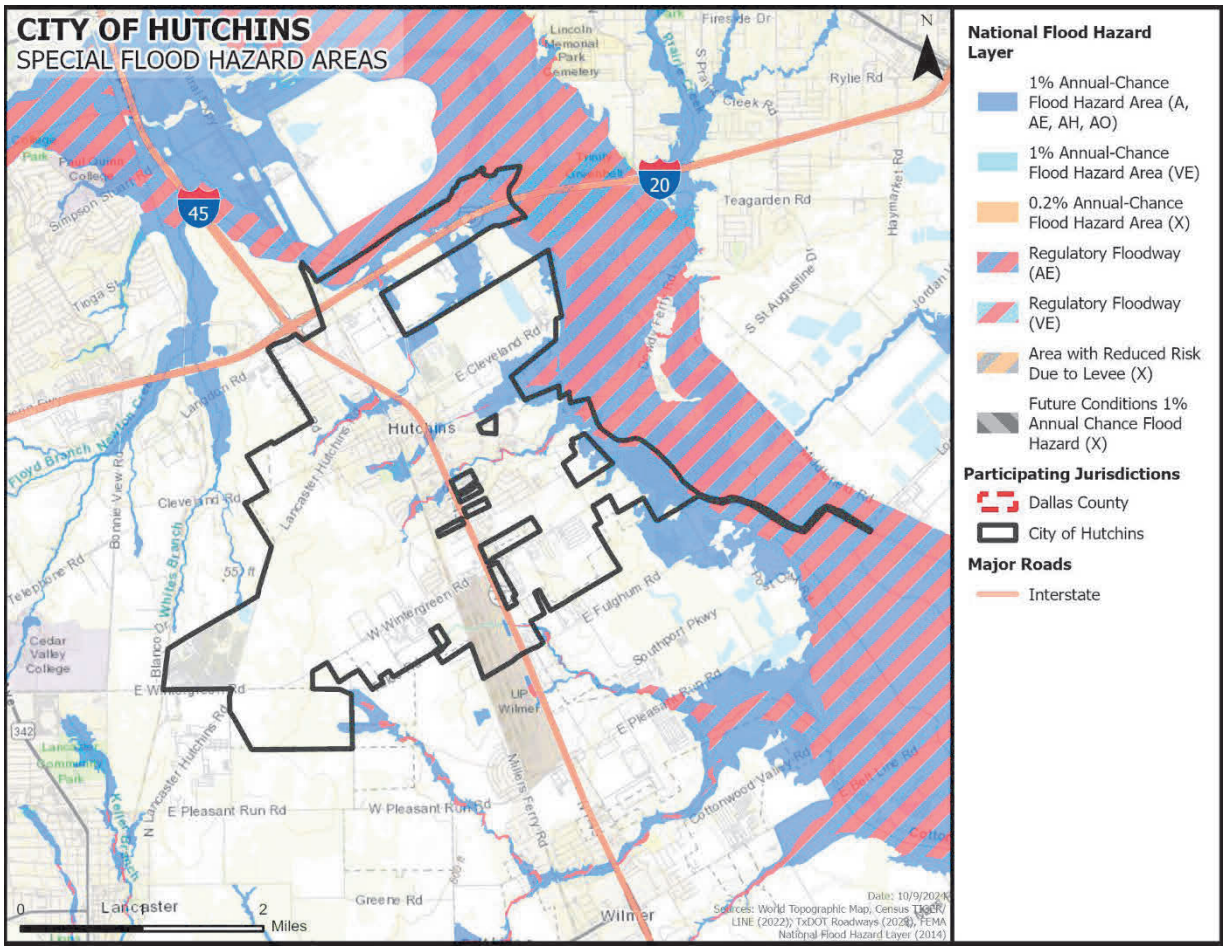


Figure 9-14. Estimated Flood Zones in the City of Lancaster

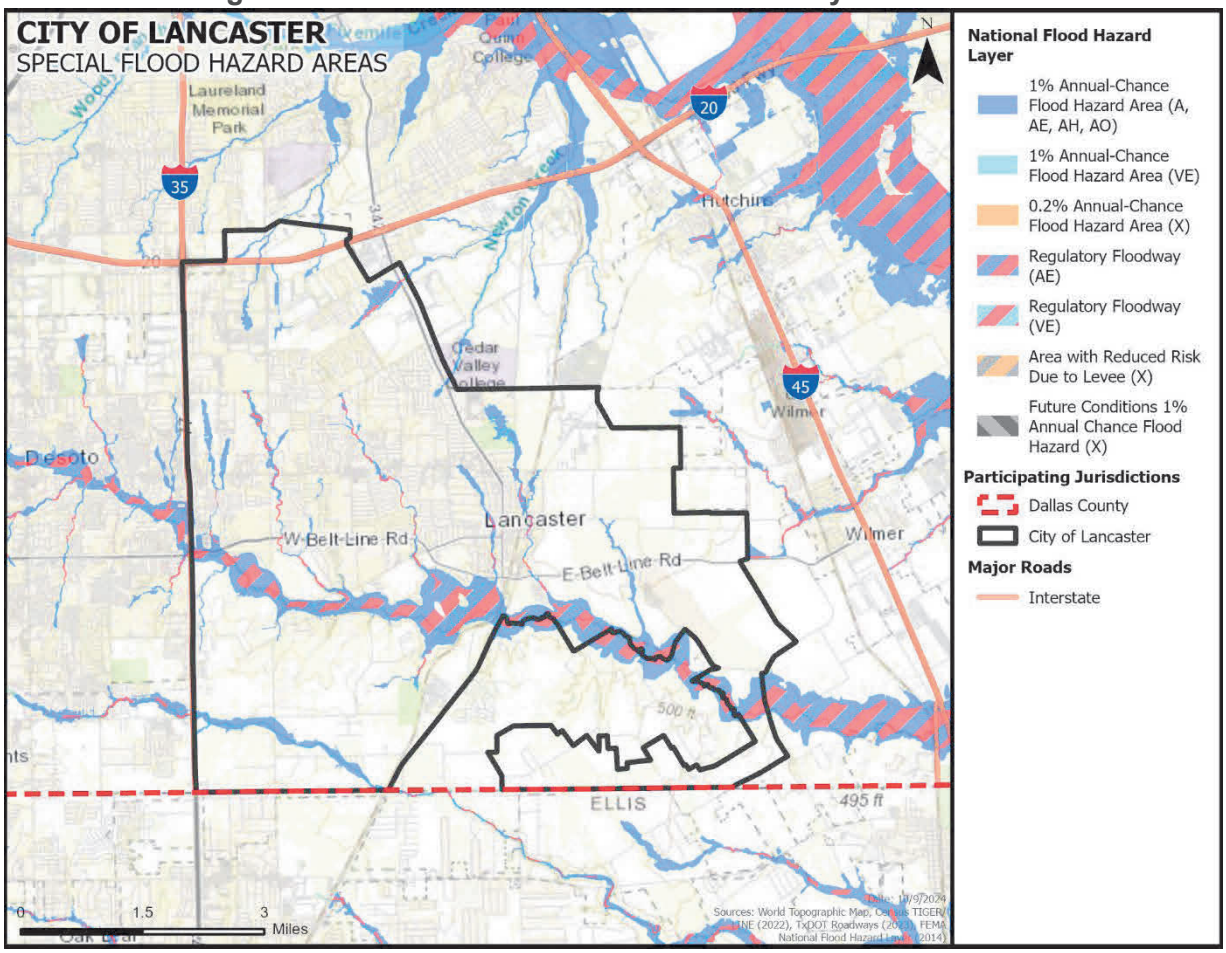


Figure 9-15. Estimated Flood Zones in the City of Richardson

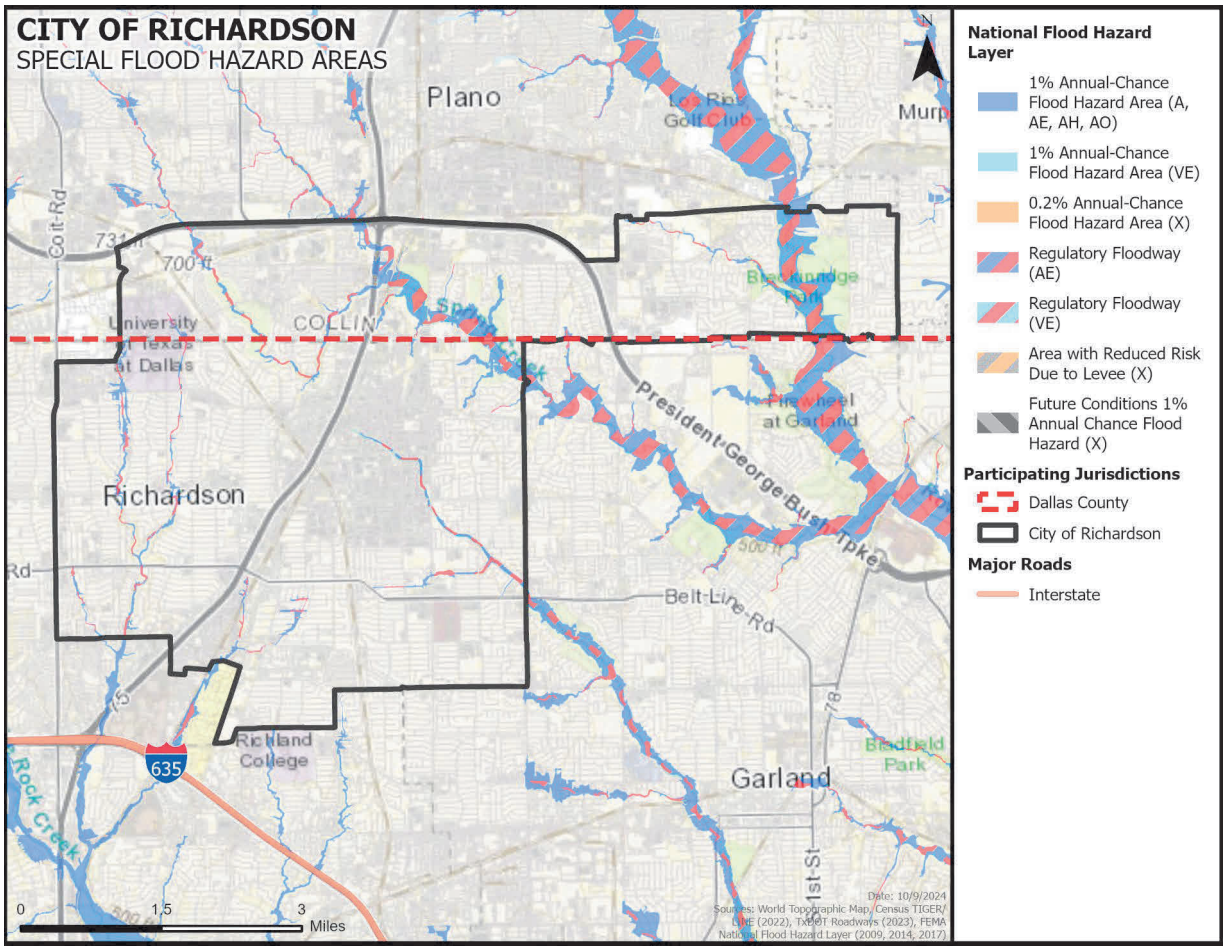


Figure 9-16. Estimated Flood Zones in the City of Rowlett

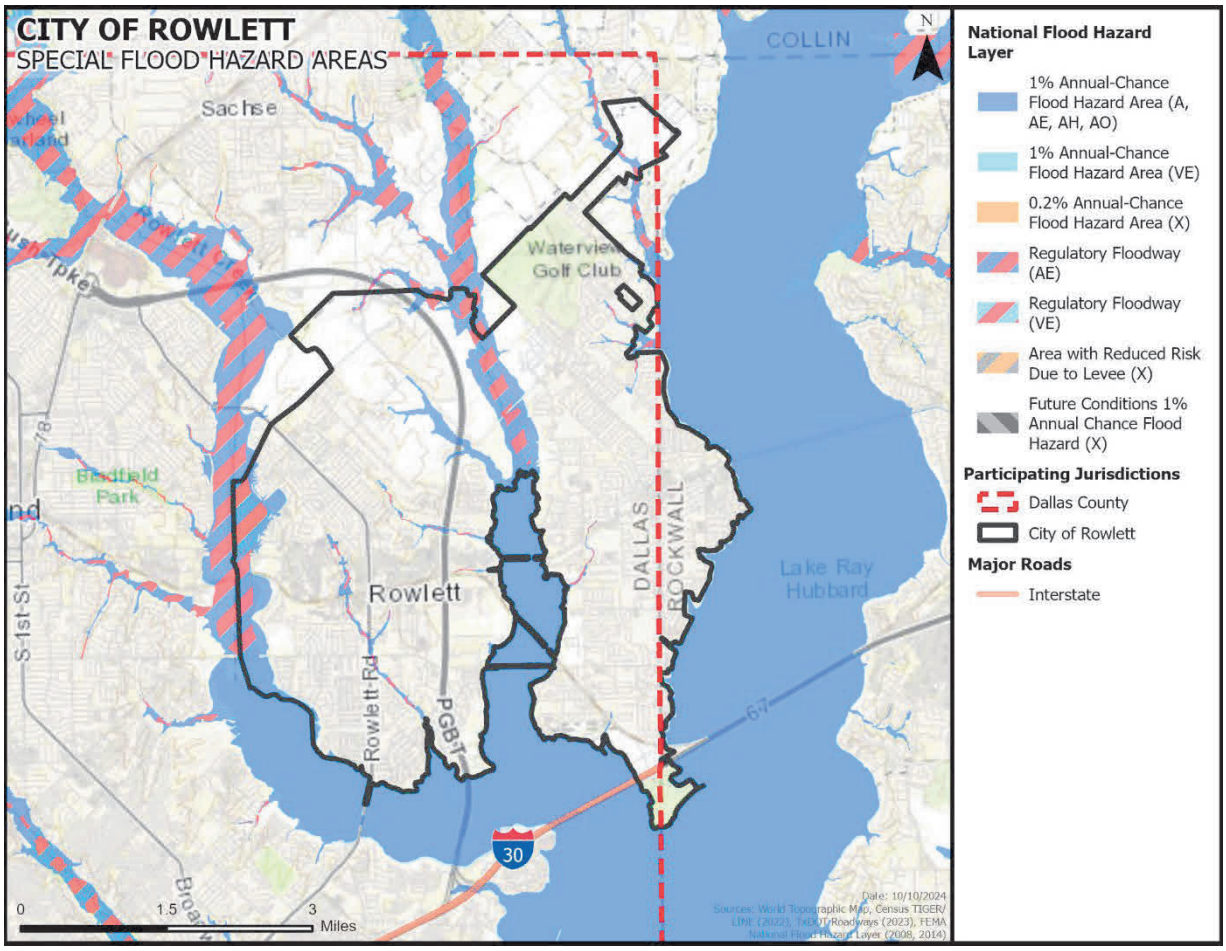


Figure 9-17. Estimated Flood Zones in the City of Sachse

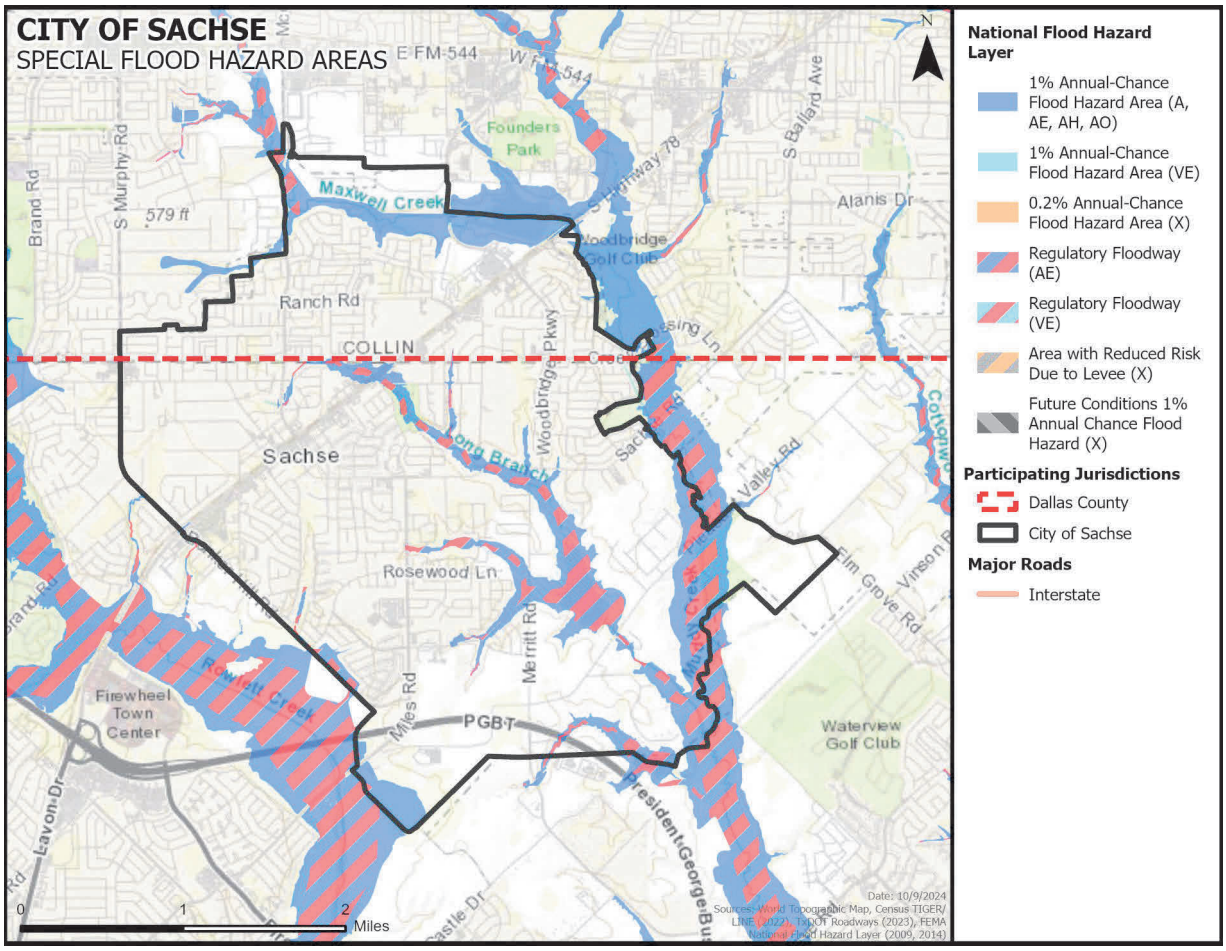


Figure 9-18. Estimated Flood Zones in the City of Seagoville

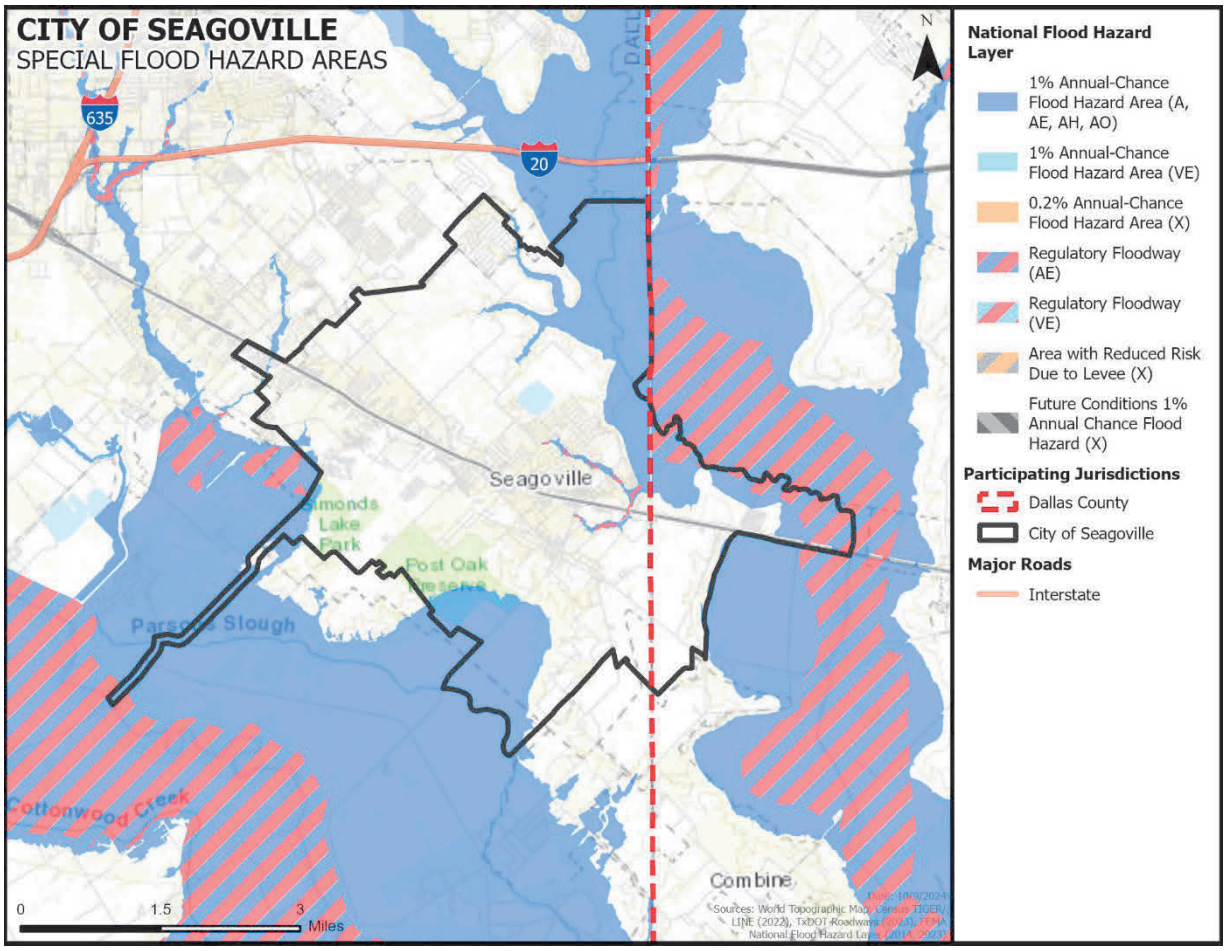


Figure 9-19. Estimated Flood Zones in the Town of Sunnyvale

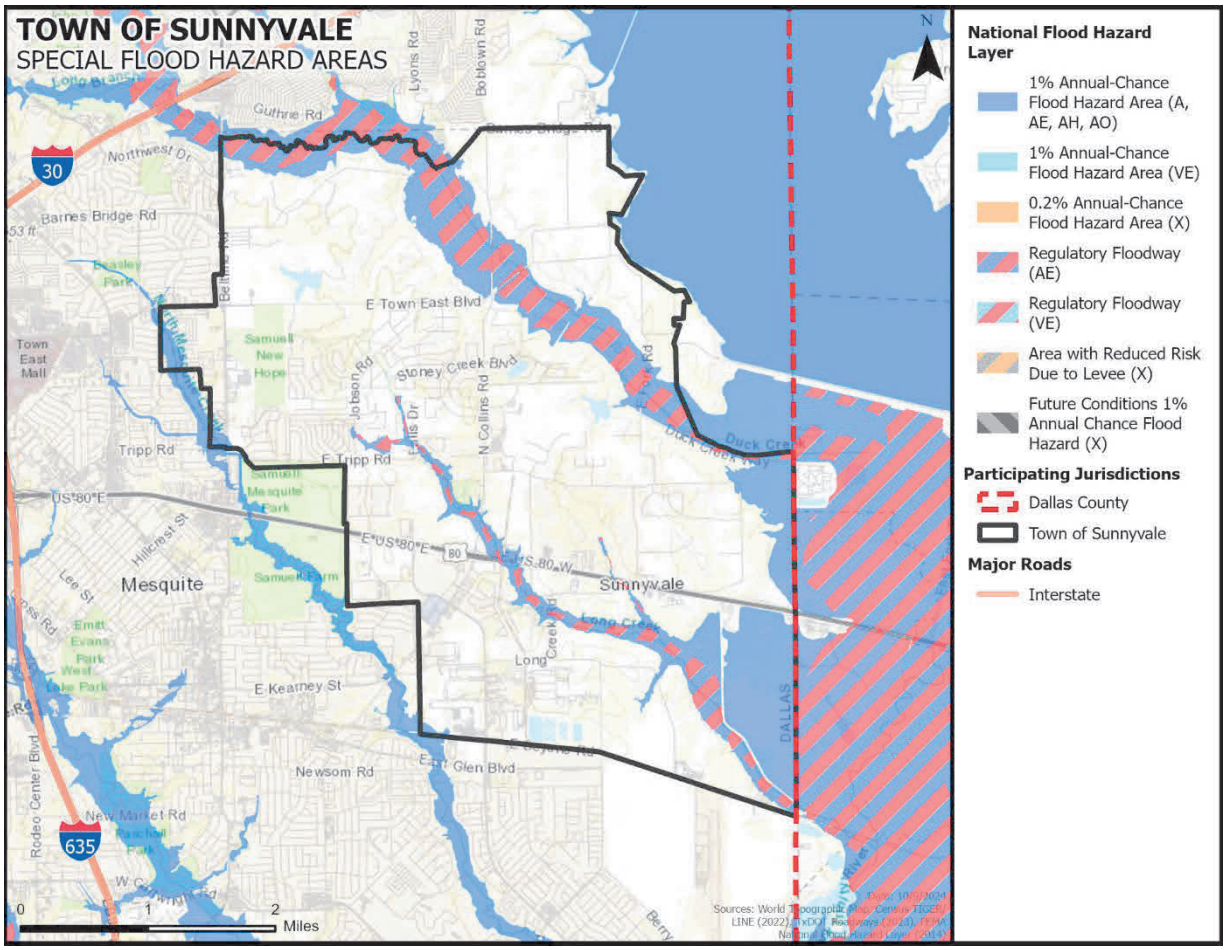


Figure 9-20. Estimated Flood Zones in the City of University Park

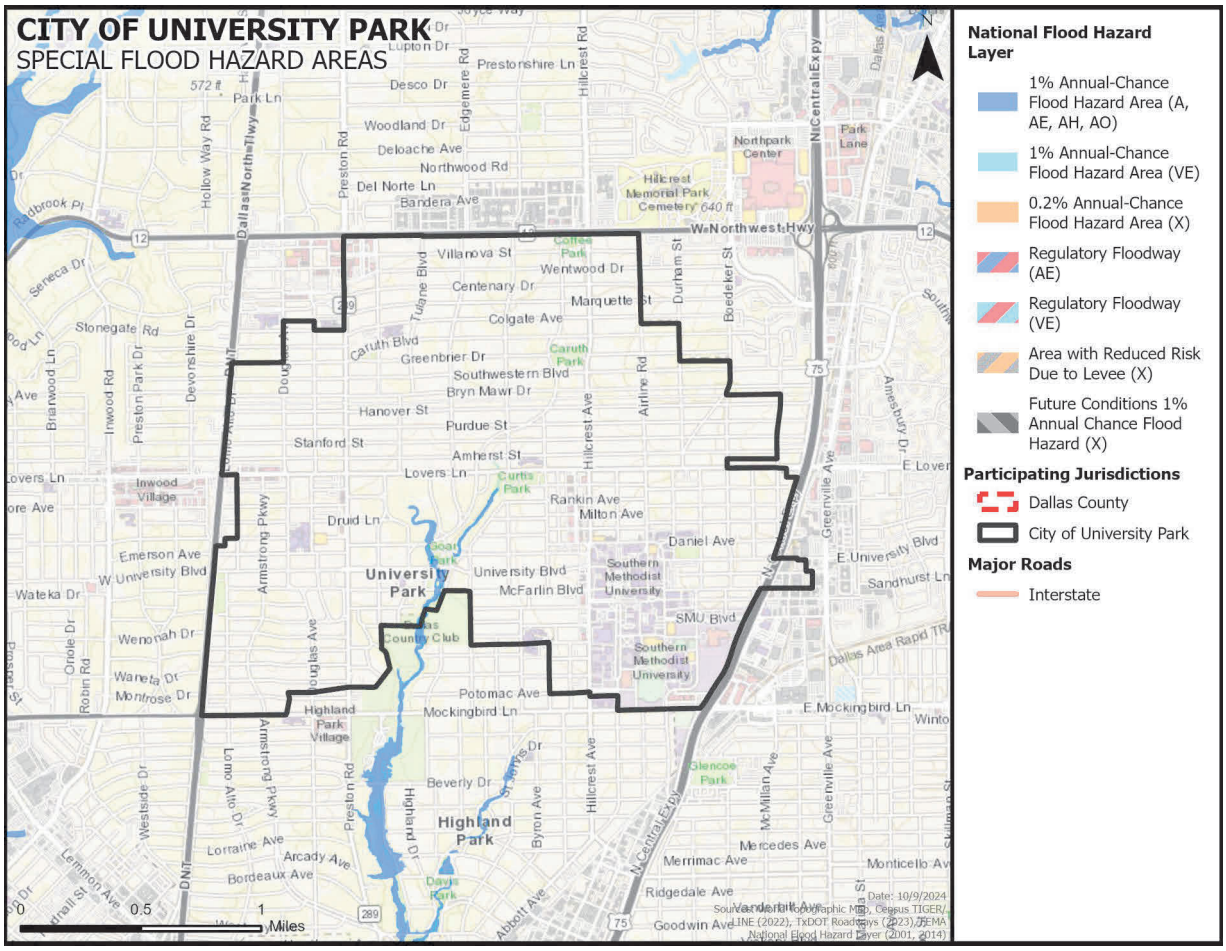
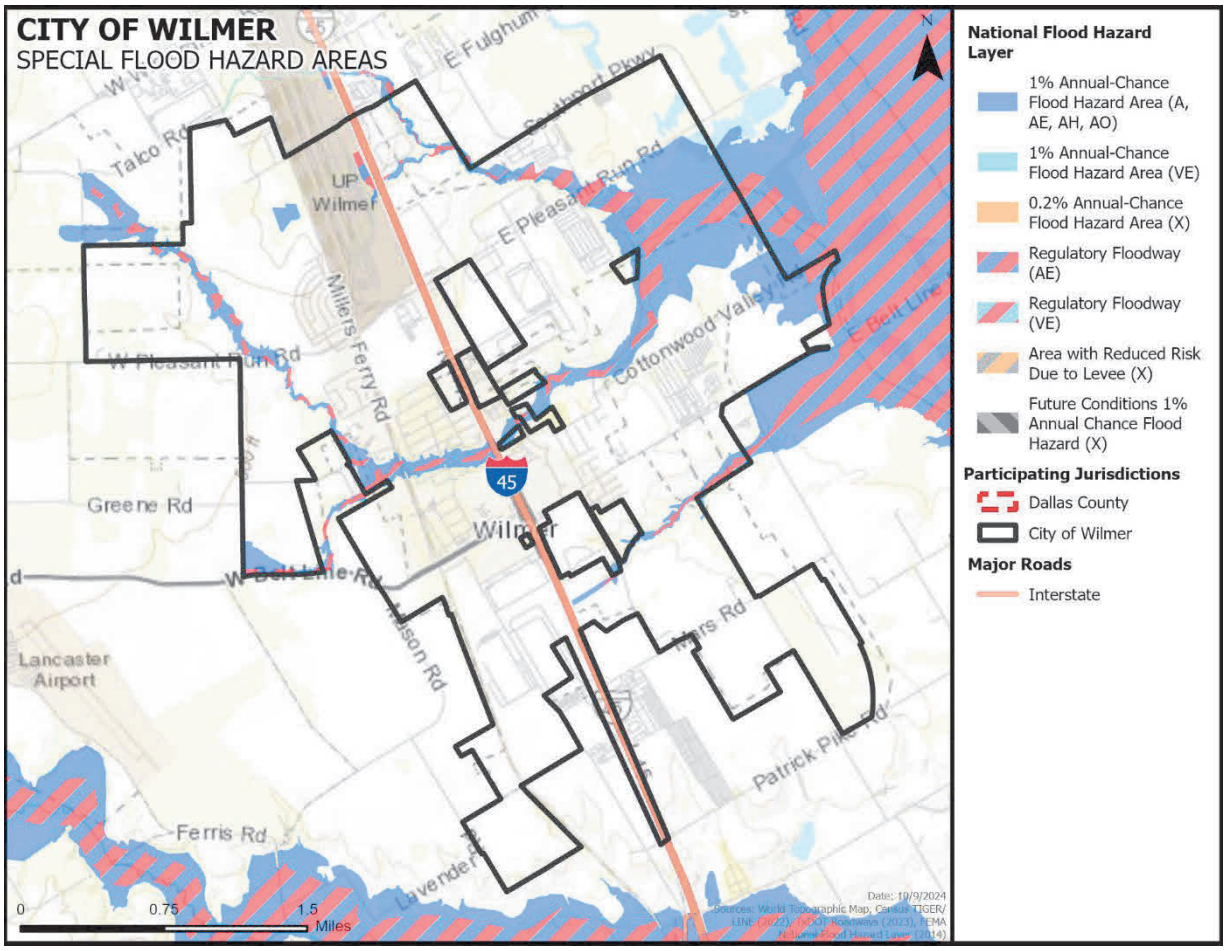


Figure 9-21. Estimated Flood Zones in the City of Wilmer



EXTENT

The severity of a flood event is determined by a combination of several major factors, including stream and river basin topography and physiography; precipitation and weather patterns; recent soil moisture conditions; and the degree of vegetative clearing and impervious surfaces. Typically, floods are long-term events that may last for several days.

Determining the intensity and magnitude of a flood event is dependent upon the flood zone and location of the flood hazard area in addition to the depths of flood waters. The extent of flood damages can be expected to be more damaging in the areas that will convey a base flood. FEMA categorizes areas on the terrain according to how the area will convey flood water. Flood zones are the categories that are mapped on FIRMs. Table 9-1 provides a description of FEMA flood zones and the flood impact in terms of severity or potential harm. Flood Zones A, AE, AO and X are the hazard areas mapped in the region. Figures 9-1 through 9-21 should be read in conjunction with the extent for flooding in Tables 9-1 and 9-2 to determine the intensity of a potential flood event.

Table 9-1. Flood Zones

INTENSITY	ZONE	DESCRIPTION
HIGH	ZONE A	Areas with a 1-percent-annual-chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones.
	ZONE A1-30	These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a Base Flood Elevation (BFE) (old format).
	ZONE AE	The base floodplain where BFEs are provided. AE Zones are now used on the new format FIRMs instead of A1-A30 Zones.
	ZONE AO	River or stream flood hazard areas and areas with a 1-percent-annual-chance or greater of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26 percent chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
	ZONE AH	Areas with a 1-percent-annual-chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26 percent chance of flooding over the life of a 30-year mortgage. BFEs derived from detailed analyses are shown at selected intervals within these zones.
	ZONE A99	Areas with a 1-percent-annual-chance of flooding that will be protected by a federal flood control system where construction has reached specified legal requirements. No depths or BFEs are shown within these zones.
	ZONE AR	Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements will apply, but rates will not exceed the rates for unnumbered A zones if the structure is built or restored in compliance with Zone AR floodplain management regulations.
MODERATE to LOW	ZONE X 500	An area inundated by 500-year flooding; an area inundated by 100-year flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile; or an area protected by levees from 100-year flooding.

Zone A is interchangeably referred to as the 100-year flood, the 1-percent-annual-chance flood, the Special Flood Hazard Area (SFHA), or more commonly, the base flood. This is the area that will convey the base flood and constitutes a threat to the planning area. The impact from a flood event can be more damaging in areas that will convey a base flood.

Structures built in the SFHA are subject to damage by rising waters and floating debris. Moving flood water exerts pressure on everything in its path and causes erosion of soil and solid objects. If not elevated above Base Flood Elevation, utility systems, such as heating, ventilation, air conditioning, fuel, electrical systems, sewage maintenance systems and water systems, may also be damaged.

The intensity and magnitude of a flood event is also determined by the depth of flood water. Table 9-2 describes the stream gauge data provided by the United States Geological Survey (USGS).

Table 9-2. Extent for Dallas County[1]

JURISDICTION[2]	PEAK FLOOD EVENT
Dallas County	Bear Creek at Shady Grove Road in Grand Prairie, Texas reached an overflow elevation of 52 feet in September of 2015. The average peak for Bear Creek is 48 feet at this site.
Dallas County	West Fork Trinity River in Grand Prairie, Texas reached an overflood elevation of 37 feet in November of 2004. The average peak for the West Fork Trinity River is 22 feet at this site.
City of Carrolton	Elm Fork Trinity River near Carrollton, Texas reached an overflow elevation of 21 feet in November of 1941. The average peak for Elm Fort Trinity River is 9 feet at this site.
Dallas County	Elm Fork Trinity River in Irving, Texas reached an overflow elevation of 27 feet in May of 2015. The average peak for Elm Fort Trinity River is 23 feet at this site.
Dallas County	Mountain Creek in Grand Prairie, Texas reached an overflow elevation of 29 feet in March of 2006. The average peak for Mountain Creek is 19 feet at this site.
Dallas County	Trinity River in Dallas, Texas reached an overflow elevation of 53 feet in May of 1908. The average peak for Trinity River is 35 feet at this site.
Dallas County	Turtle Creek in Dallas, Texas reached an overflow elevation of 11 feet in April of 1966. The average peak for Turtle Creek is 7 feet at this site.
Dallas County	White Rock Creek in Dallas, Texas reached an overflow elevation of 92 feet in September of 2018. The average peak for White Rock Creek is 88 feet at this site.

[1] Severity estimated by averaging floods at certain stage level over the history of flood events. Severity and peak events are based on USGS data.
[2] Severity is provided where peak data was available for streams, creeks and rivers throughout the planning area.

JURISDICTION[2]	PEAK FLOOD EVENT
Dallas County	Trinity River below Dallas, Texas reached an overflow elevation of 35 feet in May of 1990. The average peak for Trinity River is 27 feet at this site.
City of Sachse	Rowlett Creek near Sachse, Texas reached an overflow elevation of 32 feet in September of 2018. The average peak for Rowlett Creek is 25 feet at this site.
City of Sachse	Muddy Creek near Sachse, Texas reached an overflow elevation of 21 feet in February of 2018. The average peak for Muddy Creek is 20 feet at this site.
Dallas County	Hutton Branch in Carrollton, Texas reached an overflow elevation of 19 feet in May of 2021. The average peak for Hutton Branch is 15 feet at this site.

The range of flood intensity that the planning area can experience is high, or Zone A. Based on historical occurrences, the planning area could expect to experience an average of three to five inches of rain within a 3-hour period, resulting in flash flooding.

The data described in Tables 9-1 and 9-2, together with Figures 9-1 through 9-21, and historical occurrences for the area, provides an estimated potential magnitude and severity for the Dallas County planning area, including participating jurisdictions.

HISTORICAL OCCURRENCES

Historical evidence indicates that areas within the planning area are susceptible to flooding, especially in the form of flash flooding. It is important to note that only flood events that have been reported have been factored into this risk assessment, therefore it is likely that additional flood occurrences have gone unreported before and during the recording period. Table 9-3 identifies historical flood events that resulted in damages, injuries, or fatalities within the Dallas County planning area. Table 9-4 provides the historical flood event summary by jurisdiction. Historical Data is provided by the Storm Prediction Center (NOAA), National Centers for Environmental Information (NCEI) database for Dallas County, including all participating jurisdictions. Additional events not reported in the NCEI were provided by the planning team. There have been a total of 264 reported flood events in the Dallas County planning area.

Table 9-3. Historical Flood Events, January 1996 – May 2024[3]

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	10/27/1996	0	0	$7,900	$0
Dallas County	1/4/1998	1	0	$0	$0

[3] Values are in 2024 dollars.

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	12/4/1998	1	0	$0	$0
Dallas County	5/17/1999	0	1	$18,700	$0
Dallas County	5/3/2000	0	0	$27,200	$0
City of DeSoto	6/4/2000	0	0	$45,100	$0
City of Lancaster	6/4/2000	0	0	$45,100	$0
Dallas County	5/25/2003	0	0	$42,300	$0
City of Richardson	5/25/2003	0	0	$119,500	$0
Dallas County	7/28/2004	0	0	$4,915,500	$0
City of Lancaster	7/28/2004	0	0	$27,854,000	$0
Dallas County	3/19/2006	1	0	$466,000	$0
Dallas County	3/13/2007	0	1	$15,200	$0
City of Richardson	5/2/2007	0	0	$53,700	$0
Dallas County	5/30/2007	0	0	$4,500	$0
City of Duncanville	6/26/2007	0	0	$1,500	$0
Dallas County	6/26/2007	1	0	$0	$0
Dallas County	7/3/2007	0	0	$14,900	$0
City of Lancaster	9/5/2007	0	0	$37,300	$0
Dallas County	9/9/2007	0	0	$37,300	$0
Dallas County	10/15/2007	0	0	$29,800	$0
Dallas County	3/18/2008	0	0	$21,800	$0
Dallas County	3/18/2008	1	0	$218,000	$0
Dallas County	5/2/2009	0	0	$10,200	$0
City of Balch Springs	5/2/2009	0	0	$10,200	$0
City of Duncanville	5/2/2009	0	0	$3,000	$0
City of Farmers Branch	5/2/2009	0	0	$7,300	$0
Dallas County	6/11/2009	0	0	$21,600	$0
Dallas County	6/11/2009	0	0	$21,600	$0

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	6/11/2009	0	0	$10,100	$0
Dallas County	6/11/2009	0	0	$1,079,100	$0
Dallas County	6/11/2009	0	0	$28,800	$0
Dallas County	6/11/2009	0	0	$287,800	$0
Dallas County	6/11/2009	0	0	$108,000	$0
Dallas County	6/11/2009	0	0	$43,200	$0
Dallas County	6/11/2009	0	0	$100,800	$0
City of Coppell	6/11/2009	0	0	$72,000	$0
Town of Highland Park	6/11/2009	0	0	$14,400	$0
Town of Sunnyvale	6/11/2009	0	0	$287,800	$0
Town of Highland Park	7/30/2009	0	0	$28,900	$0
Dallas County	9/11/2009	0	0	$800	$0
Dallas County	9/11/2009	0	0	$43,200	$0
City of Rowlett	9/13/2009	0	0	$215,600	$0
City of Sachse	10/9/2009	0	0	$800	$0
City of Coppell	9/8/2010	0	0	$355,200	$0
City of Richardson	9/18/2011	0	1	$0	$0
City of Coppell	1/25/2012	0	0	$68,500	$0
Dallas County	3/19/2012	0	0	$67,700	$0
Dallas County	4/8/2012	0	0	$27,000	$0
Dallas County	8/18/2012	0	0	$134,800	$0
Dallas County	8/18/2012	0	0	$80,900	$0
Dallas County	8/18/2012	0	0	$269,500	$0
Dallas County	8/18/2012	0	0	$67,400	$0
Dallas County	8/18/2012	0	0	$269,500	$0
Dallas County	8/18/2012	1	0	$40,500	$0
Dallas County	5/8/2014	0	0	$32,700	$0

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	5/24/2015	0	0	$46,978,600	$0
Dallas County	5/29/2015	1	0	$163,200	$0
Dallas County	5/29/2015	0	0	$1,400	$0
Dallas County	5/29/2015	0	0	$32,700	$0
Dallas County	5/29/2015	1	0	$117,500	$0
Dallas County	5/29/2015	0	0	$26,100	$0
Town of Highland Park	6/9/2015	0	0	$39,100	$0
Dallas County	10/23/2015	0	0	$130,500	$0
Dallas County	10/30/2015	0	0	$1,400	$0
Dallas County	10/30/2015	0	0	$1,400	$0
City of Cockrell Hill	10/30/2015	0	0	$2,700	$0
Dallas County	10/31/2015	0	0	$13,100	$0
City of Rowlett	10/31/2015	0	0	$1,400	$0
City of Coppell	11/27/2015	1	0	$65,400	$0
City of Cedar Hill	12/26/2015	0	0	$65,700	$0
Town of Highland Park	7/5/2016	1	0	$19,400	$0
Town of Highland Park	9/7/2018	0	0	$12,300	$0
Dallas County	9/21/2018	0	0	$18,500	$0
Dallas County	9/21/2018	0	0	$123,000	$0
Dallas County	9/21/2018	0	0	$61,500	$0
City of Richardson	9/21/2018	0	0	$907,700	$0
Dallas County	9/22/2018	0	0	$12,300	$0
Dallas County	10/8/2018	0	0	$36,900	$0
Dallas County	4/23/2019	0	0	$60,800	$0
Dallas County	2/12/2020	0	0	$6,000	$0
Dallas County	6/20/2020	0	0	$60,200	$0
Dallas County	5/16/2021	0	0	$34,600	$0

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	5/16/2021	0	0	$34,600	$0
Dallas County	5/16/2021	0	0	$11,600	$0
City of Richardson	5/16/2021	0	0	$166,000	$0
City of Rowlett	5/16/2021	0	0	$3,500	$0
Dallas County	5/31/2021	0	0	$86,500	$0
Dallas County	6/6/2021	1	0	$0	$0
Dallas County	4/4/2022	0	0	$16,200	$0
Dallas County	8/22/2022	0	0	$52,389,700	$0
Dallas County	8/22/2022	0	0	$314,338,100	$0
Dallas County	8/22/2022	1	0	$21,000	$0
Dallas County	8/22/2022	0	0	$1,047,800	$0
Dallas County	8/22/2022	0	0	$104,800	$0
Dallas County	8/22/2022	0	0	$523,896,700	$0
City of Balch Springs	8/22/2022	0	0	$523,896,700	$0
Town of Highland Park	8/22/2022	0	0	$157,200	$0
City of Farmers Branch	10/4/2023	0	0	$50,500	$0
Dallas County	10/26/2023	0	0	$100,900	$0
Dallas County	10/27/2023	0	0	$75,700	$0
Dallas County	10/27/2023	0	0	$30,300	$0
Dallas County	5/28/2024	0	0	$20,000	$0
Dallas County	5/30/2024	0	0	$50,000	$0
Total Losses		**12**	**3**	**$1,503,275,400**	**$0**

Table 9-4. Summary of Historical Flood Events, January 1996 – May 2024[4]

JURISDICTION	NUMBER OF EVENTS	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	184	10	2	$948,667,900	$0
Town of Addison	1	0	0	$0	$0
City of Balch Springs	4	0	0	$523,906,900	$0
City of Carrollton	1	0	0	$0	$0
City of Cedar Hill	5	0	0	$65,700	$0
City of Cockrell Hill	3	0	0	$2,700	$0
City of Coppell	7	1	0	$561,100	$0
City of DeSoto	3	0	0	$45,100	$0
City of Duncanville	6	0	0	$4,500	$0
City of Farmers Branch	3	0	0	$57,800	$0
City of Glenn Heights	0	-	-	-	-
Town of Highland Park	10	1	0	$271,300	$0
City of Hutchins	1	0	0	$0	$0
City of Lancaster	5	0	0	$27,936,400	$0
City of Richardson	12	0	1	$1,246,900	$0
City of Rowlett	8	0	0	$220,500	$0
City of Sachse	6	0	0	$800	$0
City of Seagoville	2	0	0	$0	$0
Town of Sunnyvale	1	0	0	$287,800	$0
City of University Park	0	-	-	-	-
City of Wilmer	2	0	0	$0	$0
Total Losses	**264**	**12**	**3**	**$1,503,275,400**	

Based on the list of historical flood events for the Dallas County planning area and including all participating jurisdictions, 48 events have occurred since the 2020 Plan.

[4] Participating jurisdictions with no reported events show a "-" in table columns where damages, deaths or injuries would be otherwise reported.

SIGNIFICANT EVENTS

Flash Flood on July 28, 2004 – Dallas County and City of Lancaster

It was reported that more than 13 inches of rain fell in a 12 hour period, resulting in many flooded roads and highways that had to be shut down. Homes were evacuated, particularly in south Dallas, and there were over 80 high water rescues across the county during this event. In the City of Lancaster, an estimated 200 homes and several streets were flooded, people were stranded in cars, and numerous high water rescues were needed. The City's police station was also flooded. This event caused $4,915,500 (2024 dollars) in reported property damages for Dallas County and $27,854,000 (2024 dollars) in reported property damages for the City of Lancaster.

Flash Flood on June 11, 2009 – Dallas County

Severe thunderstorms in an unstable environment moved through north Texas on June 10, 2009. Training cells moved across the northern portions of the Metroplex and Dallas County resulting in significant flash flooding. Numerous water rescues were needed in the Metroplex. Additionally, power outages impacted an estimated 500,000 customers in the Metroplex. Dallas Fire and Rescue had conducted 48 water rescues, and the police had worked 200 traffic accidents due to weather. Two lightning strikes hit the Dallas pumping station causing the failure of one of the pumps that is responsible for parts of west Dallas. This failure exacerbated flooding that was already ongoing in Dallas. Some evacuations were performed in neighborhoods around Hampton Road and Canada Drive. The water was reported to be 3 feet deep near Fair Park in Dallas and 2 feet deep at Singleton Boulevard and Loop 12 on the west side of Dallas. Widespread street and creek flooding was reported around Irving and the river walk at Centennial Park was flooded. Several major highways had to be closed, and cars were reported to be stranded. Eight homes and one business were flooded in Mesquite. This event caused a total of $2,075,200 (2024 dollars) in reported damages for Dallas County, City of Coppell, Town of Highland Park, and the Town of Sunnyvale.

Flooding on May 24-30, 2015 – Dallas County

For several days, a stalled cold front combined with abundant moisture from the Gulf of Mexico combined to produce widespread rain and thunderstorms across Texas. Several rounds of strong to severe thunderstorms occurred over several days, producing flash flooding. By the end of the month, the region had essentially erased a four year drought in less than four weeks. Several area lakes were in surcharge capacity and releasing water downstream. Many areas across the county were flooded, cars were stranded, highways were shut down, and apartment buildings were flooded. Two deaths were reported during this time period. There is a total of $47,319,500 (2024 dollars) in reported property damages for Dallas County.

Flooding on August 22, 2022 – Dallas County

A slow-moving upper trough combined with a stalling front, and a large swath of tropical moisture, to produce record breaking rainfall across parts of North Texas late August 21, 2022, through August 22, 2022. Considerable flooding occurred across Dallas County after upwards of 15 inches of rain fell in some areas. Numerous roads, vehicles, homes, buildings and more were flooded and heavily damaged by this event. Damage assessments indicate over 800 buildings and homes were impacted by flood waters, and many were under insured. Preliminary reports indicated 27 destroyed buildings and nearly 300 with major damage. One fatality was reported during this event when a vehicle was swept off a road by a nearby creek. The NCEI and planning team reported damages for Dallas County, City of Balch Springs, City of Cedar Hill, City of DeSoto, City

of Duncanville, Town of Highland Park, City of Lancaster and the City of Richardson for this event. There is a total of $1,415,852,000 (2024 dollars) reported property damages for the planning area.

Figure 9-22. Water Rescue, City of Balch Springs, August 22, 2022[5]



PROBABILITY OF FUTURE EVENTS

Based on 264 recorded historical occurrences within a 28.5-year[6] reporting period within the Dallas County planning area, including all participating jurisdictions, flooding is considered "Highly Likely," meaning an event is probable within the next year.

VULNERABILITY AND IMPACT

A property's vulnerability to a flood depends on its location and proximity to the floodplain. Structures that lie along banks of a waterway are the most vulnerable and are often repetitive loss structures. Dallas County and all participating jurisdictions promote development outside of the floodplain. In terms of structures and infrastructure, the impacts from flooding are considered minor with critical facilities shut down for 24-hours or less and less then ten percent of property destroyed or with major damage. However, with twelve fatalities and three injuries, the impact from flooding is considered "Substantial" with multiple deaths possible, depending on the size and extent of the event.

[5] The Washington Post. At least one dead after Dallas area hit by 1-in-1,000-year flood. 2022. https://www.washingtonpost.com/nation/2022/08/22/dallas-texas-flash-floods/.
[6] Reporting period is rounded to the nearest half year.

Table 9-5 includes the comprehensive critical facilities identified in Appendix C that were considered the most important to the planning area that are subject to a range of impacts due to flooding and are located in the regulatory floodplain. For a comprehensive list of identified critical facilities by participating jurisdiction, please see Appendix C.

Table 9-5. Critical Facilities in the Floodplain by Participating Jurisdiction

CRITICAL FACILITY TYPES	CRITICAL FACILITIES AT RISK	POTENTIAL IMPACTS
Emergency Response Departments (EOC, Fire, Police, EMS), Hospitals	Dallas County: 3 Federal Government Facilities (Administration and Military) Town of Highland Park: 1 Fire Station, 1 Police Station	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Emergency vehicles can be damaged by rising flood waters. • Flood-related rescues may be necessary at swift and low water crossings or in flooded neighborhoods where roads have become impassable, placing first responders in harm's way. • Evacuations may be required for entire neighborhoods because of rising floodwaters, further taxing limited response capabilities and increasing sheltering needs for displaced residents. • Power outages could disrupt communications, delaying emergency response times. • Critical staff may be injured or otherwise unable to report for duty, limiting response capabilities. • Washed out roads and bridges can impede emergency response vehicle access to areas. • Increased number of structure fires due to gas line ruptures and downed power lines, further straining the capacity and resources of emergency personnel. • First responders are exposed to downed power lines, contaminated and unusual debris, hazardous materials, and generally unsafe conditions. • Extended power outages and evacuations may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.
Airport, Academic Institutions, Community Residential Facilities, Day Care Facilities, Evacuation Centers & Shelters, Governmental Facilities	Dallas County: 1 Municipal, 8 Schools City of Carrolton: 1 Municipal, 1 Transportation City of Cedar Hill: 1 School City of Coppell: 1 Residential	• Structures can be damaged by rising flood waters. • Power outages could disrupt critical care. • Backup power sources could be damaged, inundated or otherwise inoperable. • Critical staff may be impacted and unable to report for duty, limiting response capabilities. • Evacuations may be necessary due to extended power outages, gas line ruptures, or inundation of facilities. • Additional emergency responders and critical aid workers may not be able to reach the area for days. • Power outages and infrastructure damage may prevent larger airports from acting as temporary command

CRITICAL FACILITY TYPES	CRITICAL FACILITIES AT RISK	POTENTIAL IMPACTS
	(Vulnerable Populations) City of DeSoto: 1 Residential (Vulnerable Populations) City of Duncanville: 1 Evacuation Shelter City of Farmers Branch: 2 Schools Town of Highland Park: 1 Municipal City of Lancaster: 1 Community Facility, 1 Municipal, 1 School City of Richardson: 1 School/University	centers for logistics, communications, and emergency operations. • Temporary break in operations may significantly inhibit post event evacuations. • Damaged or destroyed highway infrastructure may substantially increase the need for airport operations.
Commercial Suppliers (food, gas, etc.)	N/A	• Facilities or infrastructure may be damaged, destroyed or otherwise inaccessible. • Essential supplies like medicines, water, food, and equipment deliveries may be significantly delayed.
Utility Services and Infrastructure (electric, water, wastewater, communications)	Dallas County: 1 Air Quality Monitoring, 1 Sewage and Water City of Balch Springs: 1 Sewage and Water City of Carrolton: 1 Dam, 5 Sewage and Water City of Cedar Hill: 1 Communication	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Emergency service vehicles can be damaged by rising flood waters. • Flood-related rescues may be necessary at swift and low water crossings or in flooded neighborhoods where roads have become impassable, placing emergency service workers in harm's way. • Increased number of structure fires due to gas line ruptures and downed power lines, further straining the capacity and resources of emergency personnel. • Service responders are exposed to downed power lines, contaminated and unusual debris, hazardous materials, and generally unsafe conditions.

CRITICAL FACILITY TYPES	CRITICAL FACILITIES AT RISK	POTENTIAL IMPACTS
	City of Farmers Branch: 1 Sanitation/Waste, 3 Sewage and Water Town of Highland Park: 2 Sewage and Water City of Lancaster: 1 Communication City of Richardson: 1 Sewage and Water City of Rowlett: 3 Sewage and Water City of Sachse: 1 Communication, 2 Sewage and Water City of Seagoville: 1 Sewage and Water Town of Sunnyvale: 1 Sewage and Water City of Wilmer: 2 Sewage and Water	• Extended power outages and evacuations may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.

Historic loss estimates due to flood are presented in Table 9-6 below. Considering 264 flood events over a 28.5-year period, frequency is approximately nine events every year.

Table 9-6. Average Annualized Losses by Jurisdiction, January 1996 – May 2024

JURISDICTION	TOTAL PROPERTY & CROP LOSS	AVERAGE ANNUAL LOSS ESTIMATES
Dallas County	$948,667,900	$33,286,600
Town of Addison	$0	$0
City of Balch Springs	$523,906,900	$18,382,700
City of Carrollton	$0	$0
City of Cedar Hill	$65,700	$2,300
City of Cockrell Hill	$2,700	$100
City of Coppell	$561,100	$19,700
City of DeSoto	$45,100	$1,600
City of Duncanville	$4,500	$200
City of Farmers Branch	$57,800	$2,000
City of Glenn Heights	-	-
Town of Highland Park	$271,300	$9,500
City of Hutchins	$0	$0
City of Lancaster	$27,936,400	$980,200
City of Richardson	$1,246,900	$43,800
City of Rowlett	$220,500	$7,700
City of Sachse	$800	$0
City of Seagoville	$0	$0
Town of Sunnyvale	$287,800	$10,100
City of University Park	-	-
City of Wilmer	$0	$0
TOTALS	**$1,503,275,400**	**$52,746,500**

While all citizens are at risk of the impacts of a flood, forced relocation and disaster recovery drastically impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. In addition, the elderly, children, and people with disabilities are also disproportionately affected by flooding events. This is due to factors like limited mobility, communication difficulties, medical needs, reliance on support services, transportation challenges, housing accessibility issues, and possible shortages in

emergency shelter accommodations. People who speak a language other than English may face increased vulnerability due to language barriers that limit their access to important information such as weather-related warnings and instructions regarding safety measures.

The population over 65 in the Dallas County planning area is estimated at 11 percent of the total population and children under the age of 5 are estimated at 7 percent. Individuals with a disability are estimated at 10 percent of the total population. In addition, an estimated 14 percent of the planning area population live below the poverty level and 17 percent of the populations speaks a language other than English.

Table 9-7. Populations at Greater Risk by Jurisdiction[7]

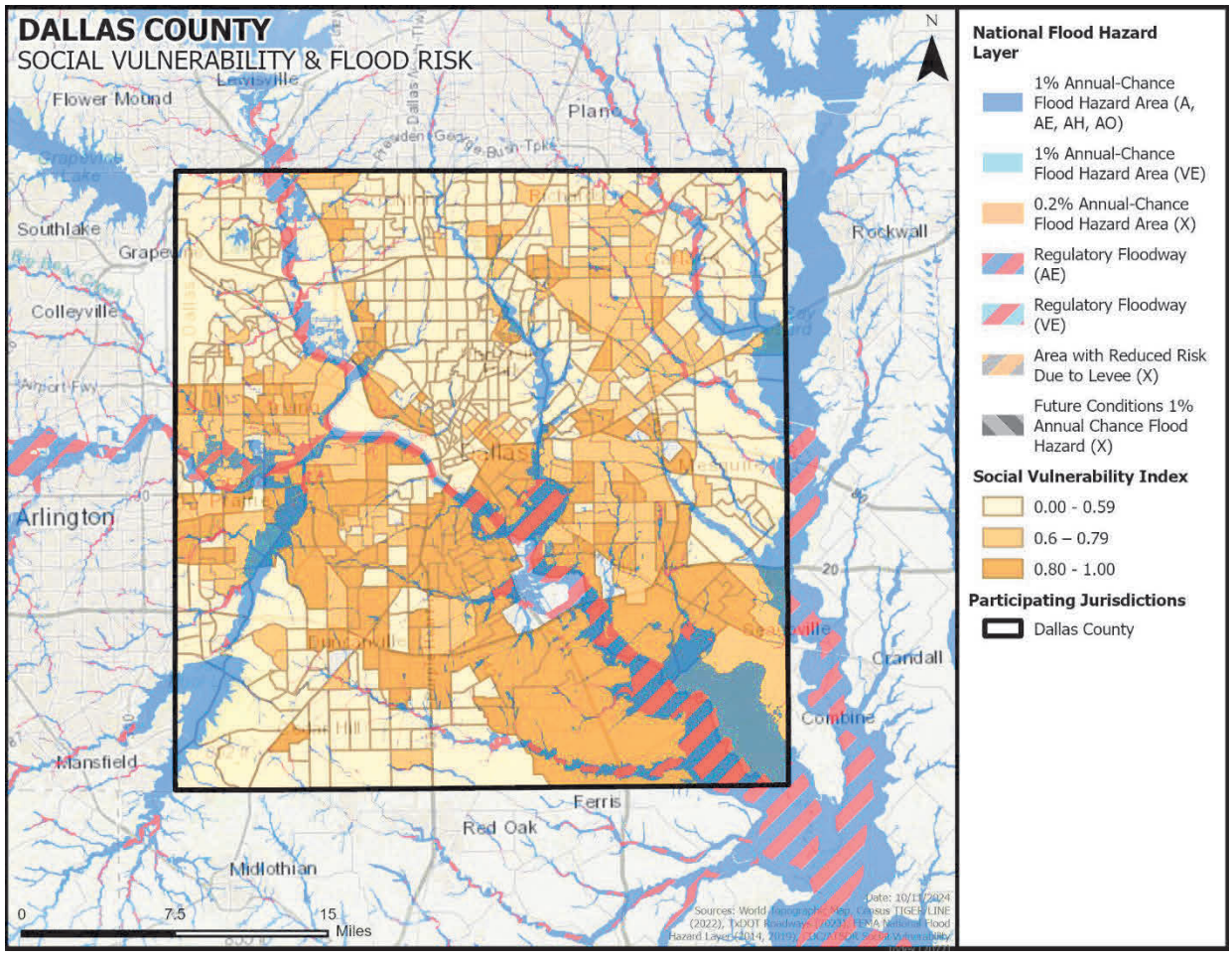
JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
Dallas County	290,461	182,349	264,190	364,567	440,684
Town of Addison	1,711	736	1,000	1,445	1,891
City of Balch Springs	2,659	2,008	3,721	3,116	5,512
City of Carrollton	17,122	6,820	10,950	8,995	19,892
City of Cedar Hill	5,384	2,867	5,750	4,776	3,866
City of Cockrell Hill	550	247	372	315	1,222
City of Coppell	4,206	2,656	2,367	1,105	2,899
City of DeSoto	8,490	3,030	7,477	4,582	2,805
City of Duncansville	6,485	2,387	4,802	4,069	4,951
City of Farmers Branch	4,336	2,094	2,573	3,167	6,473
City of Glenn Heights	1,206	902	2,383	1,677	854
Town of Highland Park	1,668	538	356	513	135
City of Hutchins	292	576	460	1,436	1,236
City of Lancaster	3,648	4,058	4,236	6,021	2,867
City of Richardson	14,931	7,510	9,972	12,751	11,935
City of Rowlett	7,416	3,890	6,004	4,684	4,152
City of Sachse	3,515	1,321	2,823	557	2,615

[7] U.S. Census Bureau Five-Year estimates

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
City of Seagoville	2,252	1,617	2,116	2,631	3,730
Town of Sunnyvale	1,146	275	732	567	243
City of University Park	2,228	1,451	844	1,209	286
City of Wilmer	673	581	712	961	976

The Center for Disease Control (CDC) created a Social Vulnerability Index (SVI) which includes a database and mapping application that identifies and quantifies communities experiencing social vulnerability. The current CDC SVI uses 16 U.S. census variables from the 5-year American Community Survey (ACS) to identify communities that may need support before, during, or after disasters. All 16 variables fall under four broad categories including socioeconomic status (population in poverty, unemployment, etc.), household characteristics (age, disability status, etc.), racial and ethnic minority status, and housing type and transportation (mobile homes, no vehicles, etc.). Populations experiencing social vulnerability may be adversely impacted by natural hazards, disasters, and other community-level stressors. Figure 9-23 identifies areas of social vulnerability using the CDC's SVI and where these areas overlap with the Dallas County flood hazard areas.

Figure 9-23. Dallas County Social Vulnerability and Flood Hazard Areas



ASSESSMENT OF IMPACTS

Flooding is the deadliest natural disaster that occurs in the U.S. each year, and it poses a constant and significant threat to the health and safety of the people in the Dallas County planning area. Impacts to the planning area can include:

- Flood-related rescues may be necessary at swift water and low water crossings or in flooded neighborhoods where roads have become impassable, placing first responders in harm's way.
- Evacuations may be required for entire neighborhoods because of rising floodwaters, further taxing limited response capabilities and increasing sheltering needs for displaced residents.
- Health risks and threats to residents are elevated after the flood waters have receded due to contaminated flood waters (untreated sewage and hazardous chemicals) and mold growth typical in flooded buildings and homes.
- Significant flood events often result in widespread power outages, increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.

- Extended power outages can result in an increase in structure fires and/or carbon monoxide poisoning, as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- Floods can destroy or make residential structures uninhabitable, requiring shelter or relocation of residents in the aftermath of the event.
- First responders are exposed to downed power lines, contaminated and potentially unstable debris, hazardous materials, and generally unsafe conditions, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.
- Emergency operations and services may be significantly impacted due to damaged facilities.
- Significant flooding can result in the inability of emergency response vehicles to access areas of the community.
- Critical staff may suffer personal losses or otherwise be impacted by a flood event and be unable to report for duty, limiting response capabilities.
- City or county departments may be flooded, delaying response and recovery efforts for the entire community.
- Private sector entities that the planning area and its residents rely on, such as utility providers, financial institutions, and medical care providers, may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Damage to infrastructure may slow economic recovery since repairs may be extensive and lengthy.
- Some businesses not directly damaged by the flood may be negatively impacted while utilities are being restored or water recedes, further slowing economic recovery.
- When the community is affected by significant property damage it is anticipated that funding would be required for infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, as well as normal day-to-day operating expenses.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Residential structures substantially damaged by a flood may not be rebuilt for years and uninsured or underinsured residential structures may never be rebuilt, reducing the tax base for the community.
- Large floods may result in a dramatic population fluctuation, as people are unable to return to their homes or jobs and must seek shelter and/or work outside of the affected area.
- Businesses that are uninsured or underinsured may have difficulty reopening, which results in a net loss of jobs for the community and a potential increase in the unemployment rate.
- Recreation activities may be unavailable, and tourism can be unappealing for years following a large flood event, devastating directly related local businesses and negatively impacting economic recovery.
- Flooding may cause significant disruptions of clean water and sewer services, elevating health risks and delaying recovery efforts.
- The psychosocial effects on flood victims and their families can traumatize them for long periods of time, creating long term increases in medical treatment and services.

- Extensive or repetitive flooding can lead to decreases in property value for the affected community.
- Flood poses a potential catastrophic risk to annual and perennial crop production and overall crop quality, leading to higher food costs.
- Flood related declines in production may lead to an increase in unemployment.
- Large floods may result in loss of livestock, potential increased livestock mortality due to stress and water borne disease, and increased cost for feed.

The overall extent of damage caused by floods is dependent on the extent, depth, and duration of flooding, in addition to the velocities of flows in the flooded areas. The level of preparedness and pre-event planning done by the community, local businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a flood event.

CLIMATE CHANGE CONSIDERATIONS

River flooding in Texas is projected to have no substantial change through 2036. This is in large part due to the construction of dams and reservoirs for flood management in the 20th century. There is a mixture of historical trends categorized by season, with no one clear trend to project. In addition, meteorological drivers of river flooding (increased rainfall intensity, decreased soil moisture) are projected to have competing influences. On balance, if an increasing trend is present in river flooding, it will be at the most extreme flood events or in the wettest parts of the state where there is so much rainfall that a decrease in soil moisture would have little mitigating impact.[8]

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) PARTICIPATION

Flood insurance offered through the National Flood Insurance Program (NFIP) is the best way for home and business owners to protect themselves financially against the flood hazard. Dallas County and all participating jurisdictions in the planning area participate in the NFIP and are in good standing.

As an additional indicator of floodplain management responsibility, communities may choose to participate in FEMA's Community Rating System (CRS). This is an incentive-based program that allows communities to undertake flood mitigation activities that go beyond NFIP requirements. Currently, the City of Carrolton, City of Coppell, City of Duncanville, and City of Richardson participate in the CRS.

Dallas County, the Towns of Addison, Highland Park, and Sunnyvale, the Cities of Carrolton, Cedar Hill, Coppell, DeSoto, Duncanville, Farmers Branch, Hutchins, Richardson, Rowlett, Sachse, and Seagoville have all adopted higher regulatory standards. All remaining participating jurisdictions currently have in place standard flood damage prevention ordinances which include minimum NFIP standards for new construction and substantial Improvements of structures. All NFIP participants regulate development in the Special Flood Hazard Areas (SFHAs), where

[8] Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, Texas A&M University Office of the Texas State Climatologist, 2021 update.

identified. Each participating jurisdiction is considering adopting higher regulatory NFIP standards to limit or further regulate floodplain development.

The flood hazard areas throughout Dallas County are subject to periodic inundation. This may adversely affect public safety, resulting in loss of life and property, health and safety hazards, disruption of commerce and governmental services, and extraordinary public expenditures for flood protection and relief. Flood losses are created by the cumulative effect of obstructions in floodplains which cause an increase in flood heights and velocities, and by the occupancy of flood hazard areas by uses vulnerable to floods and hazardous to other lands because they are inadequately elevated, flood-proofed, or otherwise protected from flood damage. Mitigation actions are included to address flood maintenance issues as well, including routinely clearing debris from roadside ditches and bridges, and expanding drainage culverts and storm water structures to convey flood water more adequately.

It is the purpose of Dallas County and the participating jurisdictions to continue to promote public health, safety, and general welfare by minimizing public and private losses due to flood conditions in specific areas. All participating communities in the planning area are guided by their local Flood Damage Prevention Ordinance. These communities will continue to comply with NFIP requirements through their local permitting, inspection, and record-keeping requirements for new and substantially developed construction. Further, the NFIP program promotes sound development in floodplain areas and includes provisions designed to:

- Protect human life and health;
- Minimize expenditure of public money for costly flood control projects;
- Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- Minimize prolonged business interruptions;
- Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges located in floodplains;
- Help maintain a stable tax base by providing for the sound use and development of flood-prone areas in such a manner as to minimize future flood blight areas; and
- Ensure that potential buyers are notified that property is in a flood area.

In order to accomplish these tasks, Dallas County and participating NFIP jurisdictions seek to observe the following guidelines in order to achieve flood mitigation:

- Restrict or prohibit uses that are dangerous to health, safety, or property in times of flood, such as filling or dumping, that may cause excessive increases in flood heights or velocities;
- Require that uses vulnerable to floods, including facilities, which serve such uses, be protected against flood damage at the time of initial construction, as a method of reducing flood losses;
- Control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of floodwaters;
- Control filling, grading, dredging, and other development, which may increase flood damage; and
- Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.

NFIP COMPLIANCE AND MAINTENANCE

All NFIP participating jurisdictions have developed mitigation actions that relate to either NFIP maintenance or compliance. Compliance and maintenance actions can be found in Section 18.

Flooding was identified as a high-risk hazard during hazard ranking activities at the Risk Assessment Workshop by the majority of the planning team. As such, many of the mitigation actions were developed with flood mitigation in mind. Many of these flood actions address compliance with the NFIP and implementing flood awareness programs. All participating jurisdictions recognize the need and are working towards adopting higher NFIP regulatory standards to further minimize flood risk in their community. In addition, each jurisdiction is focusing on public flood awareness activities. This includes promoting the availability of flood insurance.

Each NFIP participating jurisdiction in this planning process has a designated floodplain administrator. All floodplain administrators in the planning area will continue to maintain compliance with the NFIP, including continued floodplain administration, zoning ordinances, and development regulation. The floodplain ordinance adopted by each participating jurisdiction outlines the minimum requirements for development in Special Flood Hazard Areas.

All participating jurisdictions have a permitting process in place and each local floodplain administrator is responsible for coordinating inspections of damaged homes located in the floodplain. Following a flood event, local officials inspect damaged homes to make a substantial damage determination. Substantially damaged homes must be brought into compliance. Similarly, proposed improvements to homes located in the floodplain are reviewed by local building officials to determine if a substantial improvement is proposed. The floodplain administrator oversees permitted repairs and improvements to ensure compliance during the rebuilding or improvement process.

REPETITIVE LOSS

The Flood Mitigation Assistance (FMA) Grant Program under FEMA provides federal funding to assist states and communities in implementing mitigation measures to reduce or eliminate the long-term risk of flood damage to buildings that are insured under the National Flood Insurance Program. The Texas Water Development Board (TWDB) administers the FMA grant program for the State of Texas. One of the goals of the FMA program is to reduce the burden of repetitive loss and severe repetitive loss properties on the NFIP through mitigation activities that significantly reduce or eliminate the threat of future flood damages.

Repetitive Loss properties are defined as structures that are:

- Any insurable building for which 2 or more claims of more than $1,000 each, paid by the National Flood Insurance Program (NFIP) within any 9-year period, since 1978;
- May or may not be currently insured under the NFIP.

Severe Repetitive Loss properties are defined as structures that are:

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

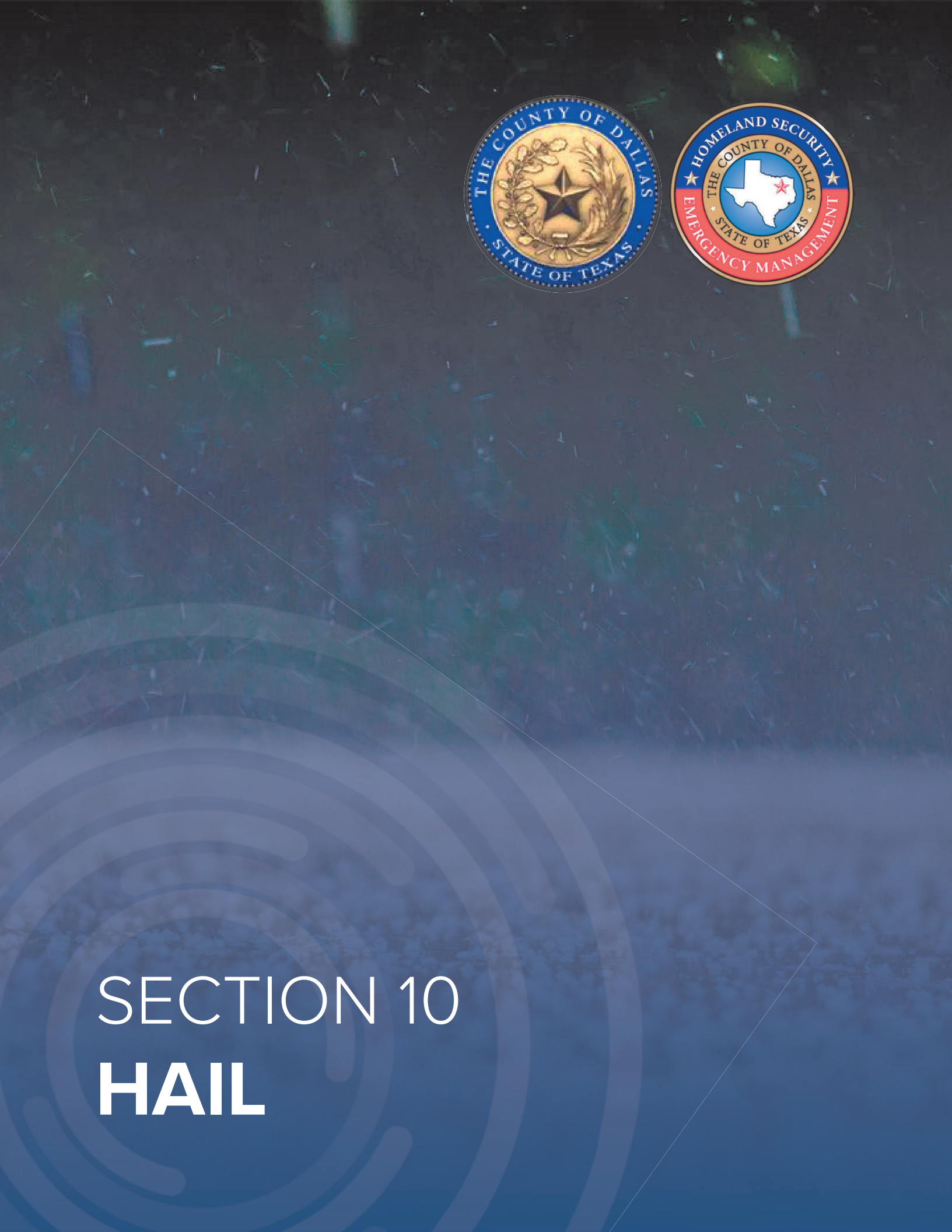
- At least 2 separate claim payments (building payments only) have been made, with the cumulative amount of the building portion of such claims exceeding the market value of the building.

In either scenario, at least 2 of the referenced claims must have occurred within any 9-year period and must be greater than 10 days apart.[9] Table 9-8 shows repetitive loss and severe repetitive loss properties for Dallas County. There are no repetitive loss properties reported for the following jurisdictions: Town of Addison, City of Cockrell Hill, City of Coppell, City of Hutchins, City of Richardson, City of Sachse, City of Seagoville, Town of Sunnyvale, City of University Park, and City of Wilmer.

Table 9-8. Repetitive Loss and Severe Repetitive Loss Properties

JURISDICTION	NUMBER OF STRUCTURES	NUMBER OF LOSSES
Dallas County	8	25
City of Balch Springs	22	76
City of Carrolton	6	17
City of Cedar Hill	1	2
City of DeSoto	10	26
City of Duncanville	8	21
City of Farmers Branch	13	110
City of Glenn Heights	1	4
Town of Highland Park	4	31
City of Lancaster	16	59
City of Rowlett	1	3

[9] Source: Texas Water Development Board.



SECTION 10
HAIL

SECTION 10: HAIL

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HAZARD DESCRIPTION



Hailstorm events are a potentially damaging outgrowth of severe thunderstorms. During the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to the rapid rising of warm air into the upper atmosphere, and the subsequent cooling of the air mass. Frozen droplets gradually accumulate into ice crystals until they fall as precipitation that is round or irregularly shaped masses of ice typically greater than 0.75 inches in diameter. The size of hailstones is a direct result of the size and severity of the storm. High velocity updraft winds are required to keep hail in suspension in thunderclouds. The strength of the updraft is a by-product of heating on the Earth's surface. Higher temperature gradients above Earth's surface result in increased suspension time and hailstone size.

According to the National Insurance Crime Bureau (NICB), between 2018 and 2020 the State of Texas had the greatest number of hail loss claims in the U.S. with 605,866 loss claims (23 percent of total hail claims in the U.S.) due to hail events. In this two-year period Texas experienced a total of 584 severe hail days. Five of the top ten cities for hail loss claims between 2017 and 2019 were in Texas, three of which were in the Dallas-Fort Worth metropolitan area.[1]

In 2021, 6.8 million properties in the U.S. experienced one or more damaging hail events, resulting in a total of $16.5 billion in insured losses. Texas had the highest number of properties affected by hail with over 1.5 million properties or 17 percent of total properties in the state affected; an increase of 80,000 properties affected between 2020 and 2021. Texas hailstorms accounted for almost a quarter of total U.S. properties affected by hail in 2021.

LOCATION

Hailstorms are an extension of severe thunderstorms that could potentially cause severe damage. As a result, they are not confined to any specific geographic location and can vary greatly in size, location, intensity, and duration. Therefore, the entire Dallas County planning area, including all

[1] Manasek, Thomas, "2018-2020 United States Hail Loss Claims and Questionable Claims" (National Insurance Crime Bureau, March 15, 2021). http://www.rmiia.org/downloads/PUBLIC%202018%20-%202020%20Hail%20foreCAST-%20TJM.pdf

participating jurisdictions, is equally at risk to the hazard of hail. Refer to Figure 10-1 for the location of past hail events in the planning area.

EXTENT

The National Weather Service (NWS) classifies a storm as "severe" if there is hail three-quarters of an inch in diameter (approximately the size of a penny) or greater, based on radar intensity or as seen by observers. The intensity category of a hailstorm depends on hail size and the potential damage it could cause, as depicted in the National Centers for Environmental Information (NCEI) Intensity Scale in Table 10-1.

Table 10-1. Hail Intensity and Magnitude[2]

SIZE CODE	INTENSITY CATEGORY	SIZE (diameter inches)	DESCRIPTIVE TERM	TYPICAL DAMAGE
H0	Hard Hail	Up to 0.33	Pea	No damage
H1	Potentially Damaging	0.33 – 0.60	Marble	Slight damage to plants and crops
H2	Potentially Damaging	0.60 – 0.80	Dime	Significant damage to plants and crops
H3	Severe	0.80 – 1.20	Nickel	Severe damage to plants and crops
H4	Severe	1.2 – 1.6	Quarter	Widespread glass and auto damage
H5	Destructive	1.6 – 2.0	Half Dollar	Widespread destruction of glass, roofs, and risk of injuries
H6	Destructive	2.0 – 2.4	Ping Pong Ball	Aircraft bodywork dented and brick walls pitted
H7	Very Destructive	2.4 – 3.0	Golf Ball	Severe roof damage and risk of serious injuries
H8	Very Destructive	3.0 – 3.5	Hen Egg	Severe damage to all structures
H9	Super Hailstorms	3.5 – 4.0	Tennis Ball	Extensive structural damage, could cause fatal injuries
H10	Super Hailstorms	4.0 +	Baseball	Extensive structural damage, could cause fatal injuries

The intensity scale in Table 10-1 ranges from H0 to H10, with increments of intensity or damage potential in relation to hail size (distribution and maximum), texture, fall speed, speed of storm translation, and strength of the accompanying wind. Based on the best available data regarding the previous occurrences for the area, the Dallas County planning area may experience

[2] NCEI Intensity Scale, based on the TORRO Hailstorm Intensity Scale.

hailstorms ranging from an H0 (pea size) to an H10 (baseball size). The largest size hail to be reported was 4.5 inches in diameter, or a H10, which is considered a very destructive super hailstorm that can cause severe damage to structures. An event of this magnitude occurred on April 12, 1986. This is likely the greatest extent the planning area can anticipate in the future. Refer to the Historical Occurrences section below for more details on significant previous events.

HISTORICAL OCCURRENCES

Historical evidence shown in Figure 10-1 demonstrates that the planning area is vulnerable to hail events overall. Historical events with reported damages, injuries, or fatalities are shown in Table 10-2. A total of 798 reported historical hail events impacted the Dallas County planning area between January 1955 and May 2024; these events were reported to NCEI and NOAA databases and may not represent all hail events to have occurred during this reporting period. Only those events for the Dallas County planning area with latitude and longitude available were plotted (Figure 10-1).

Figure 10-1. Spatial Historical Hail Events, January 1955 – May 2024

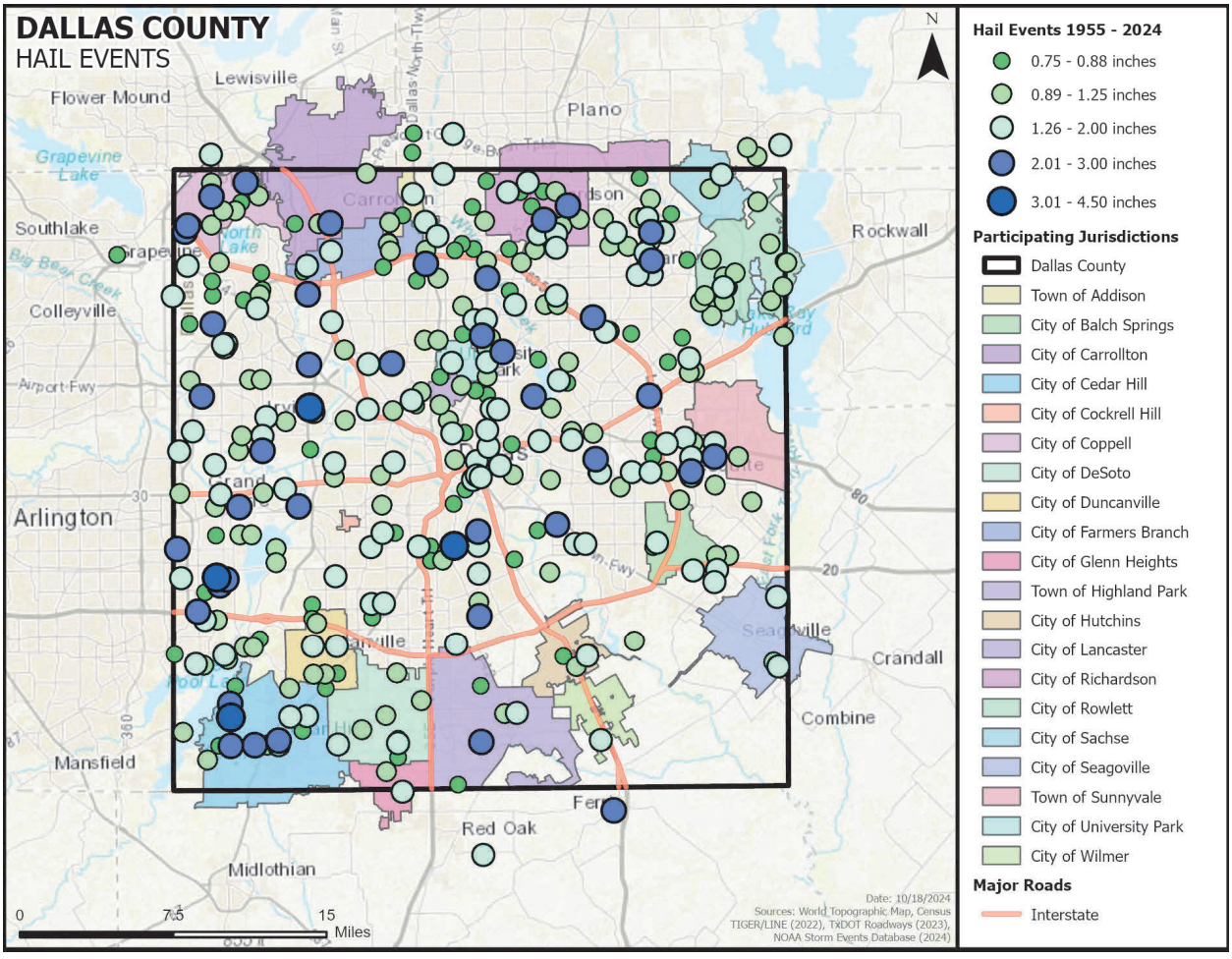


Table 10-2. Damaging Historical Hail Events, January 1955 – May 2024[3]

JURISDICTION	DATE	MAGNITUDE (inches)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	10/2/1993	1.75	0	0	$106,500	$0
Dallas County	3/25/1995	2	0	0	$40,994,200	$0
Dallas County	3/25/1995	2.75	0	0	$40,994,200	$0
Dallas County	3/25/1995	1.75	0	0	$20,497,100	$0
Dallas County	3/25/1995	1.75	0	0	$20,497,100	$0
Dallas County	3/25/1995	1.75	0	0	$20,497,100	$0
City of Duncanville	3/25/1995	1.75	0	0	$20,497,100	$0
Dallas County	2/25/2000	3.5	0	0	$36,552,000	$0
Dallas County	4/5/2003	1.75	0	0	$1,266,300	$0
Dallas County	4/13/2007	1.75	0	0	$15,100	$0
Dallas County	2/5/2008	1.75	0	0	$7,400	$0
Dallas County	2/5/2008	1.75	0	0	$7,400	$0
Town of Highland Park	7/8/2009	1.75	0	0	$14,500	$0
Dallas County	7/19/2009	1.75	0	0	$7,300	$0
City of Seagoville	5/17/2010	1.75	0	0	$28,500	$0
City of Cockrell Hill	5/20/2010	1.75	0	0	$14,300	$0
Dallas County	4/14/2011	1.75	0	0	$69,000	$0
Dallas County	4/14/2011	1.75	0	0	$69,000	$0
City of Sachse	4/14/2011	2	0	0	$41,400	$0
City of Farmers Branch	4/14/2011	1.5	0	0	$34,500	$0
Dallas County	4/30/2011	1.75	0	0	$20,700	$0
Dallas County	4/30/2011	1.25	0	0	$5,600	$0
Dallas County	5/1/2011	2	0	0	$20,700	$0
Dallas County	5/1/2011	1.75	0	0	$20,700	$0
Dallas County	5/24/2011	4.25	0	0	$412,100	$0

[3] Only recorded events with damages or injuries are listed. Monetary damage amounts have been inflated to reflect their 2024 value.

SECTION 10: HAIL

JURISDICTION	DATE	MAGNITUDE (inches)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of University Park	5/24/2011	2.75	0	0	$412,100	$0
Dallas County	5/24/2011	1.75	0	0	$206,100	$0
City of Coppell	5/24/2011	1.75	0	0	$41,300	$0
City of Farmers Branch	5/24/2011	1.75	0	0	$41,300	$0
Dallas County	5/24/2011	1.75	0	0	$27,500	$0
Dallas County	5/24/2011	2	0	0	$27,500	$0
Dallas County	5/24/2011	1.5	0	0	$11,000	$0
Dallas County	9/18/2011	2	0	0	$20,600	$0
Dallas County	9/18/2011	1.75	0	0	$13,700	$0
Dallas County	10/23/2011	1	0	0	$5,500	$0
Dallas County	4/3/2012	2.75	0	0	$9,441,300	$0
City of Coppell	4/3/2012	2.75	0	0	$9,441,300	$0
City of Coppell	4/3/2012	3	0	0	$6,743,800	$0
City of Coppell	4/3/2012	2.5	0	0	$2,023,200	$0
Dallas County	4/3/2012	1.75	0	0	$809,300	$0
Dallas County	4/3/2012	1.5	0	0	$404,700	$0
Dallas County	4/3/2012	1.5	0	0	$16,200	$0
City of Coppell	4/3/2012	1	0	0	$13,500	$0
Town of Highland Park	6/13/2012	2.75	0	0	$1,217,081,400	$0
Town of Highland Park	6/13/2012	1.5	0	0	$270,462,600	$0
City of University Park	6/13/2012	2.75	0	0	$4,057,000	$0
Dallas County	6/13/2012	1.5	0	0	$3,380,800	$0
Dallas County	6/13/2012	2.75	0	0	$2,704,700	$0
Dallas County	6/13/2012	2.5	0	0	$1,893,300	$0
Dallas County	6/13/2012	1.75	0	0	$1,622,800	$0
City of Duncanville	6/13/2012	2	0	0	$1,622,800	$0
City of University Park	6/13/2012	1.75	0	0	$1,622,800	$0
Dallas County	6/13/2012	1.75	0	1	$1,352,400	$0

SECTION 10: HAIL

JURISDICTION	DATE	MAGNITUDE (inches)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	6/13/2012	1.5	0	0	$1,352,400	$0
Dallas County	6/13/2012	2.5	0	0	$1,352,400	$0
Dallas County	6/13/2012	2.5	0	0	$1,217,100	$0
Dallas County	6/13/2012	3	0	0	$1,081,900	$0
Dallas County	6/13/2012	3	0	0	$1,081,900	$0
Dallas County	6/13/2012	1.75	0	0	$811,400	$0
Dallas County	6/13/2012	2.75	0	0	$676,200	$0
Dallas County	6/13/2012	1.75	0	0	$541,000	$0
Dallas County	6/13/2012	1.75	0	0	$405,700	$0
Dallas County	6/13/2012	2	0	0	$270,500	$0
Dallas County	6/13/2012	3	0	0	$162,300	$0
Dallas County	6/13/2012	1.5	0	0	$162,300	$0
Dallas County	6/13/2012	1.75	0	0	$135,300	$0
Dallas County	6/13/2012	2	0	0	$121,800	$0
Town of Addison	6/13/2012	2	0	0	$101,500	$0
Dallas County	6/13/2012	1.5	0	0	$81,200	$0
Dallas County	6/13/2012	1	0	0	$67,700	$0
Dallas County	6/13/2012	1	0	0	$13,600	$0
City of Richardson	6/13/2012	1	0	0	$13,600	$0
Dallas County	6/13/2012	2.75	0	0	$1,700	$0
Dallas County	3/9/2013	1.25	0	0	$4,000	$0
Dallas County	3/9/2013	1.25	0	0	$4,000	$0
Dallas County	5/12/2014	1.75	0	0	$19,600	$0
City of Richardson	4/21/2017	2	0	0	$253,900	$0
Town of Addison	4/21/2017	1.75	0	0	$101,600	$0
City of Richardson	4/21/2017	2	0	0	$2,600	$0
City of Richardson	4/21/2017	1	0	0	$1,300	$0
City of Cedar Hill	4/26/2017	2	0	0	$127,000	$0

SECTION 10: HAIL

JURISDICTION	DATE	MAGNITUDE (inches)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	6/2/2017	2.5	0	0	$63,400	$0
City of Rowlett	4/6/2018	1.75	0	0	$12,400	$0
City of Coppell	6/6/2018	3	0	0	$369,500	$0
City of Carrollton	6/6/2018	3	0	0	$307,900	$0
Dallas County	6/6/2018	1.75	0	0	$61,600	$0
City of Coppell	6/6/2018	2.75	0	0	$61,600	$0
City of Balch Springs	6/1/2019	1.75	0	0	$12,200	$0
Dallas County	6/1/2019	1.5	0	0	$1,300	$0
Dallas County	4/9/2021	2	0	0	$174,400	$0
City of Cockrell Hill	4/9/2021	2	0	0	$174,400	$0
City of Cedar Hill	6/12/2023	4	0	0	$1,017,100	$0
City of Cedar Hill	6/12/2023	2.75	0	0	$254,300	$0
Dallas County	6/12/2023	2	0	0	$203,500	$0
City of Cedar Hill	6/12/2023	2.5	0	0	$203,500	$0
City of Balch Springs	6/12/2023	2	0	0	$101,800	$0
City of Cedar Hill	6/12/2023	2	0	0	$101,800	$0
City of Cedar Hill	6/12/2023	2	0	0	$101,800	$0
Dallas County	6/13/2023	1.75	0	0	$7,200	$0
Dallas County	6/13/2023	1.75	0	0	$5,100	$0
Dallas County	9/24/2023	2.25	0	0	$151,300	$0
City of Richardson	9/24/2023	2.25	0	0	$100,900	$0
Dallas County	9/24/2023	2	0	0	$50,500	$0
City of Richardson	9/24/2023	2	0	0	$50,500	$0
Dallas County	9/24/2023	1.75	0	0	$15,200	$0
City of Richardson	9/24/2023	1.75	0	0	$15,200	$0
City of Richardson	9/24/2023	1.5	0	0	$3,100	$0
Dallas County	5/27/2024	1.75	0	0	$100,000	$0
City of Cockrell Hill	5/27/2024	1.75	0	0	$100,000	$0

JURISDICTION	DATE	MAGNITUDE (inches)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Hutchins	5/27/2024	2	0	0	$100,000	$0
Dallas County	5/27/2024	1.75	0	0	$8,000	$0
TOTALS		**(Max Extent)**	**0**	**1**	**$1,752,285,300**	**$0**

Table 10-3. Historical Hail Events Summary, January 1955 – May 2024

JURISDICTION	NUMBER of EVENTS	MAX MAGNITUDE (inches)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	542	4.5	0	1	$214,402,400	$0
Town of Addison	17	2	0	0	$203,100	$0
City of Balch Springs	5	2	0	0	$114,000	$0
City of Carrollton	5	3	0	0	$307,900	$0
City of Cedar Hill	31	4	0	0	$1,805,500	$0
City of Cockrell Hill	7	2	0	0	$288,700	$0
City of Coppell	29	3	0	0	$18,694,200	$0
City of DeSoto	16	2	0	0	$0	$0
City of Duncanville	22	2	0	0	$22,119,900	$0
City of Farmers Branch	12	1.75	0	0	$75,800	$0
City of Glenn Heights	0	-	-	-	-	-
Town of Highland Park	14	2.75	0	0	$1,487,558,500	$0
City of Hutchins	5	2	0	0	$100,000	$0
City of Lancaster	11	2	0	0	$0	$0
City of Richardson	35	2.25	0	0	$441,100	$0
City of Rowlett	16	1.75	0	0	$12,400	$0
City of Sachse	11	2	0	0	$41,400	$0
City of Seagoville	9	2.75	0	0	$28,500	$0
Town of Sunnyvale	1	1	0	0	$0	$0
City of University Park	8	2.75	0	0	$6,091,900	$0
City of Wilmer	2	1	0	0	$0	$0
TOTAL LOSSES	**798**	**(Max Extent)**	**0**	**1**	**1,752,285,300**	**$0**

Based on the list of historical hail events for the Dallas County planning area (listed above), 130 of the events have occurred since 2020 Plan according to reports in the NCEI database. Dallas County, which includes unincorporated areas and non-participating jurisdictions, has had the greatest number of events (542) over the reporting period followed by City of Richardson (35). The most significant event in relation to damages occurred on June 13, 2012, with over $1.5 billion in total damages (2024 dollars) across multiple jurisdictions throughout the planning area.

SIGNIFICANT EVENTS

March 25, 1995 – Dallas County and City of Duncanville

Between 5pm and 6pm, a hailstorm producing hail between 1.75 and 2.75 inches impacted the City of Duncanville and areas throughout the Dallas County planning area. The large hail from this event caused broken windows and damage to homes, businesses, and automobiles. Six separate event reports were made for this hail event, which estimated totals of $20,497,100 (2024 dollars) in damages for the City of Duncanville as well as $143,479,700 (2024 dollars) in property damage for the rest of Dallas County.

April 3, 2012 – Dallas County and City of Coppell

A historic storm system brought large hail, among other events such as tornadoes and high winds, to North Texas, causing damage across the Dallas-Fort Worth Metroplex including the Dallas County planning area. Hail in the planning area ranged from 1 to 3 inches in diameter, with the largest recorded hail being in the City of Coppell. Approximately 110 airplanes at DFW International Airport suffered hail damage and had to be taken out of service until repaired. Other impacts included damage to automobiles, homes, and businesses. In total, nine event reports were made for this hailstorm, four for the City of Coppell and five for other areas within Dallas County. These reports estimated $18,221,800 (2024 dollars) in property damage in the City of Coppell and $10,671,500 (2024 dollars) in property damage elsewhere in Dallas County.

June 13, 2012 – Dallas County, Town of Addison, and Cities of Richardson, University Park, and Highland Park

Four supercell storms produced a record-setting hail event affecting North Texas, including Dallas County and numerous participating jurisdictions. Many areas saw hail as big as 3 inches in diameter which caused significant damage across the planning area. Impacts included holes being torn through roofs, home and vehicle windows being smashed out, tree limbs and leaves being shredded from trees, and major damage to a golf course. A greenhouse attached to a home on Mercedes Avenue in the Town of Highland Park was destroyed. One injury was also reported in Dallas County, where a woman suffered a head injury after hail broke through the sunroof of her car and struck her. More than 30 event reports were made for this hail event, which estimated a total of $1,515,452,100 (2024 dollars) in property damage across the Dallas County planning area.

May 27, 2024 – Dallas County, City of Hutchins, and City of Cockrell Hill

A pair of isolated thunderstorms developed across the Dallas-Fort Worth Metroplex along a stationary front which was draped across the area on the evening of May 27. These storms quickly became severe, producing damaging 1-to-2-inch hail across much of the planning area, with some reports stating the largest hail was as big as 3.25 inches. Reports estimated $100,000 in property damage in both the City of Hutchins and City of Cockrell Hill, as well as $108,000 in property damage elsewhere in Dallas County.

PROBABILITY OF FUTURE EVENTS

Based on available records of historic events, 798 events in a 69.5-year[4] reporting period for Dallas County provides an average annual occurrence of 11 to 12 events per year. This frequency supports a "Highly Likely" probability of future events for the Dallas County planning area, including participating jurisdictions, with multiple events probable within the next year.

VULNERABILITY AND IMPACT

Much of the damage inflicted by hail is to crops. Even relatively small hail can shred plants to ribbons in a matter of minutes. Vehicles, roofs of buildings and homes, and landscaping are most damaged by hail. Utility systems on roofs of buildings and critical facilities would be vulnerable and could be damaged. Hail could cause a significant threat to people, as they could be struck by hail and falling trees and branches. Outdoor activities and events may elevate the risk to residents and visitors when a hailstorm strikes with little warning. Portable buildings typically utilized by schools and commercial sites such as construction areas would be more vulnerable to hail events than the typical site-built structures.

The Dallas County planning area features mobile or manufactured home parks throughout the planning area. These parks are typically more vulnerable to hail events than typical site-built structures. In addition, manufactured homes are located sporadically throughout the planning area including most participating jurisdictions which would also be more vulnerable (Table 10-4). The U.S. Census data indicates a total of 16,390 (2 percent of total housing stock) manufactured homes located in the Dallas County planning area. In addition, 47 percent (approximately 492,078) structures) of the housing structures in the Dallas County planning area were built before 1980. These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damage during significant wind events.

Table 10-4. Structures at Greater Risk by Participating Jurisdiction[5]

JURISDICTION	TOTAL HOUSING UNITS	BUILT PRIOR TO 1980	MOBILE HOME
Dallas County	1,040,669	492,078	16,390
Town of Addison	10,576	1,549	0
City of Balch Springs	8,865	3,734	389
City of Carrollton	52,646	14,956	137
City of Cedar Hill	16,662	2,149	73
City of Cockrell Hill	1,285	1,146	25
City of Coppell	16,006	1,119	233
City of DeSoto	21,593	4,124	495

[4] Reporting period is rounded to the nearest half year.
[5] The Housing Inventory and Vulnerable Structures are based off the 2022 American Community Survey 5-Year Estimates Data Profiles.

JURISDICTION	TOTAL HOUSING UNITS	BUILT PRIOR TO 1980	MOBILE HOME
City of Duncanville	14,632	8,681	26
City of Farmers Branch	16,313	7,337	27
City of Glenn Heights	5,350	549	749
Town of Highland Park	3,696	2,006	0
City of Hutchins	1,399	463	355
City of Lancaster	14,865	4,723	243
City of Richardson	47,777	21,448	0
City of Rowlett	22,102	2,539	392
City of Sachse	9,758	393	170
City of Seagoville	5,603	1,716	579
City of Sunnyvale	2,694	228	0
City of University Park	7,799	3,088	6
City of Wilmer	1,870	490	812

While all citizens are at risk of the impacts of hail, forced relocation and disaster recovery drastically impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. An estimated 14 percent of the planning area population live below the poverty level (Table 10-5). While warning times for this type of hazard events should be substantial enough for these individuals to seek shelter, the elderly, children, and people with a disability may have trouble taking shelter due to mobility issues or a lack of awareness, making them more susceptible to injury or harm. In addition, people who speak a language other than English may face increased vulnerability due to language barriers that limit their access to important information such as weather-related warnings and instructions regarding safety measures.

Table 10-5. Populations at Greater Risk by Jurisdiction[6]

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
Dallas County	290,461	182,349	264,190	364,567	440,684
Town of Addison	1,711	736	1,000	1,445	1,891
City of Balch Springs	2,659	2,008	3,721	3,116	5,512

[6] US Census Bureau 2022 data for Dallas County

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
City of Carrollton	17,122	6,820	10,950	8,995	19,892
City of Cedar Hill	5,384	2,867	5,750	4,776	3,866
City of Cockrell Hill	550	247	372	315	1,222
City of Coppell	4,206	2,656	2,367	1,105	2,899
City of DeSoto	8,490	3,030	7,477	4,582	2,805
City of Duncansville	6,485	2,387	4,802	4,069	4,951
City of Farmers Branch	4,336	2,094	2,573	3,167	6,473
City of Glenn Heights	1,206	902	2,383	1,677	854
Town of Highland Park	1,668	538	356	513	135
City of Hutchins	292	576	460	1,436	1,236
City of Lancaster	3,648	4,058	4,236	6,021	2,867
City of Richardson	14,931	7,510	9,972	12,751	11,935
City of Rowlett	7,416	3,890	6,004	4,684	4,152
City of Sachse	3,515	1,321	2,823	557	2,615
City of Seagoville	2,252	1,617	2,116	2,631	3,730
Town of Sunnyvale	1,146	275	732	567	243
City of University Park	2,228	1,451	844	1,209	286
City of Wilmer	673	581	712	961	976

The Dallas County Planning Team identified the following critical facilities (Table 10-6) as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by hail events. For a comprehensive list by participating jurisdiction, please see Appendix C.

Table 10-6. Critical Facilities Vulnerable to Hail

CRITICAL FACILITY TYPE	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police,	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Emergency vehicles can be damaged by hailstones.

CRITICAL FACILITY TYPE	POTENTIAL IMPACTS
EMS), Hospitals and Medical Centers	• Power outages could disrupt communications, delaying emergency response times. • Accumulated hail on the streets may impede emergency response vehicle access to areas. • Extended power outages and evacuations may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities	• Structures can be damaged by hailstones. • Power outages could disrupt critical care. • Backup power sources could be damaged. • Evacuations may be necessary due to extended power outages, gas line ruptures, or structural damage to facilities. • Power outages and infrastructure damage may prevent larger airports from acting as temporary command centers for logistics, communications, and emergency operations. • Temporary break in operations may significantly inhibit post event evacuations. • Damaged or destroyed highway infrastructure may substantially increase the need for airport operations.
Commercial Supplier (Food, fuel, etc.)	• Facilities or infrastructure may be damaged, destroyed or otherwise inaccessible. • Essential supplies like medicines, water, food, and equipment deliveries may be significantly delayed.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Power outages could disrupt communications, delaying emergency response times. • Accumulated hail on the streets may impede service response vehicle access to areas. • Extended power outages and evacuations may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.

Hail has been known to cause injury to humans and occasionally has been fatal; one injury due to hail has been reported in Dallas County. Overall, the total loss estimate of property in the planning area is $1,752,285,300 (2024 dollars) with an average annualized loss of $25,212,700. Based on historic loss and damages, the impact of hail damages on the Dallas County planning area, including participating jurisdictions, can be considered “Limited” severity of impact, meaning injuries and illnesses are treatable with first-aid, complete shutdown of critical facilities for 24-hours or less, and less than 10 percent of property destroyed or with major damage.

Table 10-7. Estimated Annualized Losses by Jurisdiction

JURISDICTION	TOTAL PROPERTY & CROP LOSS	AVERAGE ANNUAL LOSS ESTIMATES
Dallas County	$214,402,400	$3,084,900
Town of Addison	$203,100	$2,900

JURISDICTION	TOTAL PROPERTY & CROP LOSS	AVERAGE ANNUAL LOSS ESTIMATES
City of Balch Springs	$114,000	$1,600
City of Carrollton	$307,900	$4,400
City of Cedar Hill	$1,805,500	$26,000
City of Cockrell Hill	$288,700	$4,200
City of Coppell	$18,694,200	$269,000
City of DeSoto	$0	$0
City of Duncanville	$22,119,900	$318,300
City of Farmers Branch	$75,800	$1,100
City of Glenn Heights	$0	$0
Town of Highland Park	$1,487,558,500	$21,403,700
City of Hutchins	$100,000	$1,400
City of Lancaster	$0	$0
City of Richardson	$441,100	$6,300
City of Rowlett	$12,400	$200
City of Sachse	$41,400	$600
City of Seagoville	$28,500	$400
Town of Sunnyvale	$0	$0
City of University Park	$6,091,900	$87,700
City of Wilmer	$0	$0
TOTALS	**$1,752,285,300**	**$25,212,700**

ASSESSMENT OF IMPACTS

Hail events have the potential to pose a significant risk to people and can create dangerous situations Hail conditions can be frequently associated with a variety of impacts, including:

- Hail may create hazardous road conditions during and immediately following an event, potentially delaying critical staff from reporting for duty as well as delaying first responders from providing for or preserving public health and safety.
- Individuals and first responders who are exposed to the storm may be struck by hail, falling branches, or downed trees resulting in injuries or possible fatalities.

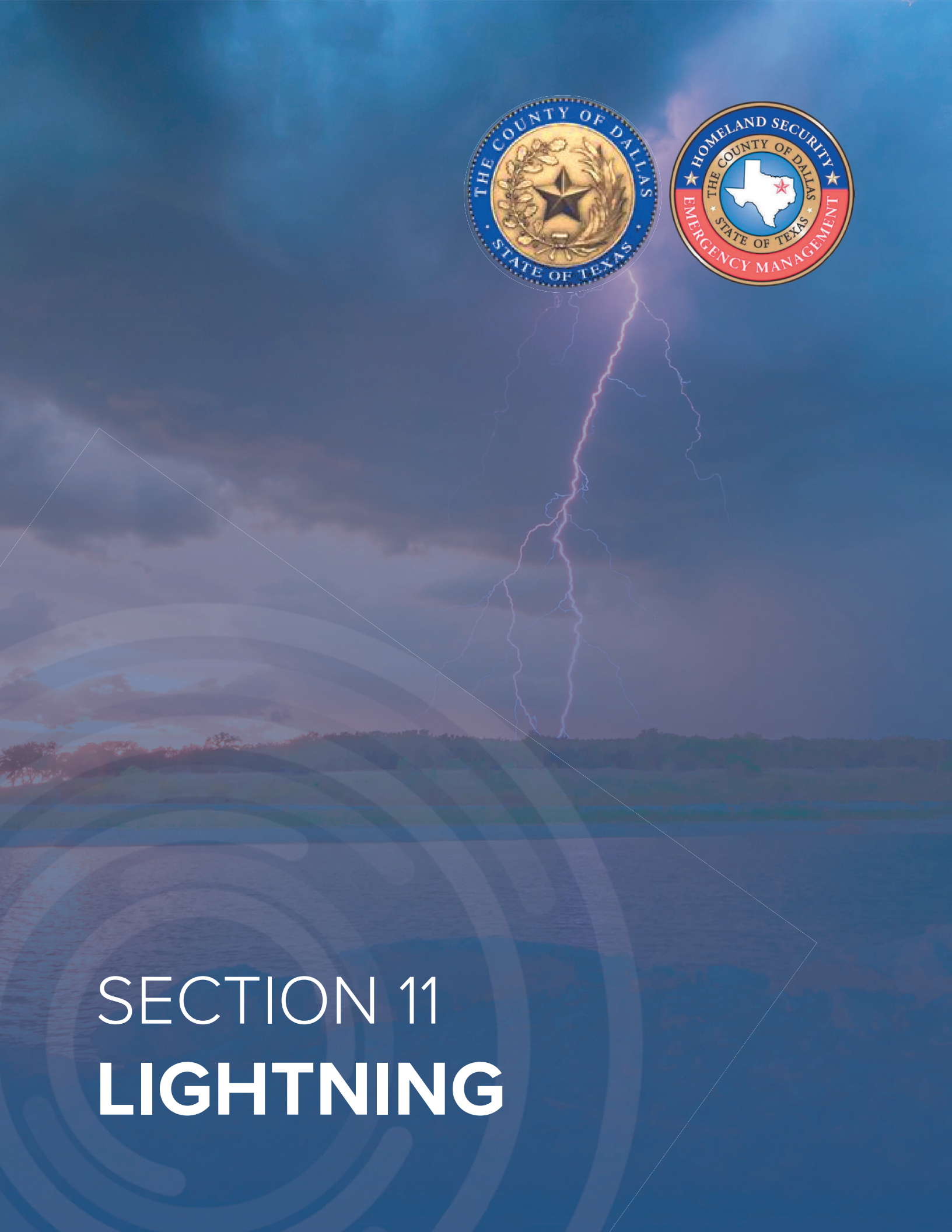
- Large hail events will likely cause extensive roof damage to residential structures along with siding damage and broken windows, creating a spike in insurance claims and a rise in premiums, and potentially result in physical harm to occupants.
- Automobile damage may be extensive depending on the size of the hail and length of the storm.
- Hail events can result in power outages over widespread areas increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage can result in an increase in structure fires and/or carbon monoxide poisoning, as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- First responders are exposed to downed power lines, damaged structures, hazardous spills, and debris that often accompany hail events, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.
- Some businesses not directly damaged by the hail event may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damage without a backup power source.
- Depending on the severity and scale of damage caused by large hail events, damage to power transmission and distribution infrastructure can require days or weeks to repair.
- A significant hail event could significantly damage agricultural crops, resulting in extensive economic losses for the community and surrounding area.
- Hail events may injure or kill livestock and wildlife or destroy wildlife habitat.
- A large hail event could impact the accessibility of recreational areas and parks due to extended power outages or debris clogged access roads.
- Historical sites and properties are placed at a higher risk of impact due to materials used and the inability to change properties due to their historic status. There are 152 historical sites listed on the National Register of Historic Places for Dallas County.

The economic and financial impacts of hail will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning conducted by the community, local businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of any hail event.

CLIMATE CHANGE CONSIDERATIONS

Although the impact of climate change on the frequency and severity of hail events is uncertain, some climate studies attempt to give insight on the future conditions of hailstorms. As ocean temperatures rise due to climate change, more moisture is evaporating into the atmosphere. The warm and moist air masses that fuel severe weather may become more unstable on average, which could favor the increased development of thunderstorms and hail. However, it is also suggested that in a warming climate, the average melting level will rise in thunderstorms, meaning small hailstones will have more of a chance to melt as they fall to the ground. Therefore, hail may become less frequent, but large hail can be expected when it does occur, leading to the possibility of increased damages.[7]

[7] Yale Climate Connections, Hailstorms and Climate Change, March 17, 2022.



SECTION 11
LIGHTNING

SECTION 11: LIGHTNING

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HAZARD DESCRIPTION

Lightning is a discharge of electrical energy resulting from the buildup of positive and negative charges within a thunderstorm, creating a "bolt" when the buildup of charges becomes strong enough. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Lightning rapidly heats the sky as it flashes but the surrounding air cools following the bolt. This rapid heating and cooling of the surrounding air causes thunder which often accompanies lightning strikes. While most often affiliated with severe thunderstorms, lightning often strikes outside of heavy rain and might occur as far as 10 miles away from any rainfall.

According to the National Weather Service (NWS), the 10-year (2012–2021) average for fatalities is 23 people with an average of 300 injuries in the United States each year by lightning. Lightning can occur as cloud to ground flashes or as intra-cloud lightning flashes. Direct lightning strikes can cause significant damage to buildings, critical facilities, infrastructure, and communication equipment affecting emergency response. Lightning is also responsible for igniting wildfires that can result in widespread damage to property before firefighters have the ability to contain and suppress the resultant fire.

LOCATION

Lightning can strike in any geographic location and is considered a common occurrence in Texas. The Dallas County planning area is in a region of the country that is moderately susceptible to a lightning strike. Therefore, lightning could occur at any location within the entire planning area. It is assumed that the entire Dallas County planning area, including participating jurisdictions, is uniformly exposed to the threat of lightning.

EXTENT

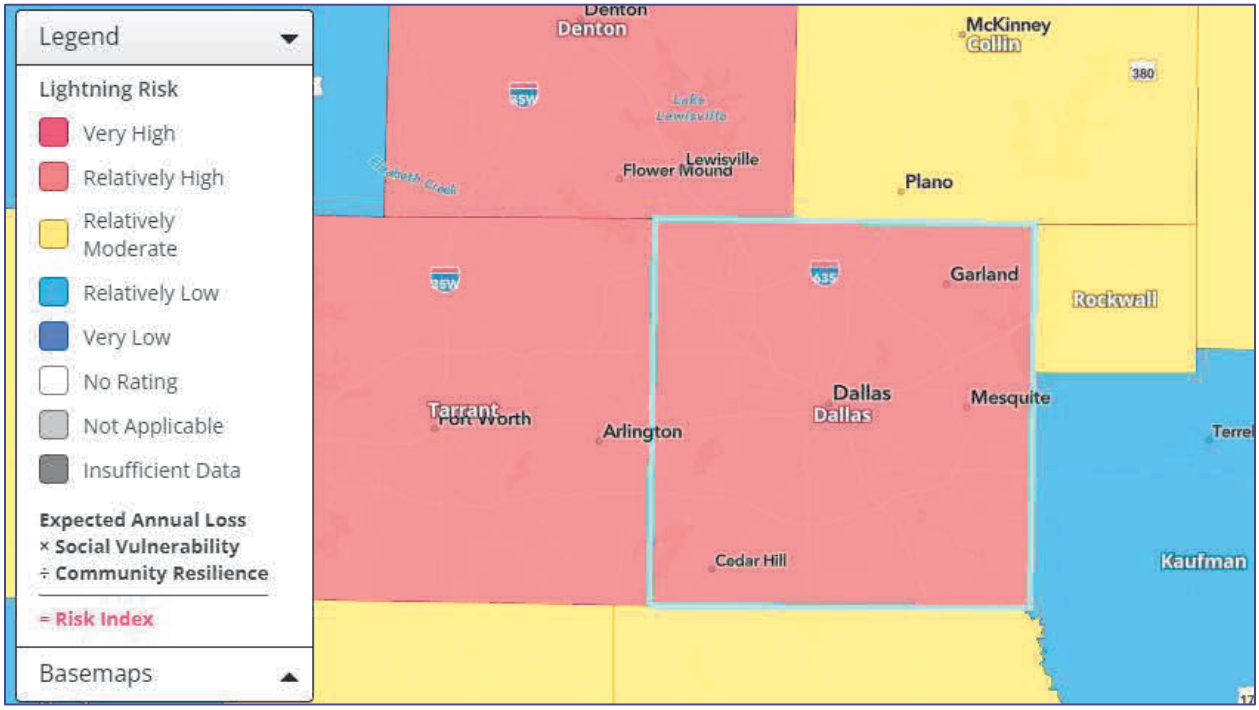
According to the 2023 Annual Lightning Report by Vaisala, the State of Texas ranks tenth in the U.S. for lightning strike density with an average of 157.7 flashes per square mile.[1] Vaisala's U.S. National Lightning Detection Network lightning flash density map shows an average of 324.7 lightning events per square mile per year for the Dallas County planning area. This rate equates

[1] Source: https://www.xweather.com/annual-lightning-report

to approximately 295,000 flashes per year for the entire planning area, or eight to nine flashes per fifteen minute interval.

FEMA's National Risk Index includes an analysis of the planning area's expected annual loss and the community's risk factor which incorporates social vulnerability as well as community resilience to determine the lightning risk for the area, compared to the rest of the United States. Dallas County is located in an area where the extent is classified as Relatively High (Figure 11-1).

Figure 11-1. Dallas County Lightning Risk, National Risk Index, September 2024[2]



HISTORICAL OCCURRENCES

The NCEI database includes 35 recorded lightning events for the Dallas County planning area from January 1996 through May 2024. It is highly likely multiple lightning occurrences have gone unreported before and during the recording period. The NCEI is a national data source organized under the National Oceanic and Atmospheric Administration and considered a reliable resource for hazards. However, the flash density for the planning area along with input from local team members indicates regular lightning occurrences that simply have not been reported.

Planning Team members from the City of Richardson also provided supplemental lightning data from the Richardson Fire Department, which includes 73 additional events from August 2001 through May 2024. These events and their associated damages have been integrated into the NCEI data below to create the most comprehensive data set possible.

[2] Source: Map | National Risk Index, https://hazards.fema.gov/nri/map

Table 11-1. Historical Lightning Events, January 1996 – May 2024[3]

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of University Park	6/14/1996	0	0	$891,200	$0
City of Hutchins	2/19/1997	1	0	$0	$0
Dallas County	5/9/1997	0	1	$232,600	$0
Dallas County	5/15/1997	0	0	$58,200	$0
City of Richardson	5/27/1998	0	0	$286,000	$0
Dallas County	5/2/1999	0	0	$2,240,700	$0
Dallas County	5/2/1999	0	0	$186,800	$0
Dallas County	5/2/1999	0	0	$280,100	$0
Dallas County	6/12/1999	0	1	$0	$0
Dallas County	2/21/2003	0	0	$8,500	$0
City of Richardson*	4/25/2005	0	0	$150,000	$0
City of Richardson*	7/15/2005	0	0	$5,000	$0
City of Richardson*	8/8/2005	0	1	$15,000	$0
Dallas County	8/27/2006	0	0	$7,700	$0
City of Coppell	9/11/2006	0	0	$91,800	$0
City of Coppell	9/11/2006	0	0	$7,700	$0
Town of Highland Park	5/8/2007	0	0	$149,300	$0
Dallas County	7/15/2008	1	0	$0	$0
Dallas County	6/11/2009	0	0	$72,000	$0
Dallas County	6/11/2009	0	0	$4,400	$0
City of Richardson*	6/12/2009	0	0	$2,300	$0
City of Richardson*	7/30/2009	0	0	$200,000	$0
City of Richardson*	8/21/2009	0	0	$10,000	$0
City of Richardson*	9/11/2009	0	0	$10,000	$0
City of Coppell	9/21/2009	0	0	$800	$0
City of Richardson*	5/3/2010	0	0	$20,000	$0
City of Richardson*	5/9/2010	0	0	$140,000	$0
Dallas County	5/24/2011	0	0	$61,900	$0
Dallas County	5/24/2011	0	1	$0	$0
City of University Park	8/29/2011	0	0	$274,000	$0

[3] Values are in 2024 dollars. Database was searched for events between January 1996 and May 2024. Events denoted with "*" indicates lightning event provided by the City of Richardson Fire Department

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JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Richardson*	4/8/2012	0	0	$15,000	$0
Dallas County	6/6/2012	0	0	$40,600	$0
City of Richardson*	8/15/2012	0	0	$80,000	$0
City of Sachse	2/10/2013	0	0	$334,200	$0
City of Richardson*	5/9/2013	0	0	$2,000	$0
City of Richardson*	5/12/2014	0	0	$25,000	$0
City of Richardson*	7/31/2014	0	0	$300,000	$0
Dallas County	4/18/2015	0	0	$13,200	$0
City of Richardson*	5/29/2015	0	0	$1,000	$0
Dallas County	6/9/2015	0	0	$13,100	$0
City of Duncanville	6/21/2015	0	0	$650,300	$0
Dallas County	6/30/2015	0	0	$13,100	$0
Dallas County	9/9/2015	0	0	$130,500	$0
City of Hutchins	10/23/2015	0	0	$65,300	$0
City of Richardson*	3/8/2016	0	0	$10,000	$0
City of Richardson*	4/29/2016	0	0	$10,000	$0
City of Carrollton	5/11/2016	0	0	$129,200	$0
City of Richardson*	7/4/2016	0	0	$300,000	$0
Dallas County	4/2/2017	0	0	$63,500	$0
Town of Highland Park	12/26/2018	0	0	$123,600	$0
City of Richardson*	4/13/2019	0	0	$100,000	$0
City of Richardson*	5/18/2019	0	0	$5,000	$0
City of Richardson*	6/9/2019	0	0	$10,000	$0
City of Richardson*	10/20/2019	0	0	$25,000	$0
Dallas County	6/28/2020	1	0	$0	$0
Dallas County	7/2/2020	1	0	$0	$0
TOTALS		**4**	**4**	**$7,865,600**	

Table 11-2. Historical Lightning Events Summary, January 1996 – May 2024[4]

JURISDICTION	NUMBER OF EVENTS	DEATHS	INJURIES	PROPERTY DAMAGES	CROP DAMAGES
Dallas County	22	3	3	$3,426,900	$0
Town of Addison	0	-	-	-	-
City of Balch Springs	0	-	-	-	-
City of Carrollton	1	0	0	$129,200	$0
City of Cedar Hill	0	-	-	-	-
City of Cockrell Hill	0	-	-	-	-
City of Coppell	3	0	0	$100,300	$0
City of DeSoto	0	-	-	-	-
City of Duncanville	1	0	0	$650,300	$0
City of Farmers Branch	0	-	-	-	-
City of Glenn Heights	0	-	-	-	-
Town of Highland Park	2	0	0	$272,900	$0
City of Hutchins	2	1	0	$65,300	$0
City of Lancaster	0	-	-	-	-
City of Richardson	74	0	1	$1,721,300	$0
City of Rowlett	0	-	-	-	-
City of Sachse	1	0	0	$334,200	$0
City of Seagoville	0	-	-	-	-
Town of Sunnyvale	0	-	-	-	-
City of University Park	2	0	0	$1,165,200	$0
City of Wilmer	0	-	-	-	-
TOTALS	**108**	**4**	**4**	**$7,865,600**	**$0**

Based on the list of historical lightning events for the Dallas County planning area, including participating jurisdictions, there have been six reported events since the 2020 Plan.

[4] Participating jurisdictions with no reported events show a "-" in table columns where damages, deaths or injuries would be otherwise reported.

SIGNIFICANT EVENTS

February 19, 1997 – City of Hutchins
A truck driver, who was involved in a two-car automobile accident, was struck and killed by lightning after leaving his vehicle to check on the occupants of the other car.

May 2, 1999 – Dallas County
During a large severe storm system, which also included hail, thunderstorm winds, and tornadoes in North and Central Texas, lightning strikes led to multiple fires throughout the Dallas County planning area. Two different homes and two apartment units were destroyed by fires caused by lightning strikes; altogether, the property damage from these losses was estimated at $1,450,000 (2024 dollars).

July 15, 2008 – Dallas County
Weak upper-level disturbances interacted with a moist airmass, producing afternoon thunderstorms and lightning activity. During the storm, a man was struck by lightning and killed in the picnic area of Lynn Creek Park on Joe Pool Lake.

July 4, 2016 – City of Richardson
Lightning struck a four-unit apartment building in the City of Richardson, which the Fire Department reported was a total loss. An occupant of the building heard a loud crack of thunder and observed smoke on the second floor as the building began to catch fire following the lightning strike. No injuries or fatalities were reported; property damage was estimated at $300,000.

April 13, 2019 – City of Richardson
A lightning strike to the chimney off a home led to a housefire which did significant damage, with property damage estimates of $100,000.

June 28, 2020 – Dallas County
Per hospital personnel, a 61-year-old woman was admitted in Dallas with injuries sustained from a lightning strike. She died from her injuries a few days later on July 2nd. No further information on the specific location in which the lightning strike occurred could be found.

July 2, 2020 – Dallas County
During thunderstorms which formed in the afternoon, lightning struck a 16-year-old male while under a tree in a yard. The boy passed away from his injuries a week later on July 9th.

PROBABILITY OF FUTURE EVENTS

Based on historical records and input from the planning team the probability of occurrence for future lightning events in the Dallas County planning area is considered “Highly Likely”, or an event probable in the next year. The planning team concurred that lightning occurs regularly in the area. According to the 2023 Annual Lightning Report by Vaisala, the Dallas County planning area, including participating jurisdictions, are in an area of the country that experiences approximately 324.7 lightning flashes per square mile per year (approximately 295,000 flashes per year). Given this estimated probability of events, it can be expected that future lightning events will continue to threaten life and cause property damage throughout the planning area. Impacts of climate change are not expected to increase the average frequency of lightning events but may lead to an increase in the intensity of events when they do occur.

VULNERABILITY AND IMPACT

Vulnerability is difficult to evaluate since lightning events can occur at different strength levels, in random locations, and can create a broad range of damage depending on the strike location. Due to the randomness of these events, all existing and future structures and facilities in the Dallas County planning area could potentially be impacted and remain vulnerable to possible injury and property loss from lightning strikes.

The direct and indirect losses associated with these events include injury and loss of life, damage to structures and infrastructure, agricultural losses, utility failure (power outages), and stress on community resources. The entire population of the Dallas County planning area, including participating jurisdictions, are considered exposed to the lightning hazard. The peak lightning season in the State of Texas is from June to August; however, the most fatalities occur in July. Fatalities occur most often when people are outdoors and/or participating in some form of recreation. The Population located outdoors during a lightning event is considered at risk and more vulnerable to a lightning strike compared to those inside a structure. Moving to a lower risk location will decrease a person's vulnerability.

The entire general building stock and all infrastructure of the Dallas County planning area, are considered exposed to the lightning hazard. Lightning can be responsible for damages to buildings, cause electrical, forest and/or wildfires, and damage infrastructure such as power transmission lines and communication towers.

While all citizens are at risk to the impacts of lightning, forced relocation and disaster recovery disproportionately impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. An estimated 14 percent of the planning area population live below the poverty level. In addition, people who speak a language other than English may face increased vulnerability due to language barriers that limit their access to important information such as weather-related warnings and instructions regarding safety measures.

Table 11-3. Populations at Greater Risk by Jurisdiction[5]

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
Dallas County	290,461	182,349	264,190	364,567	440,684
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City of Carrollton	17,122	6,820	10,950	8,995	19,892
City of Cedar Hill	5,384	2,867	5,750	4,776	3,866
City of Cockrell Hill	550	247	372	315	1,222

[5] US Census Bureau, American Community Survey Five-Year Estimates, 2022

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
City of Coppell	4,206	2,656	2,367	1,105	2,899
City of DeSoto	8,490	3,030	7,477	4,582	2,805
City of Duncansville	6,485	2,387	4,802	4,069	4,951
City of Farmers Branch	4,336	2,094	2,573	3,167	6,473
City of Glenn Heights	1,206	902	2,383	1,677	854
Town of Highland Park	1,668	538	356	513	135
City of Hutchins	292	576	460	1,436	1,236
City of Lancaster	3,648	4,058	4,236	6,021	2,867
City of Richardson	14,931	7,510	9,972	12,751	11,935
City of Rowlett	7,416	3,890	6,004	4,684	4,152
City of Sachse	3,515	1,321	2,823	557	2,615
City of Seagoville	2,252	1,617	2,116	2,631	3,730
Town of Sunnyvale	1,146	275	732	567	243
City of University Park	2,228	1,451	844	1,209	286
City of Wilmer	673	581	712	961	976

The Dallas County Planning Team identified the following critical facilities (Table 11-4) as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by lightning events. For a comprehensive list by participating jurisdiction, please see Appendix C.

Table 11-4. Critical Facilities Vulnerable to Lightning Events

CRITICAL FACILITIES	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers	• Emergency operations and services may be significantly impacted due to power outages, damaged facilities, fires and/or loss of communications as a result of lightning strikes. • Emergency vehicles, including critical equipment, can be damaged by lightning strikes or by falling trees damaged by lightning. • Power outages could disrupt communications, delaying emergency response times.

CRITICAL FACILITIES	POTENTIAL IMPACTS
	• Downed trees due to lightning strikes can impede emergency response vehicle access to areas. • Lightning strikes can be associated with structure fires and wildfires, further straining the capacity and resources of emergency personnel. • Extended power outages may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities	• Structures can be damaged by falling trees damaged by lightning. • Power outages could disrupt critical care. • Backup power sources could be damaged. • Evacuations may be necessary due to extended power outages, fires, or other associated damages to facilities.
Commercial Supplier (food, fuel, etc.)	• Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Essential supplies like medicines, water, food, and equipment deliveries may be delayed. • Economic disruption due to power outages and fires negatively impact airport services as well as area businesses reliant on airport operations.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Emergency operations and critical services may be significantly impacted due to power outages, damaged facilities, fires and/or loss of communications as a result of lightning strikes. • Emergency vehicles, including critical equipment, can be damaged by lightning strikes or by falling trees damaged by lightning. • Power outages could disrupt communications, delaying emergency response times. • Downed trees due to lightning strikes can impede emergency response vehicle access to areas. • Lightning strikes can be associated with structure fires and wildfires, further straining the capacity and resources of emergency personnel. • Extended power outages may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.

There are four recorded fatalities and four injuries within the Dallas County planning area due to lightning events. Overall, the total loss estimate in terms of property damage for the planning area (in 2024 dollars) is $7,865,600 with an average annualized loss of $277,500 (Table 11-5). Based on these damages to the built environment, the severity of impact for the planning area would be considered Limited, with critical facilities and services being shutdown for 24 hours or less and less than 10 percent of property destroyed or with major damage. However, due to the previous loss of life caused by lightning, the potential severity of impact for the Dallas County planning

area, including participating jurisdictions, is considered “Substantial” meaning multiple deaths possible.

Table 11-5. Potential Annualized Losses by Jurisdiction[6]

JURISDICTION	TOTAL PROPERTY & CROP LOSS	AVERAGE ANNUAL LOSS ESTIMATES
Dallas County	$3,426,900	$120,200
Town of Addison	$0	$0
City of Balch Springs	$0	$0
City of Carrollton	$129,200	$4,600
City of Cedar Hill	$0	$0
City of Cockrell Hill	$0	$0
City of Coppell	$100,300	$3,600
City of DeSoto	$0	$0
City of Duncanville	$650,300	$23,200
City of Farmers Branch	$0	$0
City of Glenn Heights	$0	$0
Town of Highland Park	$272,900	$9,700
City of Hutchins	$65,300	$2,300
City of Lancaster	$0	$0
City of Richardson	$1,721,300	$60,400
City of Rowlett	$0	$0
City of Sachse	$334,200	$11,900
City of Seagoville	$0	$0
Town of Sunnyvale	$0	$0
City of University Park	$1,165,200	41,600
City of Wilmer	$0	$0
TOTALS	**$7,865,600**	**$277,500**

[6] Damage values are in 2024 dollars.

SECTION 11: LIGHTNING

ASSESSMENT OF IMPACTS

Lightning events have the potential to pose a significant risk to people and can create dangerous and difficult situations for public health and safety officials. Additional impacts to the planning area can include:

- The Dallas County planning area features developed parks and green spaces. Lightning events could impact recreational activities, placing residents and visitors in imminent danger, potentially requiring emergency services or park evacuation.
- Older structures built to less stringent building codes may suffer greater damage from a lightning strike as they are typically built with less fire-resistant materials and often lack any fire mitigation measures such as sprinkler systems. 47 percent of homes in the County were built before 1980. Similarly, historic buildings may lack fire mitigation materials or measures due to their historic status. Currently, 152 historical sites in the Dallas County planning area are listed on the National Register of Historic Places.
- Vegetation in urban parks may be destroyed by lightning caused brush fires and result in poor air quality impacting public health.
- Individuals exposed to the storm can be directly struck, posing significant health risks and potential death.
- Structures can be damaged or crushed by falling trees damaged by lightning, which can result in physical harm to the occupants.
- Lightning strikes can result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage often results in an increase in structure fires and carbon monoxide poisoning as individuals attempt to cook or heat their homes with alternate, unsafe cooking or heating devices, such as grills.
- Lightning strikes can be associated with structure fires and wildfires, creating additional risk to residents and first responders.
- Emergency operations and services may be significantly impacted due to power outages and/or loss of communications.
- County and city departments may be damaged, delaying response and recovery efforts for the entire community.
- Economic disruption due to power outages and fires negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Some businesses not directly damaged by lightning events may be negatively impacted while utilities are being restored, further slowing economic recovery.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damage without a backup power source.

The economic and financial impacts of lightning on the area will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the community, local businesses, and citizens will also contribute to the overall economic and financial conditions in the aftermath of any significant lightning event.

CLIMATE CHANGE CONSIDERATIONS

As CO_2 increases and the land surface warms, stronger updrafts are more likely to produce lightning. In a climate with double the amount of CO_2, we may see fewer lightning storms overall,

but 25 percent stronger storms, with a 5 percent increase in lightning. Lightning damage is also likely to increase because of its role in igniting forest fires, where dry vegetation, also caused by rising temperatures, creates more 'fuel' for fires, so even a small climate change may have huge consequences. While the impact climate change will have on our weather still remains uncertain, researchers agree that implementing simple measures like lightning detection systems and installing grounding systems in buildings could go a long way in avoiding deaths and injuries.[7]

Lightning events have the potential to pose a significant risk to people and property throughout the planning area. The economic and financial impacts of lightning on the area will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. While no increase in the number of hazard events is anticipated, the impact of the hazard may see an increase in losses. As populations grow and urban development continues to rise, the overall vulnerability and impact are expected to increase in the next five years.

[7] Environmental Journal, Nathan Neal, January 11, 2021.

SECTION 12

THUNDERSTORM WIND

SECTION 12: THUNDERSTORM WIND

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HAZARD DESCRIPTION

Thunderstorms create extreme wind events which includes straight line winds. Wind is the horizontal motion of the air past a given point, beginning with differences in air pressures. Pressure that is higher at one place than another sets up a force pushing from high toward low pressure; the greater the difference in pressures, the stronger the force. The distance between the area of high pressure and the area of low pressure also determines how fast the moving air accelerates.

Thunderstorms are created when heat and moisture near the Earth's surface are transported to the upper levels of the atmosphere. By-products of this process are the clouds, precipitation, and wind that become the thunderstorm.



According to the National Weather Service (NWS), a thunderstorm occurs when thunder accompanies rainfall. Radar observers use the intensity of radar echoes to distinguish between rain showers and thunderstorms.

Straight line winds are responsible for most thunderstorm wind damages. One type of straight-line wind, the downburst, is a small area of rapidly descending air beneath a thunderstorm. A downburst can cause damage equivalent to a strong tornado and make air travel extremely hazardous.

LOCATION

Thunderstorm wind events can develop in any geographic location and are considered a common occurrence in Texas. Therefore, a thunderstorm wind event could occur at any location within the Dallas County planning area. These storms develop randomly and are not confined to any geographic area within the County. It is assumed that the entire Dallas County planning area, including all participating jurisdictions, is uniformly exposed to the threat of thunderstorm winds.

EXTENT

The extent or magnitude of a thunderstorm wind event is measured by the Beaufort Wind Scale. Table 12-1 describes the different intensities of wind in terms of speed and effects, from calm to violent and destructive.

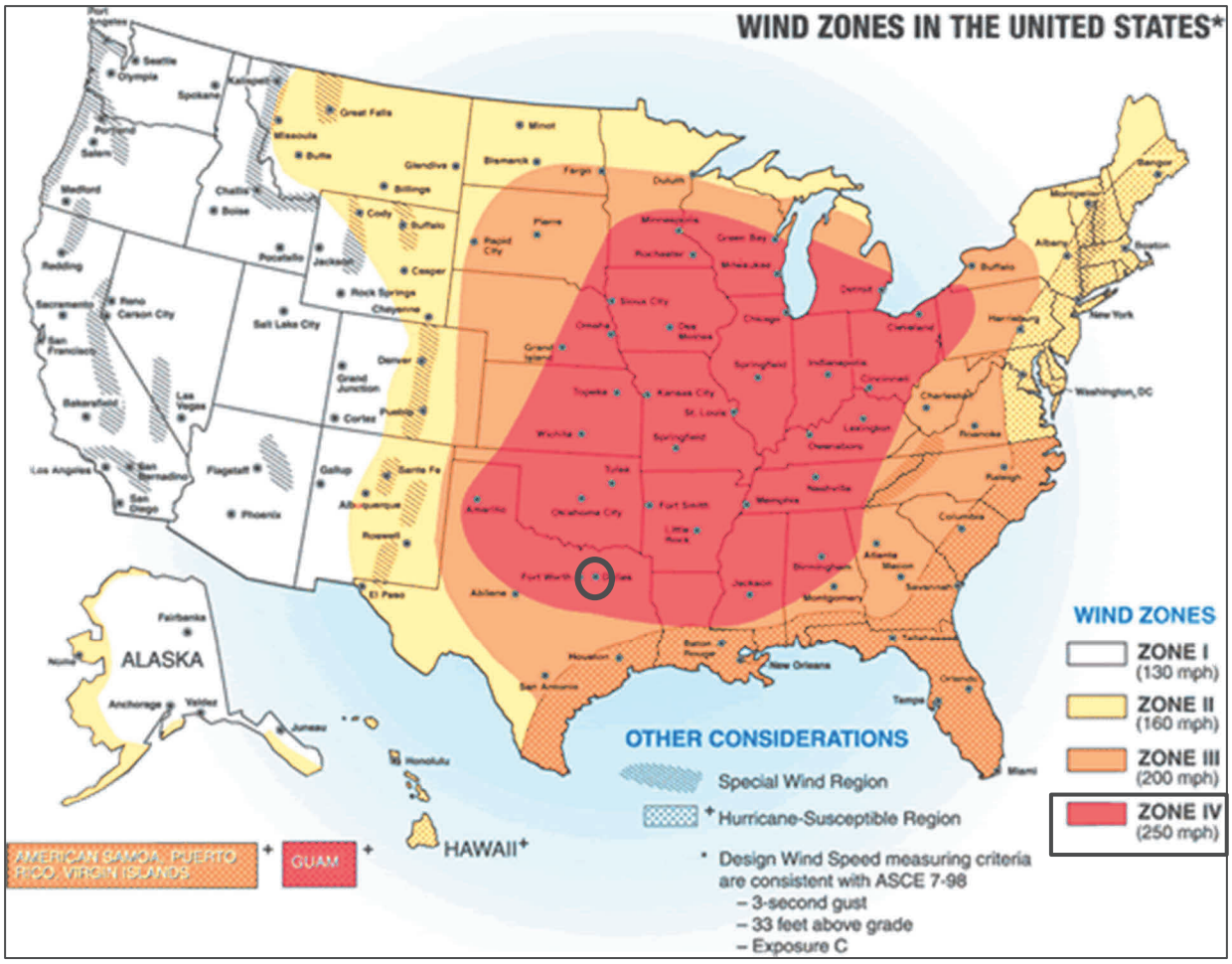
Table 12-1. Beaufort Wind Scale[1]

FORCE	WIND (mph)	WIND (knots)	WMO CLASSIFICATION	APPEARANCE OF WIND EFFECTS
0	Less than 1	Less than 1	Calm	Calm, smoke rises vertically
1	1-3	1-3	Light Air	Smoke drift indicates wind direction, still wind vanes
2	4-7	4-6	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	7-10	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	13-18	11-16	Moderate Breeze	Dust, leaves and loose paper lifted, small tree branches move
5	19-24	17-21	Fresh Breeze	Small trees in leaf begin to sway
6	25-31	22-27	Strong Breeze	Larger tree branches moving, whistling in wires
7	32-38	28-33	Near Gale	Whole trees moving, resistance felt walking against wind
8	39-46	34-40	Gale	Whole trees in motion, resistance felt walking against wind
9	47-54	41-47	Strong Gale	Slight structural damage occurs, slate blows off roofs
10	55-63	48-55	Storm	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	64-72	56-63	Violent Storm	If experienced on land, widespread damage
12	72-83	64-71	Hurricane	Violence and destruction

Figure 12-1 displays the wind zones as derived from NOAA.

[1] Source: World Meteorological Organization

Figure 12-1. Wind Zones in the United States[2]



On average, the planning area experiences nine to ten thunderstorm wind events every year. The Dallas County planning area is located within Wind Zone IV, meaning it can experience winds up to 250 mph. The Dallas County planning area has experienced a significant wind event, or an event with winds in the range of "Force 12" on the Beaufort Wind Scale with winds above 72 mph. This is the worst to be anticipated for the entire planning area based on historic events.

Based on a search of past events between January 1955 through May 2024, the greatest magnitude wind event that Dallas County planning area experienced was 100 knots, or 115 mph, during an event occurring on June 14, 1996, in the Town of Addison.

HISTORICAL OCCURRENCES

The National Centers for Environmental Information (NCEI) Storm Events database is a national data source organized under the National Oceanic and Atmospheric Administration. The NCEI is the largest archive available for historic storm events data; however, it is important to note that only incidents recorded in the NCEI have been factored into this risk assessment unless otherwise noted. It is likely that a high number of occurrences have gone unreported over the past 69.5

[2] The Dallas County planning area is indicated by the black circle.

years[3]. Tables 12-2, 12-3, and 12-4 depict historical occurrences of thunderstorm wind events for the Dallas County planning area according to the NCEI database.

Since 1955, 694 thunderstorm wind events are known to have occurred in the Dallas County planning area. Table 12-3 presents information on known historical events impacting the Dallas County planning area, resulting in damages, injuries, or fatalities. The most damaging event in terms of property damage, per the NCEI database, was reported on June 6, 1996, with over $19 million (2024 dollars) in damages. However, the most recent event reported to NCEI, which occurred on May 28, 2024, surpasses these monetary damages when combining NCEI data with pSTAT and iSTAT data provided by the Planning Team. This event is described in detail in the Significant Events section below.

It is important to note that high wind events associated with other hazards, such as tornadoes, are not accounted for in this section. Property damage estimates are not always available. Where an estimate has been provided in a table for losses, the dollar amounts have been modified for inflation to indicate the damage in 2024 dollars.

Table 12-2. Historical Thunderstorm Wind Speeds, January 1955 – May 2024

MAXIMUM WIND SPEED RECORDED (knots)	NUMBER OF REPORTED EVENTS
0-30	0
31-40	7
41-50	99
51-60	265
61-70	99
71-80	11
81-90	3
91-100+	2
Unknown	208

Table 12-3. Historical Thunderstorm Wind Events, January 1955 – May 2024[4]

JURISDICTION	DATE	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	5/1/1984	-	0	3	$0	$0
Dallas County	3/26/1985	69	0	4	$0	$0
Dallas County	6/7/1989	-	0	1	$0	$0

[3] Reporting period is rounded to the nearest half year.
[4] Only recorded events with fatalities, injuries or damages are listed. Magnitude is listed when available. Damage values are in 2024 dollars.

SECTION 12: THUNDERSTORM WIND

JURISDICTION	DATE	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	7/2/1989	78	0	2	$0	$0
Dallas County	1/19/1990	-	0	1	$0	$0
Dallas County	4/19/1993	58	0	0	$10,800	$0
Dallas County	5/18/1993	-	0	0	$10,800	$0
Dallas County	5/18/1993	-	0	0	$10,800	$0
City of DeSoto	8/3/1993	-	0	0	$10,800	$0
City of Richardson	9/14/1993	-	0	0	$107,000	$0
City of Sachse	9/14/1993	-	0	0	$10,700	$0
Dallas County	9/14/1993	-	0	0	$10,700	$0
Dallas County	10/17/1993	70	0	0	$1,065,000	$0
City of Balch Springs	10/17/1993	68	0	0	$106,500	$0
Dallas County	10/18/1993	-	0	0	$10,700	$0
City of Coppell	11/14/1993	-	0	0	$106,500	$0
City of Duncanville	4/25/1994	-	0	0	$105,300	$0
Dallas County	4/29/1994	-	0	0	$10,600	$0
Dallas County	5/13/1994	-	0	0	$10,600	$0
City of DeSoto	6/30/1994	-	0	0	$104,900	$0
Dallas County	10/20/1994	-	0	0	$103,800	$0
Dallas County	11/4/1994	-	0	0	$10,400	$0
Dallas County	11/4/1994	-	0	0	$10,400	$0
City of Cedar Hill	3/25/1995	-	0	0	$71,800	$0
City of Cockrell Hill	4/19/1995	-	0	0	$24,600	$0
Dallas County	4/19/1995	-	0	0	$4,100	$0
City of Coppell	5/7/1995	-	0	0	$102,000	$0
Dallas County	5/7/1995	-	0	0	$4,100	$0
City of DeSoto	8/20/1995	-	0	0	$101,500	$0
City of Lancaster	1/17/1996	-	0	0	$4,100	$0
City of Lancaster	1/17/1996	-	0	0	$4,100	$0

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JURISDICTION	DATE	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Town of Sunnyvale	4/19/1996	-	0	0	$39,800	$0
Dallas County	4/19/1996	-	0	0	$4,000	$0
Dallas County	6/1/1996	-	0	0	$198,100	$0
Town of Addison	6/1/1996	97	0	0	$49,600	$0
Dallas County	6/1/1996	-	0	0	$39,700	$0
City of Seagoville	6/1/1996	57	0	0	$4,000	$0
City of Coppell	6/1/1996	-	0	0	$4,000	$0
Dallas County	6/1/1996	-	0	0	$4,000	$0
Dallas County	6/1/1996	-	0	0	$4,000	$0
Dallas County	6/6/1996	71	0	0	$19,803,900	$0
City of Wilmer	6/6/1996	-	0	0	$29,800	$0
Dallas County	6/6/1996	-	0	0	$4,000	$0
Dallas County	6/13/1996	-	0	0	$19,900	$0
City of Carrollton	6/14/1996	-	0	0	$4,000	$0
Dallas County	6/15/1996	61	0	0	$4,000	$0
Dallas County	6/15/1996	-	0	0	$4,000	$0
City of Lancaster	7/23/1996	-	0	0	$39,600	$0
Dallas County	7/27/1996	-	0	0	$29,700	$0
Dallas County	6/16/1997	-	0	0	$19,400	$0
City of Richardson	6/16/1997	-	0	0	$3,900	$0
City of Desoto	6/16/1997	-	0	0	$3,900	$0
Dallas County	7/15/1997	-	0	0	$7,800	$0
Dallas County	8/13/1997	-	0	0	$29,000	$0
Dallas County	5/8/1998	-	0	0	$381,300	$0
Dallas County	5/27/1998	-	0	0	$190,700	$0
City of Rowlett	10/2/1998	-	0	0	$94,700	$0
City of Coppell	2/6/1999	-	0	0	$3,800	$0
City of Farmers Branch	4/26/1999	-	0	2	$18,700	$0

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JURISDICTION	DATE	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	4/26/1999	-	0	0	$9,400	$0
Dallas County	4/26/1999	-	0	0	$1,900	$0
City of Seagoville	4/26/1999	-	0	0	$400	$0
City of Farmers Branch	4/26/1999	-	0	0	$400	$0
Dallas County	5/11/1999	-	0	0	$1,200	$0
City of Desoto	5/17/1999	-	0	0	$3,800	$0
Dallas County	6/8/1999	-	0	0	$1,900	$0
Dallas County	12/4/1999	-	0	0	$3,700	$0
Dallas County	3/10/2000	61	0	0	$90,700	$0
Dallas County	4/11/2000	52	0	0	$1,900	$0
Dallas County	9/12/2000	-	0	0	$3,600	$0
Dallas County	2/9/2001	59	0	0	$8,900	$0
City of Sachse	2/24/2001	-	0	0	$35,400	$0
City of Duncanville	9/18/2001	52	0	0	$1,800	$0
City of Richardson	10/12/2001	-	0	0	$8,800	$0
Dallas County	8/25/2002	57	0	0	$17,200	$0
City of University Park	8/25/2002	52	0	0	$5,200	$0
City of University Park	8/25/2002	52	0	0	$5,200	$0
City of Richardson	8/27/2002	52	0	0	$3,500	$0
Dallas County	9/23/2002	52	0	0	$8,600	$0
City of Balch Springs	5/25/2003	52	0	0	$253,700	$0
Dallas County	5/25/2003	52	0	0	$3,400	$0
City of Richardson	6/11/2003	52	0	0	$8,500	$0
City of Rowlett	6/14/2003	52	0	0	$3,400	$0
Dallas County	7/30/2003	52	0	0	$1,700	$0
Town of Addison	8/12/2003	60	0	0	$84,100	$0
City of DeSoto	8/22/2003	52	0	0	$3,400	$0
City of Carrollton	8/24/2003	52	1	0	$8,500	$0

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JURISDICTION	DATE	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	8/24/2003	50	0	0	$3,400	$0
City of Seagoville	3/4/2004	52	0	0	$24,900	$0
Dallas County	6/1/2004	61	0	0	$245,400	$0
City of Hutchins	6/1/2004	61	0	0	$40,900	$0
Dallas County	6/1/2004	61	0	0	$3,300	$0
Dallas County	7/28/2004	52	0	0	$8,200	$0
Dallas County	11/23/2004	66	0	0	$406,200	$0
Dallas County	7/11/2005	50	0	0	$8,000	$0
Dallas County	7/12/2005	50	0	0	$31,800	$0
City of DeSoto	7/12/2005	50	0	0	$8,000	$0
Dallas County	8/8/2005	50	0	0	$31,700	$0
City of Rowlett	9/28/2005	50	0	0	$15,700	$0
Dallas County	9/28/2005	50	0	0	$7,900	$0
Dallas County	4/7/2006	44	0	0	$30,900	$0
Dallas County	8/22/2006	50	0	0	$1,600	$0
City of Lancaster	8/23/2006	52	0	0	$22,900	$0
Dallas County	8/27/2006	50	0	0	$4,600	$0
City of Lancaster	9/11/2006	78	0	0	$305,900	$0
Dallas County	11/15/2006	40	0	0	$54,000	$0
Dallas County	2/24/2007	50	0	0	$343,200	$0
Dallas County	3/13/2007	55	0	0	$45,400	$0
Dallas County	5/2/2007	50	0	0	$485,100	$0
Dallas County	5/2/2007	50	0	0	$44,800	$0
Town of Addison	5/30/2007	55	0	0	$26,900	$0
Dallas County	6/3/2007	50	0	0	$4,500	$0
City of Sachse	7/11/2007	50	0	0	$7,500	$0
Dallas County	10/15/2007	50	0	0	$11,900	$0
Dallas County	1/29/2008	45	0	0	$7,400	$0

SECTION 12: THUNDERSTORM WIND

JURISDICTION	DATE	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	1/29/2008	41	0	0	$3,000	$0
City of Carrollton	4/10/2008	61	0	0	$4,333,700	$0
Town of Addison	4/10/2008	50	0	0	$36,200	$0
City of Lancaster	4/10/2008	56	0	0	$28,900	$0
Dallas County	4/10/2008	50	0	0	$1,500	$0
Town of Highland Park	6/17/2008	50	0	0	$35,500	$0
Dallas County	7/15/2008	52	0	0	$14,200	$0
Dallas County	8/3/2008	35	0	0	$21,300	$0
Dallas County	4/17/2009	42	0	0	$10,200	$0
City of Carrollton	5/2/2009	61	0	12	$7,255,500	$0
City of Carrollton	5/2/2009	61	0	0	$7,300	$0
City of Lancaster	5/2/2009	50	0	0	$4,400	$0
Dallas County	5/2/2009	61	0	0	$4,400	$0
City of Balch Springs	6/10/2009	61	0	0	$143,900	$0
City of Richardson	6/10/2009	61	0	0	$11,600	$0
Town of Addison	6/10/2009	52	0	0	$11,600	$0
City of Coppell	6/10/2009	61	0	0	$8,700	$0
City of Hutchins	6/10/2009	52	0	0	$7,200	$0
Dallas County	6/10/2009	62	0	0	$5,800	$0
Dallas County	6/10/2009	56	0	0	$5,800	$0
Dallas County	6/10/2009	50	0	0	$4,400	$0
City of University Park	6/11/2009	56	0	0	$7,200	$0
Town of Highland Park	6/11/2009	52	0	0	$5,800	$0
Town of Highland Park	6/11/2009	52	0	0	$4,400	$0
Town of Highland Park	6/11/2009	56	0	0	$4,400	$0
City of Duncanville	7/26/2009	52	0	0	$2,900	$0
Dallas County	7/26/2009	50	0	0	$2,900	$0
City of Richardson	7/30/2009	56	0	0	$8,700	$0

SECTION 12: THUNDERSTORM WIND

JURISDICTION	DATE	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Desoto	7/30/2009	58	0	0	$7,300	$0
Dallas County	7/30/2009	56	0	0	$2,900	$0
Dallas County	5/17/2010	50	0	0	$71,200	$0
City of Seagoville	4/11/2011	65	0	0	$55,200	$0
City of Lancaster	4/11/2011	83	0	0	$41,400	$0
City of Duncanville	4/11/2011	65	0	0	$4,200	$0
Dallas County	4/14/2011	70	0	0	$69,000	$0
Dallas County	4/14/2011	56	0	0	$69,000	$0
Dallas County	4/14/2011	64	0	0	$69,000	$0
City of Richardson	4/14/2011	56	0	0	$27,600	$0
Dallas County	4/23/2011	50	0	0	$4,200	$0
Dallas County	4/23/2011	50	0	0	$4,200	$0
Dallas County	5/11/2011	56	0	0	$6,900	$0
Dallas County	5/24/2011	65	0	0	$103,100	$0
Dallas County	5/24/2011	61	0	0	$12,400	$0
City of Wilmer	5/24/2011	61	0	0	$8,300	$0
City of Richardson	5/24/2011	56	0	0	$8,300	$0
Town of Highland Park	5/24/2011	56	0	0	$6,900	$0
Dallas County	5/24/2011	65	0	0	$6,900	$0
City of DeSoto	9/18/2011	61	0	0	$68,400	$0
Dallas County	10/23/2011	55	0	0	$13,800	$0
Dallas County	10/23/2011	61	0	0	$13,800	$0
Dallas County	10/23/2011	61	0	0	$13,800	$0
Dallas County	4/3/2012	70	0	0	$16,200	$0
City of Coppell	4/3/2012	65	0	0	$10,800	$0
City of Coppell	4/3/2012	61	0	0	$9,500	$0
Dallas County	5/29/2012	50	0	0	$5,500	$0
Dallas County	6/6/2012	52	0	0	$6,800	$0

JURISDICTION	DATE	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	7/7/2012	43	2	0	$13,600	$0
City of Richardson	12/19/2012	52	0	0	$6,800	$0
Dallas County	12/19/2012	57	0	0	$6,800	$0
Dallas County	12/19/2012	52	0	0	$6,800	$0
City of University Park	2/10/2013	56	0	0	$6,700	$0
Dallas County	2/10/2013	56	0	0	$6,700	$0
Dallas County	2/10/2013	56	0	0	$4,100	$0
Dallas County	5/21/2013	60	0	0	$40,000	$0
Dallas County	5/21/2013	50	0	0	$13,400	$0
Dallas County	7/17/2013	52	0	0	$5,400	$0
City of Rowlett	8/13/2013	43	0	0	$4,000	$0
Dallas County	8/13/2013	43	0	0	$4,000	$0
Dallas County	5/8/2014	78	0	0	$104,400	$0
Town of Highland Park	5/8/2014	56	0	0	$78,300	$0
Town of Highland Park	5/8/2014	56	0	0	$78,300	$0
Dallas County	5/8/2014	61	0	0	$65,300	$0
Dallas County	5/8/2014	52	0	0	$65,300	$0
Dallas County	5/8/2014	52	0	0	$39,200	$0
Dallas County	5/25/2014	50	0	0	$5,300	$0
Dallas County	7/14/2014	52	0	0	$52,200	$0
City of Seagoville	7/14/2014	56	0	0	$6,600	$0
City of University Park	8/16/2014	52	0	0	$2,700	$0
Dallas County	8/16/2014	56	0	0	$700	$0
Dallas County	10/2/2014	60	0	0	$13,100	$0
Dallas County	10/2/2014	50	0	0	$6,600	$0
Dallas County	10/2/2014	50	0	0	$6,600	$0
Dallas County	10/2/2014	60	0	0	$6,600	$0
City of Sachse	10/13/2014	50	0	0	$6,600	$0

JURISDICTION	DATE	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	10/13/2014	50	0	0	$1,400	$0
City of Cedar Hill	4/18/2015	52	0	0	$13,200	$0
Dallas County	5/24/2015	43	0	0	$1,400	$0
Dallas County	5/26/2015	48	0	0	$2,700	$0
City of University Park	6/9/2015	61	0	0	$26,100	$0
Dallas County	6/9/2015	59	0	0	$26,100	$0
Dallas County	6/9/2015	61	0	0	$13,100	$0
Dallas County	6/9/2015	61	0	0	$13,100	$0
Dallas County	6/13/2015	52	0	0	$700	$0
City of Rowlett	8/24/2015	43	0	0	$2,700	$0
Dallas County	11/17/2015	55	0	0	$15,700	$0
City of Duncanville	11/17/2015	56	0	0	$9,200	$0
City of Richardson	11/17/2015	48	0	0	$2,700	$0
Dallas County	12/13/2015	43	0	0	$2,700	$0
Dallas County	12/13/2015	52	0	0	$2,700	$0
Dallas County	3/8/2016	60	0	1	$13,100	$0
Dallas County	3/8/2016	60	0	0	$6,600	$0
Dallas County	3/30/2016	56	0	0	$10,500	$0
City of Sachse	4/11/2016	56	0	0	$7,800	$0
Town of Highland Park	6/27/2016	43	0	0	$64,400	$0
Town of Highland Park	6/27/2016	43	0	0	$6,500	$0
Dallas County	7/4/2016	60	0	0	$2,600	$0
Dallas County	7/5/2016	56	0	0	$2,600	$0
Dallas County	8/12/2016	55	0	0	$12,900	$0
Dallas County	8/12/2016	55	0	0	$6,500	$0
City of Richardson	8/12/2016	52	0	0	$3,900	$0
Town of Addison	1/2/2017	55	0	0	$12,800	$0
City of Seagoville	1/2/2017	56	0	0	$6,400	$0

SECTION 12: THUNDERSTORM WIND

JURISDICTION	DATE	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Farmers Branch	1/15/2017	52	0	0	$9,000	$0
City of Rowlett	3/29/2017	65	0	0	$6,400	$0
Dallas County	3/29/2017	55	0	0	$6,400	$0
Dallas County	3/29/2017	55	0	0	$6,400	$0
Dallas County	3/29/2017	55	0	0	$1,300	$0
Dallas County	10/7/2018	43	0	0	$6,200	$0
Dallas County	10/8/2018	43	1	5	$12,300	$0
Dallas County	12/26/2018	50	0	0	$1,300	$0
City of Seagoville	12/26/2018	45	0	3	$0	$0
City of Carrollton	3/13/2019	65	0	0	$61,100	$0
Dallas County	3/13/2019	60	0	0	$61,100	$0
City of Rowlett	3/13/2019	60	0	0	$12,300	$0
Dallas County	5/18/2019	45	0	0	$700	$0
Dallas County	6/1/2019	70	0	0	$121,200	$0
Dallas County	6/1/2019	60	0	0	$6,100	$0
Dallas County	6/9/2019	60	1	6	$12,115,400	$0
Dallas County	6/9/2019	62	0	0	$30,300	$0
City of Carrollton	6/9/2019	55	0	0	$24,300	$0
Dallas County	6/9/2019	60	0	0	$12,200	$0
City of Richardson	6/9/2019	55	0	0	$6,100	$0
Town of Highland Park	6/9/2019	61	0	0	$6,100	$0
City of Carrollton	6/9/2019	55	0	0	$6,100	$0
Dallas County	6/9/2019	55	0	0	$2,500	$0
Richardson	6/9/2019	60	0	0	$1,900	$0
City of Coppell	6/9/2019	52	0	0	$1,300	$0
Town of Addison	6/9/2019	50	0	0	$1,300	$0
Dallas County	6/16/2019	70	0	0	$72,700	$0
City of Farmers Branch	6/16/2019	78	0	0	$24,300	$0

SECTION 12: THUNDERSTORM WIND

JURISDICTION	DATE	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	6/23/2019	53	0	0	$6,100	$0
Dallas County	7/10/2019	50	0	0	$12,100	$0
City of Lancaster	10/20/2019	60	0	0	$30,200	$0
Dallas County	4/12/2020	43	0	0	$30,300	$0
City of Lancaster	7/12/2021	56	0	0	$34,200	$0
City of DeSoto	7/12/2021	52	0	0	$8,000	$0
Dallas County	10/10/2021	61	0	0	$5,700	$0
City of Carrollton	3/21/2022	60	0	0	$27,000	$0
Dallas County	3/21/2022	56	0	0	$4,400	$0
Dallas County	3/29/2022	39	0	0	$54,000	$0
City of Carrollton	6/2/2022	61	0	0	$104,800	$0
City of Farmers Branch	6/2/2022	65	0	0	$78,600	$0
City of DeSoto	7/14/2022	39	0	0	$1,100	$0
Dallas County	9/4/2022	50	0	0	$10,500	$0
Dallas County	9/25/2022	55	0	0	$52,300	$0
City of Balch Springs	3/2/2023	65	0	0	$77,200	$0
Dallas County	3/2/2023	61	0	0	$8,300	$0
Dallas County	3/16/2023	40	0	0	$5,200	$0
Dallas County	3/16/2023	40	0	0	$2,100	$0
Dallas County	5/28/2024	78	0	0	$2,000,000	$0
City of Richardson	5/28/2024	83	0	0	$2,000,000	$0
City of Coppell	5/28/2024	62	0	0	$350,000	$0
Dallas County	5/28/2024	63	0	0	$250,000	$0
City of Farmers Branch	5/28/2024	70	0	0	$200,000	$0
Dallas County	5/28/2024	61	0	0	$20,000	$0
Town of Highland Park	5/28/2024	61	0	0	$20,000	$0
Town of Addison	5/28/2024	70	0	0	$15,000	$0
City of Richardson	5/28/2024	63	0	0	$10,000	$0

JURISDICTION	DATE	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	5/28/2024	65	0	0	$10,000	$0
Dallas County	5/28/2024	61	0	0	$10,000	$0
Dallas County	5/28/2024	52	0	0	$5,000	$0
Dallas County[5]	5/28/2024	83	0	0	$23,144,600	$0
Town of Sunnyvale	5/28/2024	54	0	0	$2,000	$0
City of Lancaster	5/28/2024	50	0	0	$2,000	$0
TOTALS		**(MAX EXTENT)**	**5**	**40**	**$80,865,300**	**$0**

Table 12-4. Summary of Historical Events by Jurisdiction, January 1955 – May 2024

JURISDICTION	NUMBER OF EVENTS	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	506	78	4	23	$63,194,900	$0
Town of Addison	22	100	0	0	$241,700	$0
City of Balch Springs	6	68	0	0	$581,300	$0
City of Carrollton	13	65	1	12	$11,832,300	$0
City of Cedar Hill	6	56	0	0	$85,000	$0
City of Cockrell Hill	1	-	0	0	$24,600	$0
City of Coppell	12	65	0	0	$596,600	$0
City of DeSoto	13	61	0	0	$321,100	$0
City of Duncanville	11	65	0	0	$123,400	$0
City of Farmers Branch	10	78	0	0	$331,000	$0
City of Glenn Heights	0	-	-	-	-	-
Town of Highland Park	14	61	0	0	$310,600	$0
City of Hutchins	3	61	0	0	$48,100	$0
City of Lancaster	14	83	0	0	$517,700	$0
City of Richardson	22	83	0	0	$2,219,300	$0
City of Rowlett	10	70	0	0	$139,200	$0

[5] This entry was provided by the Dallas County Planning Team and includes findings from pSTAT and iSTAT surveys. See the Significant Events section below for more information.

JURISDICTION	NUMBER OF EVENTS	MAGNITUDE (knots)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Sachse	8	57	0	0	$68,000	$0
City of Seagoville	11	65	0	3	$97,500	$0
Town of Sunnyvale	2	54	0	0	$41,800	$0
City of University Park	8	61	0	0	$53,100	$0
City of Wilmer	2	61	0	0	$38,100	$0
TOTALS	**694**	**(MAX EXTENT)**	**5**	**40**	**$80,865,300**	

Based on the list of historical thunderstorm wind events for the Dallas County planning area, 55 of the events have occurred since the 2020 Plan.

SIGNIFICANT EVENTS

May 2, 2009 – Dallas County, City of Carrollton, and City of Lancaster

A period of severe thunderstorms resulted from a combination of a southward advancing cold front, warm air advection over that cold front, and an approaching shortwave. These storms moved through North Texas, including the Dallas County planning area, producing wind speeds up to 70 mph. These winds caused the collapse of the Dallas Cowboys' 80,000 square feet bubble practice facility, where a rookie minicamp was being held. The facility was approximately 85 feet tall and composed of fabric shell and metal; the collapse resulted in 12 people being injured including a coach that was paralyzed from the waist down. Trees were also damaged around the practice facility, as well as elsewhere across the planning area including the cities of Carrollton and Lancaster. The total property damage was estimated at $ $7,271,600 (2024 dollars).

July 7, 2012 – Dallas County

A cluster of thunderstorms developed in the afternoon with winds that mostly stayed below severe levels. However, wind gusts over 45 mph on the campus of the University of Texas-Dallas led to the collapse of a crane that was being dismantled at a construction site. Two construction workers, both men in their fifties, died in the crane collapse. Property damage was estimated at $13,600 (2024 dollars).

October 8, 2018 – Dallas County

An upper-level storm system deepened over the southwest United States before advancing east into the Dallas County planning area. This storm produced wind gusts over 60 mph, which caused the collapse of a residential structure that was under construction at the time. One person was killed and five others were injured when the structure collapsed. Property damage was estimated at $12,300 (2024 dollars).

June 9, 2019 – Dallas County

A complex of storms moved south from Oklahoma into North Texas, producing widespread wind damage throughout the Dallas County planning area. Wind speeds from these storms were measured above 70 mph. The most severe impact reported was the collapse of a crane into an apartment complex which killed one person and injured 6 others. The collapse also caused severe damage to the apartment building's adjoining parking garage. Widespread damage to trees,

power lines, and homes was also reported due to these strong winds. Total property damages from this event were estimated at $12,207,500 (2024 dollars).

May 28, 2024 – Dallas County (DR-4781-TX)
Following a hailstorm the day prior, another batch of thunderstorms developed near the Red River overnight and moved over Dallas County on May 28th. These storms brought intense, severe straight-line winds across the planning area, with recorded wind speeds as high as 80 to 95 mph. The most common and pervasive impacts from these winds were reports of major tree damage, roof damage, fences destroyed, and debris being strewn throughout the County. Local officials in the City of Richardson reported 111 facilities with varying degrees of damage. A church in central Garland had a portion of roof and end wall destroyed. This wind event caused Dallas County to be included in a Disaster Declaration (DR-4781-TX) for severe storms, straight-line winds, tornadoes, and flooding experienced in Texas between April 26, 2024, and June 4, 2024. Across 15 different event reports in the NCEI database, damage estimates from this wind event were estimated at $4,894,000.

The Dallas County Planning Team also provided data collected by TDEM's Individual State of Texas Assistance Tool (iSTAT) and Public Assistance State of Texas Assessment Tool (pSTAT). These are web-based survey tools used by TDEM to assess disaster damages, with iSTAT allowing individuals to report damages to private homes and businesses and pSTAT assessing damage to public infrastructure. In total, 1,865 iSTAT reports and 162 pSTAT reports were provided for this event, with the vast majority reporting thunderstorm wind as the cause of damages. Among impacts listed in the iSTAT survey responses were 535 reporting no electricity, 9 reporting property destroyed, 211 reporting major damage to property, and the remainder citing damages levels of "affected" or "minor." pSTAT entries reported a number of different impacts, with the most common being widespread and severe damage to trees and roofs. Additional impacts included wind damage to solar panels, a freestanding wall being knocked down, and broken signs, windows, and light fixtures. The iSTAT damage estimates totaled $9,100 and pSTAT estimates totaled $23,144,629.

PROBABILITY OF FUTURE EVENTS

Most thunderstorm winds occur during the spring and fall seasons and during the months of March, April, May, and September. Based on available records of historic events, there have been a total of 694 events in a 69.5-year reporting period, which provides a probability of roughly ten events every year. Even though the intensity of thunderstorm wind events is not always damaging for the Dallas County planning area, the frequency of occurrence for a thunderstorm wind event is "Highly Likely". This means that an event is probable within the next year for the Dallas County planning area, including participating jurisdictions.

VULNERABILITY AND IMPACT

Vulnerability is difficult to evaluate since thunderstorm wind events can occur at different strength levels, in random locations, and can create relatively narrow paths of destruction. Due to the randomness of these events, all existing and future structures, and facilities within the Dallas County planning area, could potentially be impacted and remain vulnerable to possible injury and property loss from strong winds.

Trees, power lines and poles, signage, manufactured housing, radio towers, concrete block walls, storage barns, windows, garbage recepticles, brick facades, and vehicles, unless reinforced, are vulnerable to thunderstorm wind events. More severe damage involves windborne debris; in some instances, patio furniture and other lawn items have been reported to have been blown around by wind and, very commonly, debris from damaged structures in turn have caused damage to other buildings not directly impacted by the event. In numerous instances roofs have been reported as having been torn off of buildings. The portable buildings typically used at schools and construction sites would be more vulnerable to thunderstorm wind events than typical site-built structures and could potentially pose a greater risk for wind-blown debris.

According to the American Community Survey (ACS) five-year estimates for 2022, a total of 16,390 manufactured homes are located in the Dallas County planning area (2 percent of total housing stock). In addition, 47 percent (approximately 492,078 structures) of the housing units were built before 1980. These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damage during significant wind events. Based on 2022 ACS five-year estimates, Dallas County followed by the cities of Richardson and Carrollton have the highest reported numbers of single-family residences built before 1980, indicating greater vulnerability in terms of at-risk structures.

Table 12-5. Structures at Greater Risk by Participating Jurisdiction

JURISDICTION	TOTAL HOUSING UNITS	BUILT PRIOR TO 1980	MOBILE HOME
Dallas County	1,040,669	492,078	16,390
Town of Addison	10,576	1,549	0
City of Balch Springs	8,865	3,734	389
City of Carrollton	52,646	14,956	137
City of Cedar Hill	16,662	2,149	73
City of Cockrell Hill	1,285	1,146	25
City of Coppell	16,006	1,119	233
City of DeSoto	21,593	4,124	495
City of Duncanville	14,632	8,681	26
City of Farmers Branch	16,313	7,337	27
City of Glenn Heights	5,350	549	749
Town of Highland Park	3,696	2,006	0
City of Hutchins	1,399	463	355
City of Lancaster	14,865	4,723	243
City of Richardson	47,777	21,448	0

JURISDICTION	TOTAL HOUSING UNITS	BUILT PRIOR TO 1980	MOBILE HOME
City of Rowlett	22,102	2,539	392
City of Sachse	9,758	393	170
City of Seagoville	5,603	1,716	579
City of Sunnyvale	2,694	228	0
City of University Park	7,799	3,088	6
City of Wilmer	1,870	490	812

While all citizens are vulnerable to the impacts of thunderstorm wind, forced relocation and disaster recovery disproportionately impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. An estimated 14 percent of the planning area population live below the poverty level (Table 12-6). While warning times for these types of hazard events should be substantial enough for these individuals to seek shelter, the elderly, children, and people with a disability may have trouble taking shelter due to mobility issues or a lack of awareness, making them more susceptible to injury or harm. In addition, people who speak a language other than English may face increased vulnerability due to language barriers that limit their access to important information such as weather-related warnings and instructions regarding safety measures.

Table 12-6. Populations at Greater Risk by Jurisdiction[6]

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
Dallas County	290,461	182,349	264,190	364,567	440,684
Town of Addison	1,711	736	1,000	1,445	1,891
City of Balch Springs	2,659	2,008	3,721	3,116	5,512
City of Carrollton	17,122	6,820	10,950	8,995	19,892
City of Cedar Hill	5,384	2,867	5,750	4,776	3,866
City of Cockrell Hill	550	247	372	315	1,222
City of Coppell	4,206	2,656	2,367	1,105	2,899
City of DeSoto	8,490	3,030	7,477	4,582	2,805
City of Duncansville	6,485	2,387	4,802	4,069	4,951

[6] US Census Bureau 2022 data for Dallas County.

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
City of Farmers Branch	4,336	2,094	2,573	3,167	6,473
City of Glenn Heights	1,206	902	2,383	1,677	854
Town of Highland Park	1,668	538	356	513	135
City of Hutchins	292	576	460	1,436	1,236
City of Lancaster	3,648	4,058	4,236	6,021	2,867
City of Richardson	14,931	7,510	9,972	12,751	11,935
City of Rowlett	7,416	3,890	6,004	4,684	4,152
City of Sachse	3,515	1,321	2,823	557	2,615
City of Seagoville	2,252	1,617	2,116	2,631	3,730
Town of Sunnyvale	1,146	275	732	567	243
City of University Park	2,228	1,451	844	1,209	286
City of Wilmer	673	581	712	961	976

The Dallas County Planning Team identified the following critical facilities (Table 12-7) as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by thunderstorm wind events. The critical infrastructure with the greatest vulnerability to thunderstorms are power and communications facilities. Failures of these facilities can result in a loss of service and cascading impacts such as posing enormous risk to individuals dependent on electricity as a medical necessity. For a comprehensive list by participating jurisdiction, please see Appendix C.

Table 12-7. Critical Facilities Vulnerable to Thunderstorm Wind Event

CRITICAL FACILITY TYPE	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Emergency vehicles can be damaged by falling trees or flying debris. • Power outages could disrupt communications, delaying emergency response times. • Critical staff may be injured or otherwise unable to report for duty, limiting response capabilities. • Debris/downed trees can impede emergency response vehicle access to areas. • Increased number of structure fires due to gas line ruptures and downed power lines, further straining the capacity and resources of emergency personnel. • First responders are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions.
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities	• Structures can be damaged by falling trees or flying debris. • Power outages could disrupt critical care. • Backup power sources could be damaged. • Critical staff may be injured or otherwise unable to report for duty, limiting response capabilities. • Evacuations may be necessary due to extended power outages, gas line ruptures, or structural damage to facilities. • Power outages and infrastructure damage may prevent larger airports from acting as temporary command centers for logistics, communications, and emergency operations. • Temporary break in operations may significantly inhibit post event evacuations. • Damaged or destroyed highway infrastructure may substantially increase the need for airport operations.
Commercial Supplier (food, fuel, etc.)	• Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Essential supplies like medicines, water, food, and equipment deliveries may be delayed. • Economic disruption due to power outages and fires negatively impact airport services as well as area businesses reliant on airport operations.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Emergency vehicles can be damaged by falling trees or flying debris. • Power outages could disrupt communications, delaying emergency response times. • Critical staff may be injured or otherwise unable to report for duty, limiting response capabilities.

CRITICAL FACILITY TYPE	POTENTIAL IMPACTS
	• Debris/downed trees can impede emergency response vehicle access to areas. • Increased number of structure fires due to gas line ruptures and downed power lines, further straining the capacity and resources of emergency personnel.

A thunderstorm wind event can also result in traffic disruptions, injuries and in rare cases, fatalities. Thunderstorm winds experienced in the Dallas County planning area has resulted in five fatalities and forty injuries. Overall, in the past 69.5 years there has been a total of $80,865,300 in damages (in 2024 dollars) in the Dallas County planning area due to thunderstorm wind events. This yields an estimated average annual loss of $1,163,500.

In terms of structures and infrastructure damages, the impact of thunderstorm wind would be considered Limited with critical facilities shut down for 24-hours or less and less than ten percent of property destroyed or with major damage. However, with five fatalities and forty injuries, the impact is of thunderstorm wind in the Dallas County planning area, including participating jurisdictions, is considered “Substantial” with multiple deaths possible depending on the size and duration of the event.

Table 12-8. Estimated Annualized Losses by Participating Jurisdiction

JURISDICTION	TOTAL PROPERTY & CROP LOSS	AVERAGE ANNUAL LOSS ESTIMATES
Dallas County	$63,194,900	$909,300
Town of Addison	$241,700	$3,500
City of Balch Springs	$581,300	$8,400
City of Carrollton	$11,832,300	$170,200
City of Cedar Hill	$85,000	$1,200
City of Cockrell Hill	$24,600	$400
City of Coppell	$596,600	$8,600
City of DeSoto	$321,100	$4,600
City of Duncanville	$123,400	$1,800
City of Farmers Branch	$331,000	$4,800
City of Glenn Heights	$0	$0
Town of Highland Park	$310,600	$4,500
City of Hutchins	$48,100	$700
City of Lancaster	$517,700	$7,400

JURISDICTION	TOTAL PROPERTY & CROP LOSS	AVERAGE ANNUAL LOSS ESTIMATES
City of Richardson	$2,219,300	$31,900
City of Rowlett	$139,200	$2,000
City of Sachse	$68,000	$1,000
City of Seagoville	$97,500	$1,400
Town of Sunnyvale	$41,800	$600
City of University Park	$53,100	$800
City of Wilmer	$38,100	$500
TOTALS	**$80,865,300**	**$1,163,500**

ASSESSMENT OF IMPACTS

Thunderstorm wind events have the potential to pose a significant risk to people and can create dangerous and difficult situations for public health and safety officials. Thunderstorm wind conditions can be frequently associated with a variety of impacts, including:

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.
- Thunderstorm wind events often result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage often results in an increase in structure fires and carbon monoxide poisoning, as individuals attempt to cook or heat their homes with alternate, unsafe cooking or heating devices, such as grills.
- Critical staff may be unable to report for duty, limiting response capabilities.
- Private sector entities that residents rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Some businesses not directly damaged by thunderstorm wind events may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.

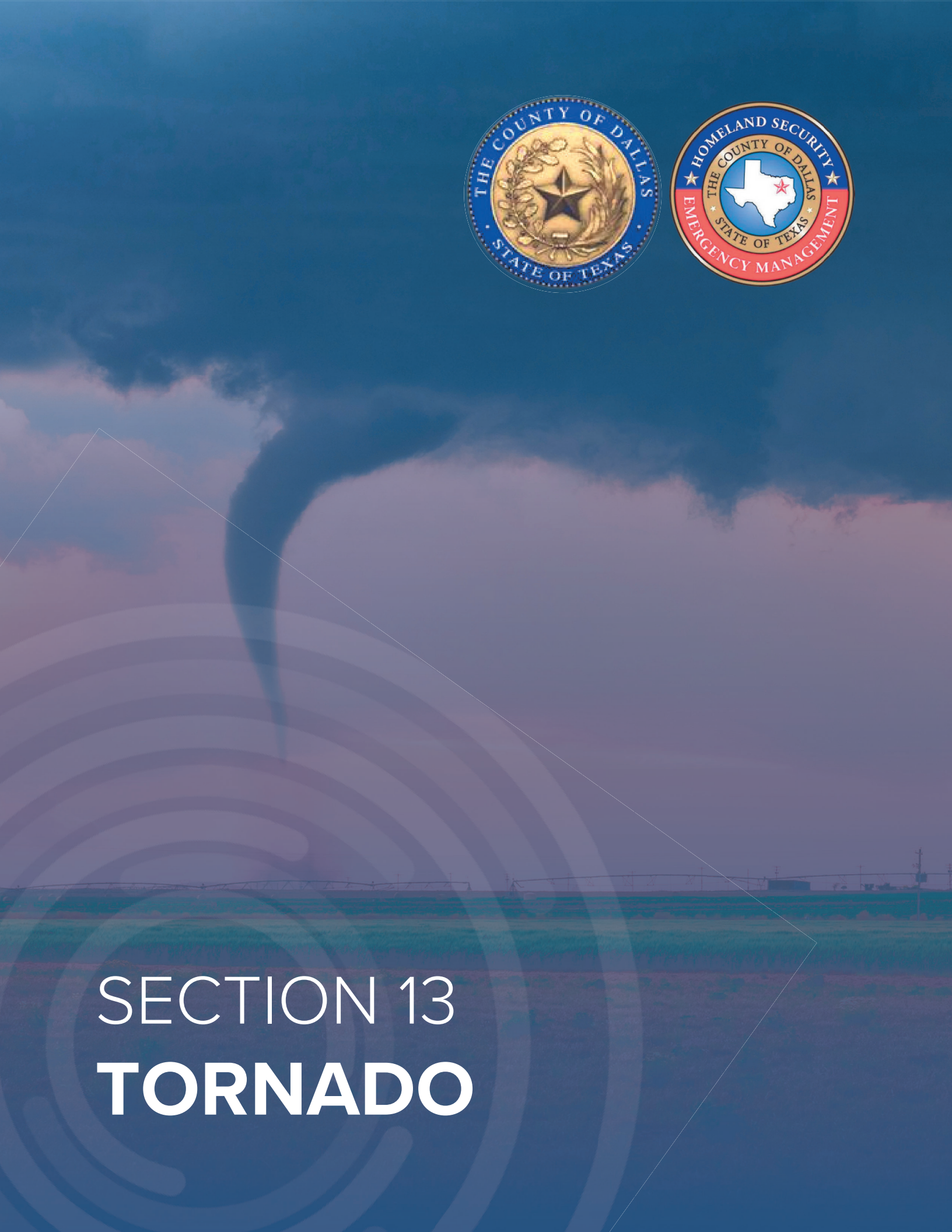
- Older structures, specifically those built before 1980 (47 percent of the planning area), were built to less stringent building codes may suffer greater damage as they are typically more vulnerable to thunderstorm winds.
- Recreational areas such as community parks and green spaces may be damaged or inaccessible due to downed trees or debris, causing temporary impacts to associated businesses in the area.
- Historical sites and properties are placed at a higher risk of impact due to materials used and the inability to change properties due to their historic status. There are 152 historical sites listed on the National Register of Historic Places for Dallas County.

The economic and financial impacts of thunderstorm winds on the area will depend entirely on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the community, local businesses, and citizens will also contribute to the overall economic and financial conditions in the aftermath of any thunderstorm wind event.

CLIMATE CHANGE CONSIDERATIONS

The impacts on the frequency and severity of severe thunderstorm wind events due to climate change are unclear. According to the Texas A&M 2021 Climate Report Update, changes in severe thunderstorm reports over time have been more closely linked to changes in population than changes in the hazard event. At this time there is low confidence of an ongoing trend in the overall frequency and severity of thunderstorm events, due to the lack of climate data records for severe thunderstorms. Based on climate models that are available, the environmental conditions needed for severe thunderstorms are estimated to become more likely, resulting in an overall increase in the number of days capable of producing a severe thunderstorm event.[7]

[7] Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, Texas A&M University Office of the Texas State Climatologist, 2021 Update.



SECTION 13
TORNADO

SECTION 13: TORNADO

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HAZARD DESCRIPTION



Tornadoes are among the most violent storms on the planet. A tornado is a rapidly rotating column of air extending between, and in contact with, a cloud and the surface of the earth. The most violent tornadoes are capable of tremendous destruction and have wind speeds of 250 miles per hour (mph) or more. In extreme cases, winds may approach 300 mph. Damage paths can be in excess of one mile wide and 50 miles long.

The most powerful tornadoes are produced by "Supercell Thunderstorms." These thunderstorms are created when horizontal wind shears (winds moving in different directions at different altitudes) begin to rotate the storm. This horizontal rotation can be tilted vertically by violent updrafts, and the rotation radius can shrink, forming a vertical column of very quickly swirling air. This rotating air can eventually reach the ground, forming a tornado.

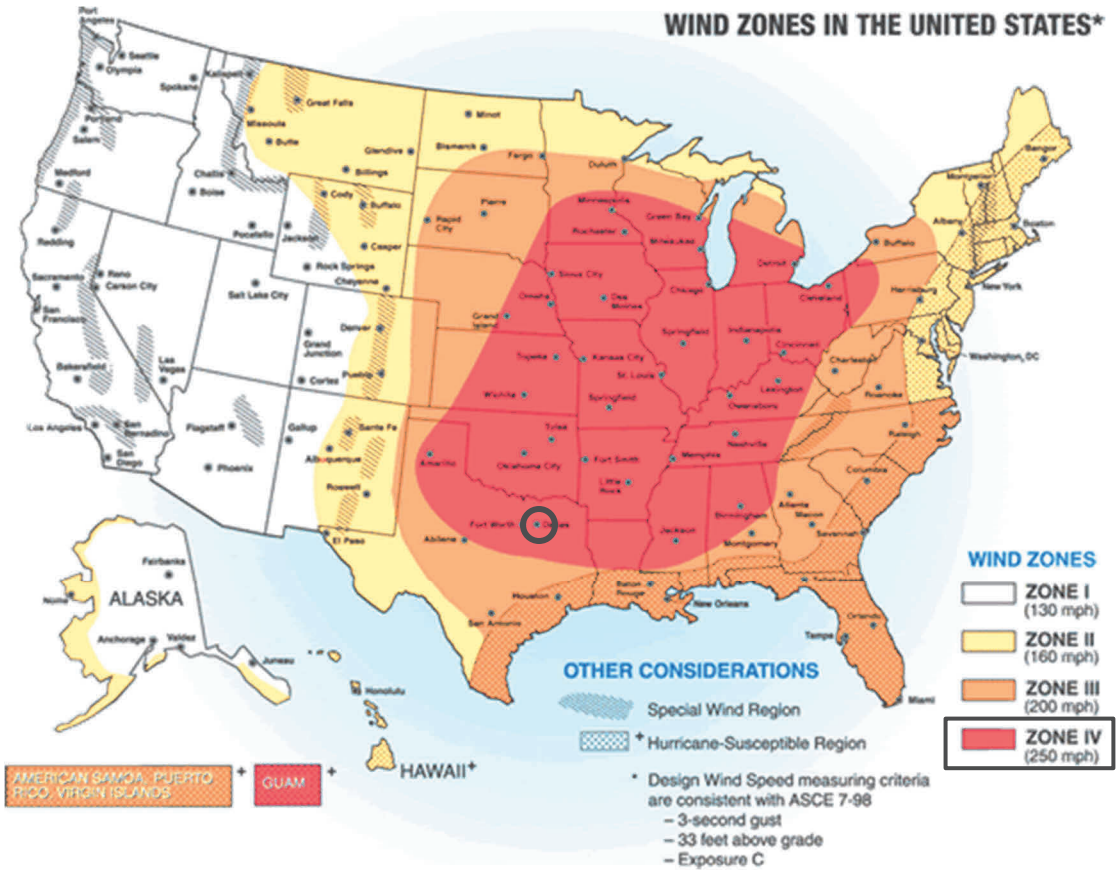
Table 13-1. Variations among Tornadoes

WEAK TORNADOES	STRONG TORNADOES	VIOLENT TORNADOES
• 69% of all tornadoes • Less than 5% of tornado deaths • Lifetime 1-10+ minutes • Winds less than 110 mph	• 29% of all tornadoes • Nearly 30% of all tornado deaths • May last 20 minutes or longer • Winds 110 – 205 mph	• 2% of all tornadoes • 70% of all tornado deaths • Lifetime can exceed one hour • Winds greater than 205 mph

LOCATION

Tornadoes do not have any specific geographic boundary and can occur throughout the county uniformly. It is assumed that the entire Dallas County planning area, including participating jurisdictions, is uniformly exposed to tornado activity. The entire Dallas County planning area is in Wind Zone IV (Figure 13-1), where tornado winds can be as high as 250 mph.

Figure 13-1. FEMA Wind Zones in the United States[1]



EXTENT

The destruction caused by tornadoes ranges from light to inconceivable, depending on the intensity, size, and duration of the storm. Typically, tornadoes cause the greatest damage to structures of light construction, such as residential homes (particularly manufactured homes).

Tornado magnitudes prior to 2007 were determined using the traditional version of the Fujita Scale, which estimated tornado wind speeds based on the damage caused by an event. Since February 2007, the Enhanced Fujita Scale has been utilized to classify tornadoes, which included improvements to the original scale. The original Fujita scale had limitations, such as a lack of damage indicators, no account for construction quality and variability, and no definitive correlation between damage and wind speed. These limitations led to some tornadoes being rated in an inconsistent manner and, in some cases, an overestimate of tornado wind speeds. The Enhanced Fujita scale retains the same basic design and six strength categories as the previous scale. The newer scale reflects more refined assessments of tornado damage surveys, standardization, and damage consideration to a wider range of structures. Table 13-2 includes both scales for reference when analyzing historical tornados since tornado events prior to 2007 will follow the original Fujita Scale.

[1] The Dallas County planning area is indicated by the black circle.

Table 13-2. The Fujita and Enhanced Fujita Tornado Scale[2]

Enhanced Fujita Scale				Fujita Scale			
Category	**Wind Speed**	**Damage Level**	**Damage**	**Category**	**Wind Speed**	**Intensity**	**Damage**
EF0	65-85 MPH	Gale	The environment sustained minor damage: tree branches are broken, some shallow-rooted trees are uprooted, and some chimneys are damaged.	**F0**	45-78 MPH	Gale	Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
EF1	86-110 MPH	Weak	The environment sustained moderate damage: mobile homes are tipped over, windows are broken, roof tiles may be blown off, and some tree trunks have snapped.	**F1**	79-117 MPH	Moderate	Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
EF2	111-135 MPH	Strong	The environment sustained considerable damage: mobile homes are destroyed, roofs are damaged, debris flies in the air, and large trees are snapped or uprooted.	**F2**	118-161 MPH	Significant	Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165 MPH	Severe	The environment sustained severe damage: roofs and walls are ripped off buildings, small buildings are destroyed, and most trees are uprooted.	**F3**	162-209 MPH	Severe	Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
EF4	166-200 MPH	Devastating	The environment sustained devastating damage: well-built homes are destroyed, buildings are lifted off their foundations, cars are blown away, and large debris flies in the air.	**F4**	210-261 MPH	Devastating	Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown, and large missiles generated.
EF5	200+ MPH	Incredible	The environment sustained incredible damage: well-built homes are lifted from their foundations, reinforced concrete buildings are damaged, the bark is stripped from trees, and car-sized debris flies through the air.	**F5**	262-317 MPH	Incredible	Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.

[2] Source: http://www.tornadoproject.com/fscale/fscale.htm

Both the Fujita Scale and Enhanced Fujita Scale should be referenced in reviewing previous occurrences since tornado events that occurred before 2007 will follow the original Fujita Scale. The greatest magnitude reported within the planning area is an F4 (an EF5 when converted to the on the Enhanced Fujita Scale), an incredible tornado. Based on the planning area's location in Wind Zone IV, the planning area has the potential to experience anywhere from an EF0 to an EF5. Previous tornado events in the Dallas County planning area (converted from the Fujita Scale) have been between EF0 and EF5 (Figure 13-2).

HISTORICAL OCCURRENCES

The National Centers for Environmental Information (NCEI) Storm Events database is a national data source organized under the National Oceanic and Atmospheric Administration (NOAA). The NCEI is the largest archive available for historic storm events data; however, it is important to note that only incidents recorded in the NCEI have been factored into this risk assessment unless otherwise noted. It is likely that a high number of occurrences have gone unreported over time.

Figure 13-2 identifies the locations of previous occurrences in the Dallas County planning area from January 1952 through May 2024. A total of 110 events have been recorded by NOAA's Storm Prediction Center and the NCEI Storm Events databases for the Dallas County planning area. The strongest event reported in the planning area was an F4 tornado (an EF5 when converted to the Enhanced Fujita Scale) that occurred on April 25, 1994, in the City of Lancaster. In terms of injuries and fatalities, the most significant tornado occurred in Dallas County on December 26, 2015, which was an EF4 tornado that caused 10 fatalities and 468 injuries as well as $34,112,600 in damages (2024 dollars).

Figure 13-2. Spatial Historical Tornado Events, January 1952 – May 2024[3]

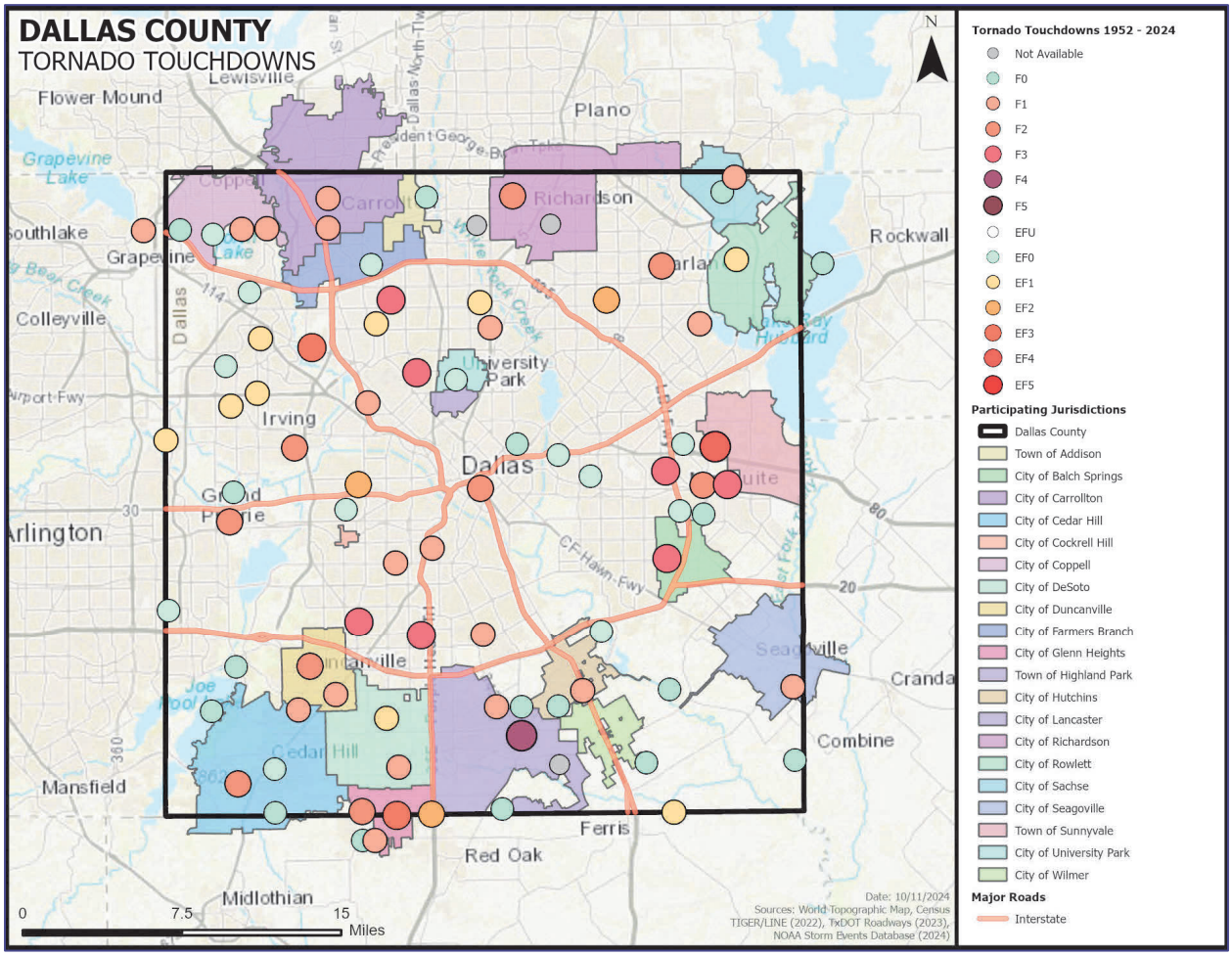


Table 13-3. Historical Tornado Events, January 1952 – May 2024[4]

JURISDICTION	DATE	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	3/2/1952	F0	0	0	$29,500	$0
Dallas County	4/2/1957	F3	10	200	$27,807,000	$0
Dallas County	4/3/1957	F0	0	0	$2,800	$0
Dallas County	4/20/1957	-	0	0	$400	$0
Dallas County	6/12/1957	F3	0	0	$27,700	$0
Dallas County	8/12/1958	F2	0	0	$26,900	$0

[3] Source: NOAA Storm Prediction Center
[4] Only recorded events with fatalities, injuries or damages are listed. Magnitude is listed when available. Damage values are in 2024 dollars.

SECTION 13: TORNADO

JURISDICTION	DATE	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	10/4/1959	F3	0	0	$2,638,900	$0
Dallas County	5/5/1960	F0	0	0	$26,300	$0
Dallas County	4/11/1961	F2	0	3	$260,400	$0
Dallas County	5/23/1966	F2	0	0	$240,200	$0
Dallas County	5/13/1968	F1	0	0	$2,300	$0
Dallas County	5/25/1968	F0	0	1	$224,900	$0
Dallas County	10/12/1969	F3	0	2	$20,800	$0
Dallas County	4/25/1970	F2	0	12	$20,151,100	$0
Dallas County	2/18/1971	F1	0	0	$19,500	$0
Dallas County	10/19/1971	F1	0	2	$1,896,900	$0
Dallas County	12/14/1971	F2	0	4	$18,876,300	$0
Dallas County	12/14/1971	F1	0	4	$18,876,300	$0
Dallas County	12/14/1971	F1	0	1	$18,876,300	$0
Dallas County	12/14/1971	F1	0	0	$1,887,700	$0
Dallas County	12/14/1971	F1	0	1	$188,800	$0
Dallas County	11/12/1972	F1	0	0	$1,829,800	$0
Dallas County	11/12/1972	F1	0	0	$183,000	$0
Dallas County	5/1/1973	F1	0	0	$176,800	$0
Dallas County	4/11/1974	F2	0	0	$1,616,300	$0
Dallas County	3/26/1976	F1	0	0	$1,400	$0
Dallas County	5/26/1976	F3	0	1	$13,731,300	$0
Dallas County	7/4/1976	-	0	0	$13,600	$0
Dallas County	4/20/1977	F2	0	0	$129,400	$0
Dallas County	5/3/1979	F2	0	5	$108,505,600	$0
Dallas County	5/3/1979	F1	0	0	$108,600	$0
Dallas County	5/3/1979	F1	0	0	$108,600	$0
Dallas County	5/3/1979	F0	0	0	$1,100	$0
Dallas County	5/8/1981	F2	0	0	$86,400	$0

JURISDICTION	DATE	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	3/14/1982	F1	0	0	$821,000	$0
Dallas County	5/11/1982	F1	0	1	$809,900	$0
Dallas County	3/23/1984	F1	0	0	$75,700	$0
Dallas County	12/13/1984	F3	0	28	$73,676,700	$0
Dallas County	12/13/1984	F3	0	0	$73,676,700	$0
Dallas County	5/13/1985	F2	0	16	$7,230,400	$0
Dallas County	1/19/1990	F2	0	1	$6,089,600	$0
Dallas County	10/7/1992	F0	0	0	$5,500	$0
City of Sachse	5/9/1993	F1	0	1	$10,760,300	$0
City of DeSoto	4/25/1994	F2	0	7	$105,266,700	$0
City of Lancaster	4/25/1994	F4	3	48	$1,052,700	$0
City of Cedar Hill	4/25/1994	F0	0	0	$105,300	$0
Dallas County	4/19/1995	F1	0	8	$12,257,800	$0
City of DeSoto	1/17/1996	F1	0	1	$1,507,500	$0
City of Lancaster	1/17/1996	F2	0	0	$1,507,500	$0
Dallas County	10/21/1996	F1	0	7	$5,881,100	$0
Dallas County	10/21/1996	F0	0	1	$235,300	$0
City of Carrollton	9/5/2001	F1	0	0	$217,600	$0
Dallas County	4/5/2003	F0	0	0	$1,700	$0
Dallas County	4/13/2007	EF0	0	0	$75,100	$0
City of Cedar Hill	6/26/2007	EF0	0	0	$89,400	$0
City of DeSoto	4/10/2008	EF1	0	0	$1,444,600	$0
Dallas County	9/8/2010	EF2	0	1	$1,065,500	$0
Dallas County	9/8/2010	EF1	0	0	$284,200	$0
Dallas County	5/24/2011	EF1	0	0	$206,100	$0
City of DeSoto	4/3/2012	EF2	0	10	$539,498,100	$4,100
Dallas County	4/3/2012	EF0	0	2	$404,700	$0
City of Coppell	4/3/2012	EF0	0	0	$202,400	$0

JURISDICTION	DATE	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	4/3/2012	EF0	0	0	$134,900	$0
Dallas County	4/3/2012	EF0	0	0	$5,400	$0
Dallas County	5/8/2014	EF0	0	0	$104,400	$0
Dallas County	5/24/2015	EF1	0	0	$783,000	$0
Dallas County	5/24/2015	EF1	0	0	$130,500	$0
Dallas County	12/26/2015	EF4	10	468	$34,112,600	$0
City of DeSoto	12/26/2015	EF3	0	0	$1,797,500	$0
Dallas County	1/15/2017	EF0	0	0	$153,400	$0
Dallas County	3/9/2019	EF0	0	0	$12,300	$0
City of Farmers Branch	6/16/2019	EF0	0	0	$24,300	$0
Dallas County	10/20/2019	EF2	0	0	$482,342,700	$0
City of Richardson	10/20/2019	EF3	0	0	$18,520,800	$0
City of Rowlett	10/20/2019	EF1	0	0	$12,058,600	$0
Dallas County	1/10/2020	EF0	0	0	$18,100	$0
Dallas County	5/16/2021	EF1	0	0	$57,700	$0
Town of Highland Park	5/16/2021	EF0	0	0	$2,400	$0
TOTALS		**(MAX EXTENT)**	**23**	**836**	**$1,633,280,600**	**$4,100**

Table 13-4. Summary of Historical Tornado Events, January 1952 – May 2024

JURISDICTION	NUMBER OF EVENTS	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	82	EF4	20	769	$939,224,900	$0
Town of Addison	0	-	-	-	-	-
City of Balch Springs	1	F0	0	0	$0	$0
City of Carrollton	1	F1	0	0	$217,600	$0
City of Cedar Hill	3	EF0	0	0	$194,700	$0
City of Cockrell Hill	0	-	-	-	-	-
City of Coppell	1	EF0	0	0	$202,400	$0

JURISDICTION	NUMBER OF EVENTS	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of DeSoto	5	EF3	0	18	$649,514,400	$4,100
City of Duncanville	0	-	-	-	-	-
City of Farmers Branch	1	EF0	0	0	$24,300	$0
City of Glenn Heights	0	-	-	-	-	-
Town of Highland Park	1	EF0	0	0	$2,400	$0
City of Hutchins	0	-	-	-	-	-
City of Lancaster	8	F4	3	48	$2,560,200	$0
City of Richardson	2	EF3	1	8	$18,520,800[5]	$0
City of Rowlett	1	EF1	0	0	$12,058,600	$0
City of Sachse	1	F1	0	1	$10,760,300	$0
City of Seagoville	2	F1	0	0	$0	$0
Town of Sunnyvale	0	-	-	-	-	-
City of University Park	0	-	-	-	-	-
City of Wilmer	1	F0	0	0	$0	$0
TOTALS	**110**	**(MAX EXTENT)**	**24**	**844**	**$1,633,284,700**	

In summary, Dallas County has experienced the greatest number of tornado events (82) based on the NCEI records, with the City of Lancaster reporting the second greatest number of events (8), followed by the City of DeSoto (5). Based on the list of historical tornado events for the Dallas County planning area including all participating jurisdictions, there have been five recorded events since the 2020 Plan.

SIGNIFICANT EVENTS

April 4, 1924 – City of Richardson[6]

On April 4, 1924, a tornado touched ground in the City of Richardson resulting in 1 fatality and at least 8 injuries. This tornado was estimated to have caused more than $738,400 in damage.

[5] City of Richardson provided additional damage estimates to include in the historical event summary. Estimated damages have been adjusted for inflation.

[6] Event date is outside of the reporting period available in the NCEI for this hazard. Event damages have not been included in the annualized loss calculation due to data limitations between 1924 and 1950. This event was included in Significant Events due to the severity of the event and details were provided by City of Richardson. Estimated damages have been adjusted for inflation.

April 2, 1957 – Dallas County
From April 2nd to April 5th, a deadly tornado outbreak sequence struck much of the southern United States, producing at least 73 tornadoes from Texas to Virginia. The most notable tornado was of F3 magnitude and hit the Dallas-Fort Worth Metroplex, which included the Dallas County planning area. This tornado killed 10 people and injured 200 others, completely destroyed over 140 homes and apartment buildings, and damaged hundreds of other structures. Total damages from this tornado were estimated at $27,807,000 (2024 dollars).

April 25, 1994 – Cities of Lancaster, Cedar Hill, & DeSoto
A severe weather system led to multiple tornadoes of varying intensities throughout the Dallas County planning area. The strongest tornado was an F4 that formed in the City of Lancaster, where it touched down and remained on the ground for approximately 6 miles with a diameter of half a mile. This tornado majorly damaged the built environment in its path, destroying 223 homes, 58 businesses, and 80 percent of the historic downtown square, in addition to damaging hundreds of other structures. This tornado also killed 3 people and injured 48 others. A smaller F2 tornado touched down in the City of DeSoto, destroying an additional 75 homes, 10 businesses, and damaging hundreds of other structures including City Hall. The City of Cedar Hill also had an F0 tornado touch down, with comparably less destruction seeing only trees and power lines being blown down. Altogether, these damages across the three affected jurisdictions were estimated at $106,424,700 (2024 dollars).

April 3, 2012 – Dallas County, City of Lancaster
A historic North Texas tornado outbreak led to the development of 17 tornadoes developing across the Dallas-Fort Worth Metroplex. The most significant of these to the Dallas County planning area was an EF2 which crossed into Dallas County from Ellis County. The tornado did significant damage, including crumpling an RV, pushing cars into fences, knocking down many trees, and blowing out windows on homes and automobiles. In the City of Lancaster, 64 homes were destroyed, 51 sustained major damage, and another 58 sustained minor damage. Ten injuries were also reported as a result of this tornado. In total, property damages were estimated at $539,498,100 (2024 dollars).

December 26, 2015 – Dallas County / Garland / Rowlett / Sunnyvale
A potent storm system brought severe weather and deadly tornadoes to North Texas, the strongest of which was an EF4 that struck Dallas County and the cities of Garland, Rowlett, and Sunnyvale. The tornado began in Sunnyvale, where several mobile homes were destroyed along a wide and long path. The full tornado length was a little over 13 miles, with nearly ten miles within Dallas County. Nine people lost their lives in vehicles as the tornado crossed Interstate 30 at the President George Bush Turnpike. Another male died after sustaining injuries in a collapsed home in Rowlett. Eight of the 10 died that night, but one died on January 8th from his injuries, and another passed away on January 18th. The tornado affected nearly 600 homes in Dallas County, destroying nearly 400 of these homes. Twenty-two businesses were affected by this tornado, with one business being completely destroyed. In addition to the ten fatalities, 468 people were injured during this event. Property damage was estimated at $34,112,600 (2024 dollars).

October 20, 2019 – Dallas County
Severe weather led to an F2 tornado developing in Dallas County, which touched down on Kenmore Street just north of West Miller Road where a warehouse was heavily damaged. Further on the tornado's path an empty 18-wheeler was tipped over, another warehouse was nearly

collapsed, and numerous homes and trees were damaged. No fatalities or injuries were reported as a result of this tornado; property damage was estimated at $482,342,700 (2024 dollars).

PROBABILITY OF FUTURE EVENTS

Tornadoes can occur at any time of year and at any time of day, but they are typically more common in the spring months during the late afternoon and evening hours. A smaller, high frequency period can emerge in the fall during the brief transition between the warm and cold seasons. With 108 historical events over a 72.5-year[7] reporting period, the Dallas County planning area can anticipate a tornado touchdown approximately once or twice each year. This frequency supports a "Highly Likely" probability of future events for the Dallas County planning area, including all participating jurisdictions.

VULNERABILITY AND IMPACT

Because tornadoes often cross jurisdictional boundaries, all existing and future buildings, facilities, and populations in the entire Dallas County planning area, including participating jurisdictions, are considered to be exposed to this hazard and could potentially be impacted. The damage caused by a tornado is typically a result of high wind velocity, wind-blown debris, lightning, and large hail.

The average tornado moves from southwest to northeast, but tornadoes have been known to move in any direction. Consequently, vulnerability of humans and property is difficult to evaluate since tornadoes form at different strengths, in random locations, and create relatively narrow paths of destruction. Although tornadoes strike at random, making all buildings vulnerable, three types of structures are more likely to suffer damage:

- Manufactured Homes;
- Homes built of peer and beam construction (more susceptible to lift); and
- Buildings with large spans, such as shopping malls, gymnasiums, and factories.

Tornadoes can cause a significant threat to people as they could be struck by flying debris, falling trees / branches, utility lines, and poles. Blocked roads could prevent first responders from responding to calls. Tornadoes commonly cause power outages which could cause health and safety risks to residents and visitors, as well as to patients in hospitals.

The Dallas County planning area features mobile or manufactured home parks throughout the planning area. These parks are typically more vulnerable to tornado events than typical site-built structures. In addition, manufactured homes are located sporadically throughout the planning area, which would also be more vulnerable. The U.S. Census data indicates a total of 16,390 (2 percent of total housing stock) manufactured homes located in the Dallas County planning area. In addition, 47 percent (approximately 492,078 structures) of the single family residential (SFR) structures in the entire planning area were built before 1980. These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damage during significant wind events (Table 13-5). Based on 2022 American Community Survey (ACS) five-year estimates, the cities of Richardson and Carrollton have the

[7] Reporting period is rounded to the nearest half year.

highest reported number of single-family residences built before 1980, causing these jurisdictions to potentially sustain more structural damage due to a tornado event.

Table 13-5. Structures at Greater Risk by Participating Jurisdiction

JURISDICTION	TOTAL HOUSING UNITS	BUILT PRIOR TO 1980	MOBILE HOME
Dallas County	1,040,669	492,078	16,390
Town of Addison	10,576	1,549	0
City of Balch Springs	8,865	3,734	389
City of Carrollton	52,646	14,956	137
City of Cedar Hill	16,662	2,149	73
City of Cockrell Hill	1,285	1,146	25
City of Coppell	16,006	1,119	233
City of DeSoto	21,593	4,124	495
City of Duncanville	14,632	8,681	26
City of Farmers Branch	16,313	7,337	27
City of Glenn Heights	5,350	549	749
Town of Highland Park	3,696	2,006	0
City of Hutchins	1,399	463	355
City of Lancaster	14,865	4,723	243
City of Richardson	47,777	21,448	0
City of Rowlett	22,102	2,539	392
City of Sachse	9,758	393	170
City of Seagoville	5,603	1,716	579
City of Sunnyvale	2,694	228	0
City of University Park	7,799	3,088	6
City of Wilmer	1,870	490	812

While all citizens are at risk to the impacts of a tornado, forced relocation and disaster recovery disproportionately impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. The elderly, children, and people with a disability may have trouble taking shelter due to mobility issues or a lack of awareness, making them more susceptible to injury or harm. In addition, people who speak a language other than English may face increased vulnerability due to language barriers that limit

their access to important information such as weather-related warnings and instructions regarding safety measures. The population over 65 in the Dallas County planning area is estimated at 11 percent of the total population and children under the age of 5 are estimated at 7 percent. The population with a disability is estimated at 10 percent of the total population. In addition, an estimated 14 percent of the planning area population live below the poverty level and 17 percent of the populations speaks a language other than English (Table 13-6).

Table 13-6. Populations at Greater Risk by Participating Jurisdiction[8]

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
Dallas County	290,461	182,349	264,190	364,567	440,684
Town of Addison	1,711	736	1,000	1,445	1,891
City of Balch Springs	2,659	2,008	3,721	3,116	5,512
City of Carrollton	17,122	6,820	10,950	8,995	19,892
City of Cedar Hill	5,384	2,867	5,750	4,776	3,866
City of Cockrell Hill	550	247	372	315	1,222
City of Coppell	4,206	2,656	2,367	1,105	2,899
City of DeSoto	8,490	3,030	7,477	4,582	2,805
City of Duncansville	6,485	2,387	4,802	4,069	4,951
City of Farmers Branch	4,336	2,094	2,573	3,167	6,473
City of Glenn Heights	1,206	902	2,383	1,677	854
Town of Highland Park	1,668	538	356	513	135
City of Hutchins	292	576	460	1,436	1,236
City of Lancaster	3,648	4,058	4,236	6,021	2,867
City of Richardson	14,931	7,510	9,972	12,751	11,935
City of Rowlett	7,416	3,890	6,004	4,684	4,152
City of Sachse	3,515	1,321	2,823	557	2,615
City of Seagoville	2,252	1,617	2,116	2,631	3,730
Town of Sunnyvale	1,146	275	732	567	243

[8] U.S. Census Bureau 2022 data for Dallas County

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
City of University Park	2,228	1,451	844	1,209	286
City of Wilmer	673	581	712	961	976

The Dallas County Planning Team identified the following critical facilities as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by tornado events (Table 13-7). The critical infrastructure with the greatest vulnerability to tornadoes are power and communications facilities. Failures of these facilities can result in a loss of service and cascading impacts such as posing enormous risk to individuals dependent on electricity as a medical necessity. For a comprehensive list by participating jurisdiction, please see Appendix C.

Table 13-7. Critical Facilities Vulnerable to Tornado Event

CRITICAL FACILITIES	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Emergency vehicles can be damaged by falling trees or flying debris. • Power outages could disrupt communications, delaying emergency response times. • Critical staff may be injured or otherwise unable to report for duty, limiting response capabilities. • Debris/downed trees can impede emergency response vehicle access to areas. • Increased number of structure fires due to gas line ruptures and downed power lines, further straining the capacity and resources of emergency personnel. • First responders are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions. • Extended power outages and evacuations may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities	• Structures can be damaged by falling trees damaged by lightning. • Power outages could disrupt critical care. • Backup power sources could be damaged. • Evacuations may be necessary due to extended power outages, fires, or other associated damage to facilities. • Power outages and infrastructure damage may prevent larger airports from acting as temporary command centers for logistics, communications, and emergency operations. • Temporary break in operations may significantly inhibit post event evacuations.

CRITICAL FACILITIES	POTENTIAL IMPACTS
	• Damaged or destroyed highway infrastructure may substantially increase the need for airport operations.
Commercial Supplier (Food, fuel, etc.)	• Facilities or infrastructure may be damaged, destroyed or otherwise inaccessible. • Essential supplies like medicines, water, food, and equipment deliveries may be significantly delayed. • Additional emergency responders and critical aid workers may not be able to reach the area for days.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Emergency vehicles can be damaged by falling trees or flying debris. • Power outages could disrupt communications, delaying emergency response times. • Critical staff may be injured or otherwise unable to report for duty, limiting response capabilities. • Debris/downed trees can impede emergency response vehicle access to areas. • Increased number of structure fires due to gas line ruptures and downed power lines, further straining the capacity and resources of emergency personnel. • First responders are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions. • Extended power outages and evacuations may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.

The total loss estimate due to tornado events is $1,633,284,700 (in 2024 dollars), having an approximate average annual loss of $22,528,000. Tornadoes have also caused 24 fatalities and 844 injuries (including 1924 event) historically in the Dallas County planning area. Based on historic damages and best available data, the impact of a tornado event in terms of structures and infrastructure would be considered Limited with critical facilities shutdown for 24-hours or less and less than ten percent of property destroyed or with major damage. However, with 23 fatalities and more than 800 injuries, the impact of tornadoes in the Dallas County planning area is considered “Substantial” with multiple fatalities possible depending on the scale and extent of the event.

Table 13-8. Estimated Average Annual Losses by Jurisdiction

JURISDICTION	TOTAL PROPERTY & CROP LOSS	AVERAGE ANNUAL LOSS ESTIMATES
Dallas County	$939,224,900	$12,954,800
Town of Addison	$0	$0
City of Balch Springs	$0	$0
City of Carrollton	$217,600	$3,000

JURISDICTION	TOTAL PROPERTY & CROP LOSS	AVERAGE ANNUAL LOSS ESTIMATES
City of Cedar Hill	$194,700	$2,700
City of Cockrell Hill	$0	$0
City of Coppell	$202,400	$2,800
City of DeSoto	$649,518,500	$8,958,900
City of Duncanville	$0	$0
City of Farmers Branch	$24,300	$300
City of Glenn Heights	$0	$0
Town of Highland Park	$2,400	$0
City of Hutchins	$0	$0
City of Lancaster	$2,560,200	$35,300
City of Richardson	$18,520,800	$255,500
City of Rowlett	$12,058,600	$166,300
City of Sachse	$10,760,300	$148,400
City of Seagoville	$0	$0
Town of Sunnyvale	$0	$0
City of University Park	$0	$0
City of Wilmer	$0	$0
TOTALS	**$1,633,284,700**	**$22,528,000**

ASSESSMENT OF IMPACTS

Tornadoes have the potential to pose a significant risk to the population and can create dangerous situations. Often, providing and preserving public health and safety is difficult. The impact of climate change could produce larger, more severe tornado events, exacerbating the current tornado impacts. More destructive tornado conditions can be frequently associated with a variety of impacts, including:

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Manufactured homes (2 percent of total housing stock) may suffer substantial damage as they would be more vulnerable than typical site-built structures.

- Portable classrooms may also suffer substantial damage as they would be more vulnerable than other classroom structures.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.
- Tornadoes often result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outages can result in an increase in structure fires and/or carbon monoxide poisoning as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- Tornadoes can destroy or make residential structures uninhabitable, requiring shelter or relocation of residents in the aftermath of the event.
- First responders must enter the damage area shortly after the tornado passes to begin rescue operations and to organize cleanup and assessments efforts, therefore they are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.
- Emergency operations and services may be significantly impacted due to damaged facilities, loss of communications, and damaged emergency vehicles and equipment.
- Private sector entities such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue, especially if damage is sustained to major employers within the planning area.
- Damage to infrastructure may slow economic recovery since repairs may be extensive and lengthy.
- When the community is affected by significant property damage it is anticipated that funding would be required for infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, and normal day-to-day operating expenses.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Residential structures destroyed by a tornado may not be rebuilt for years, reducing the tax base for the community.
- Large or intense tornadoes may result in a dramatic population fluctuation, as people are unable to return to their homes or jobs and must seek shelter and/or work outside of the affected area.
- Businesses that are uninsured or underinsured may have difficulty reopening, which results in a net loss of jobs for the community and a potential increase in the unemployment rate.
- Recreation activities may be unavailable, and tourism can be unappealing for years following a large tornado, devastating directly related local businesses.
- Tornadoes may destroy or degrade endangered species habitat.

- Historical sites and properties are placed at a higher risk of impact due to materials used and the inability to change properties due to their historic status. The Dallas County planning area has 152 historical sites listed on the National Register of Historical Places.

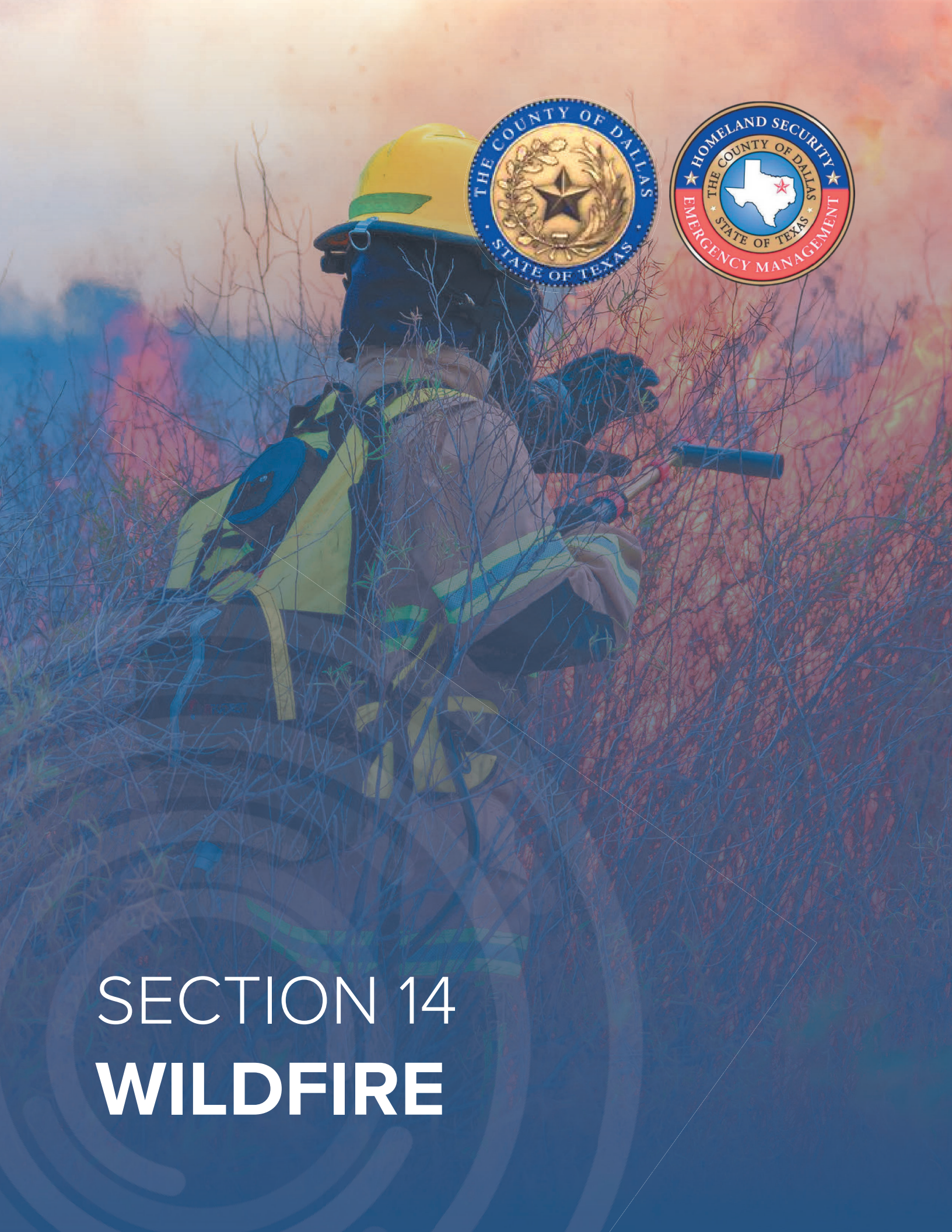
The economic and financial impacts of a tornado event on the community will depend on the scale of the event, what is damaged, costs of repair or replacement, lost business days in impacted areas, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the community, local businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a tornado event.

CLIMATE CHANGE CONSIDERATIONS

The impacts on the frequency and severity of tornado events due to climate change are unclear. According to the Texas A&M 2021 Climate Report Update, the most robust trend in tornado activity in Texas is a likelihood for a greater number of tornadoes in large outbreaks, although the factors contributing to this trend are not expected to continue. Tornadoes spawn from less than 10 percent of thunderstorms, usually supercell thunderstorms that are in a wind shear environment that promotes rotation.[9] Based on climate models that are available, the environmental conditions needed for severe thunderstorm events are estimated to become more likely, resulting in an overall increase in the number of days capable of producing a severe thunderstorm event and potential tornadoes to develop from these storms.[10]

[9] Treisman, Rachel. *The exact link between tornadoes and climate change is hard to draw. Here's why*. NPR. December 13, 2021. https://www.npr.org/2021/12/13/1063676832/the-exact-link-between-tornadoes-and-climate-change-is-hard-to-draw-heres-why

[10] Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, Texas A&M University Office of the Texas State Climatologist, 2021 update.



SECTION 14
WILDFIRE

SECTION 14: WILDFIRE

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HAZARD DESCRIPTION

Wildfire is an unplanned fire burning in natural or wildland areas such as forests, shrub lands, grasslands, or prairies.[1] Texas is one of the fastest growing states in the Nation, with much of this growth occurring adjacent to metropolitan areas. This increase in population across the state will impact counties and communities that are located within the Wildland Urban Interface (WUI). The WUI is described as the area where structures and other human improvements meet and intermingle with undeveloped wildland or vegetative fuels. Population growth within the WUI substantially increases the risk from wildfire. In Texas nearly 85 percent of wildfires occur within two miles of a community. The Dallas County planning area has an estimated 21 percent of the total planning area population that live within the WUI.[2]

Wildfires have the potential to spread quickly given the right environmental conditions, particularly within the wildland urban interface and intermix. Most ignition sources for wildfires are a result of human activities, such as an electrical line sparking dry grasses, an improperly discarded cigarette, burning debris, or arson.

Development has increased drastically in north Texas, resulting in more populated areas within the wildland interface / intermix. Additionally, the area is experiencing hotter, drier climatic conditions. These factors combine to make north Texas at risk from wildfires. While the planning area is continually at some risk for wildfires, that risk is elevated during two periods each year: the winter wildfire season (February through April) and the summer wildfire season (August through October).

The Dallas County population is expected to increase over time following population trends over the last few decades. Continued housing development in the WUI will put more people at a greater risk of catastrophic wildfire and put more pressure on land managers and fire department personnel to mitigate fire risk.

Wildfires spread based on the type and quantity of fuel that surrounds it. Fuel can include everything from trees, underbrush and dry grassy fields to homes. The amount of flammable material that surrounds a fire is referred to as the fuel load. Conditions in the weather and

[1] FEMA: https://hazards.fema.gov/nri/wildfire
[2] Texas A&M Forest Service, Texas Wildfire Risk Assessment Summary Report, Dallas County: https://texaswildfirerisk.com/

environment, such as drought, winds and extreme heat, can cause a fire to spread more quickly.[3] A wildfire event often begins unnoticed and spreads quickly, lighting brush, trees, and homes on fire. For example, a wildfire may be started by a campfire that was not doused properly, a tossed cigarette, burning debris, or arson.

Texas has seen a significant increase in the number of wildfires in the past 30 years, including wildland, urban interface, or intermix fires. Wildland fires are fueled almost exclusively by natural vegetation, while interface or intermix fires are urban / wildland fires in which vegetation and the built environment provide the fuel.

LOCATION

A wildfire incident can face devastating consequences due to human activities, drought conditions, lightning, or wind events, if the conditions allow. Wildfires can vary greatly in terms of size, location, intensity, and duration. While wildfires are not confined to any specific geographic location, they are most likely to occur in open grasslands.

The Texas A&M Forest Service Wildfire Risk Assessment Portal (TxWRAP) provides historical wildfire data for Texas counties along with mapping resources that include data layers on the WUI, ignition density, and fire intensity scales for communities throughout the Dallas County planning area, along with multiple tips, recommendations and mitigation solutions for communities and residents. The TxWRAP portal was utilized to produce the maps found in this profile.

The threat to people and property from a wildfire event is greater in the fringe areas where developed areas meet open grass lands, such as the Wildland Urban Interface (WUI) (Figures 14-1 through 14-21). It is estimated that 21 percent of the total population in the Dallas County planning area live within the WUI. However, the entire planning area is at some risk for wildfires.

[3] NOAA Weather Forecasting: https://scijinks.gov/wildfires/

Figure 14-1. Wildland Urban Interface Map – Dallas County

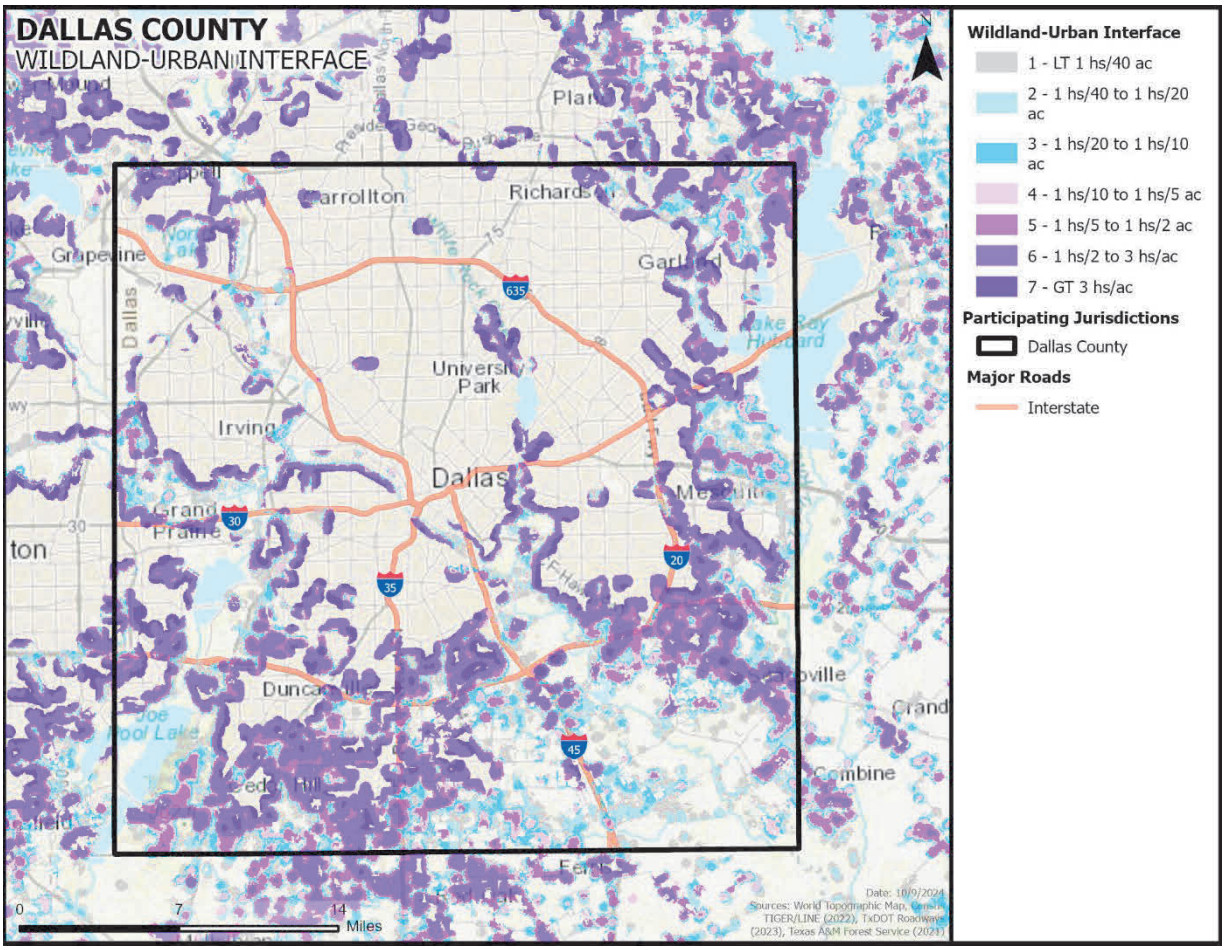
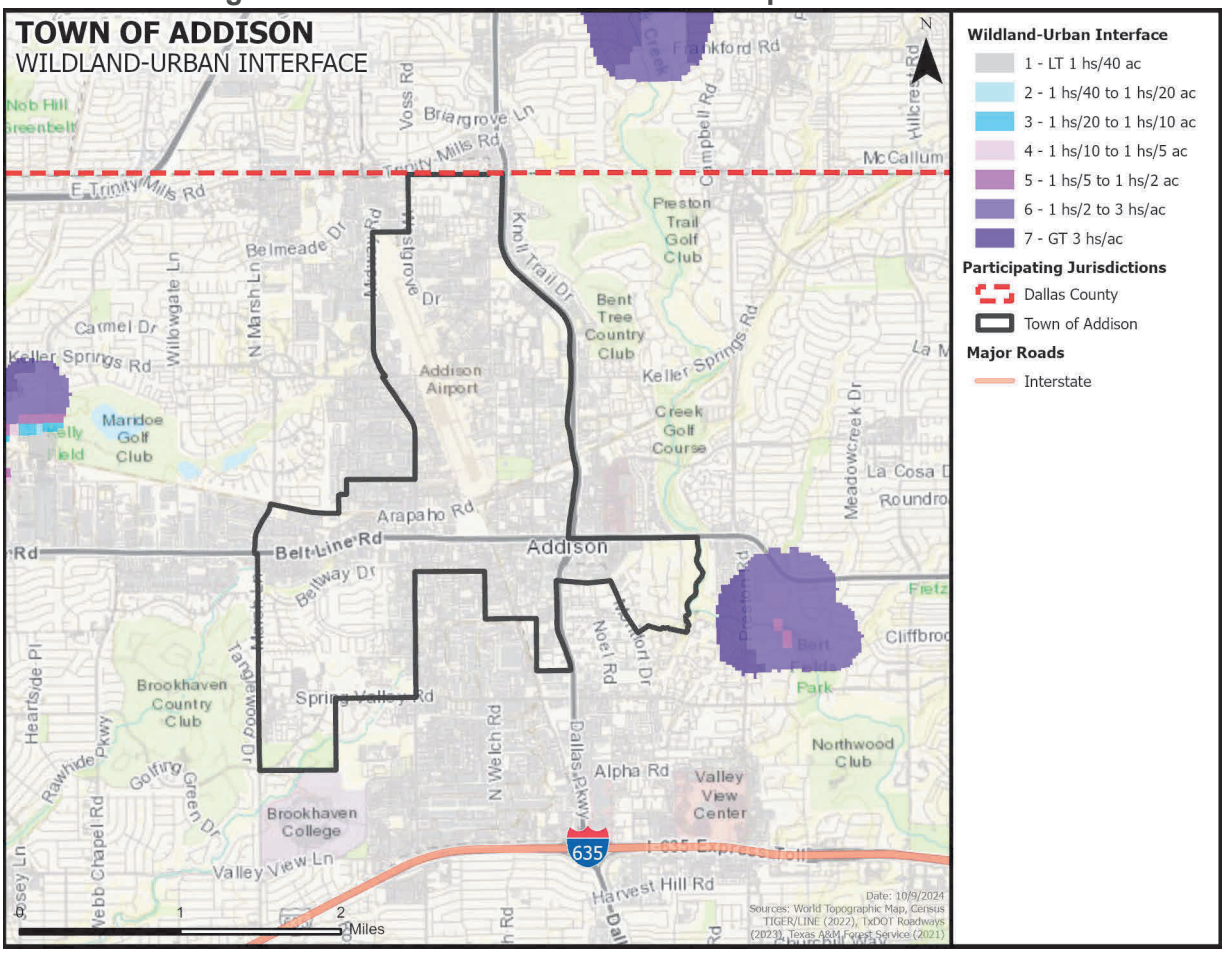
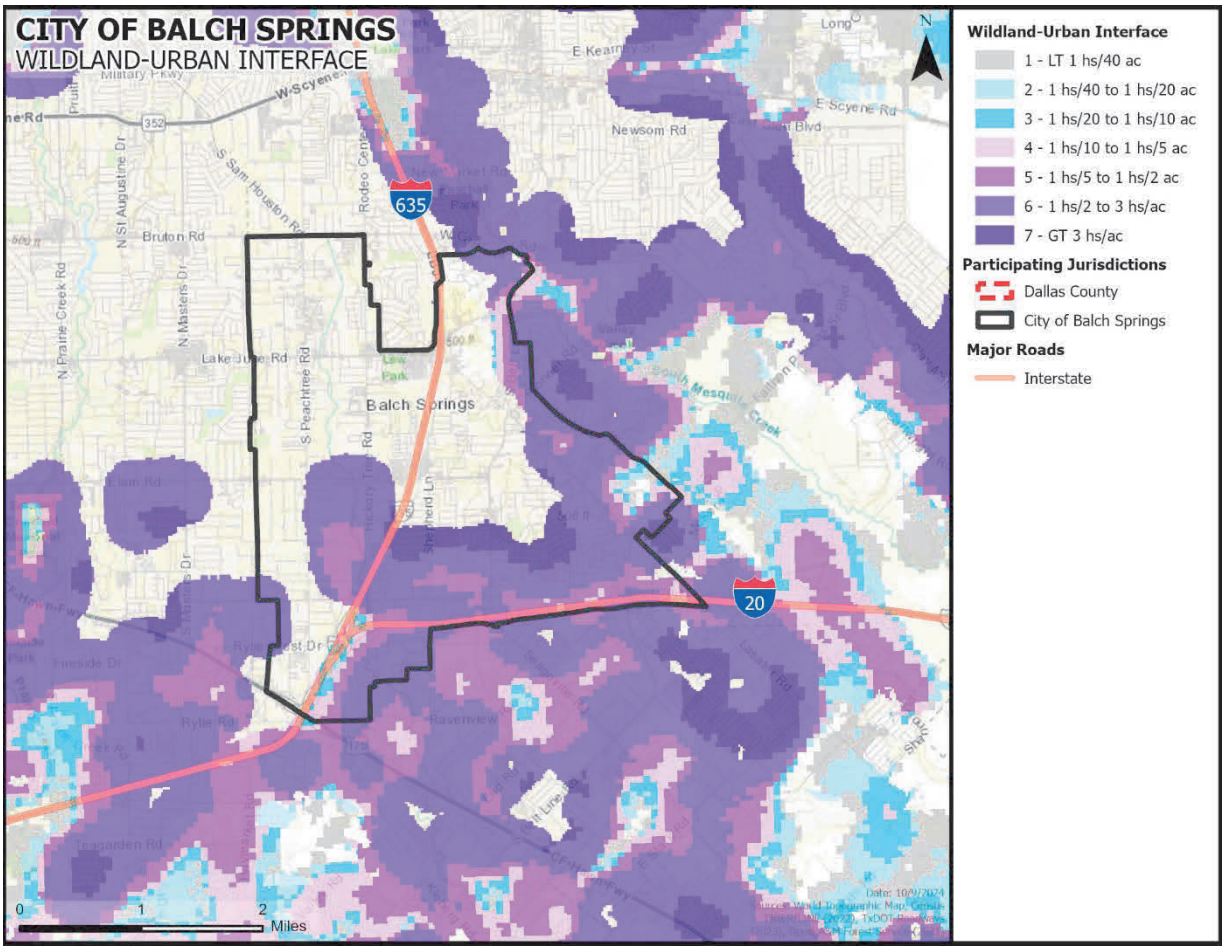


Figure 14-2. Wildland Urban Interface Map – Town of Addison



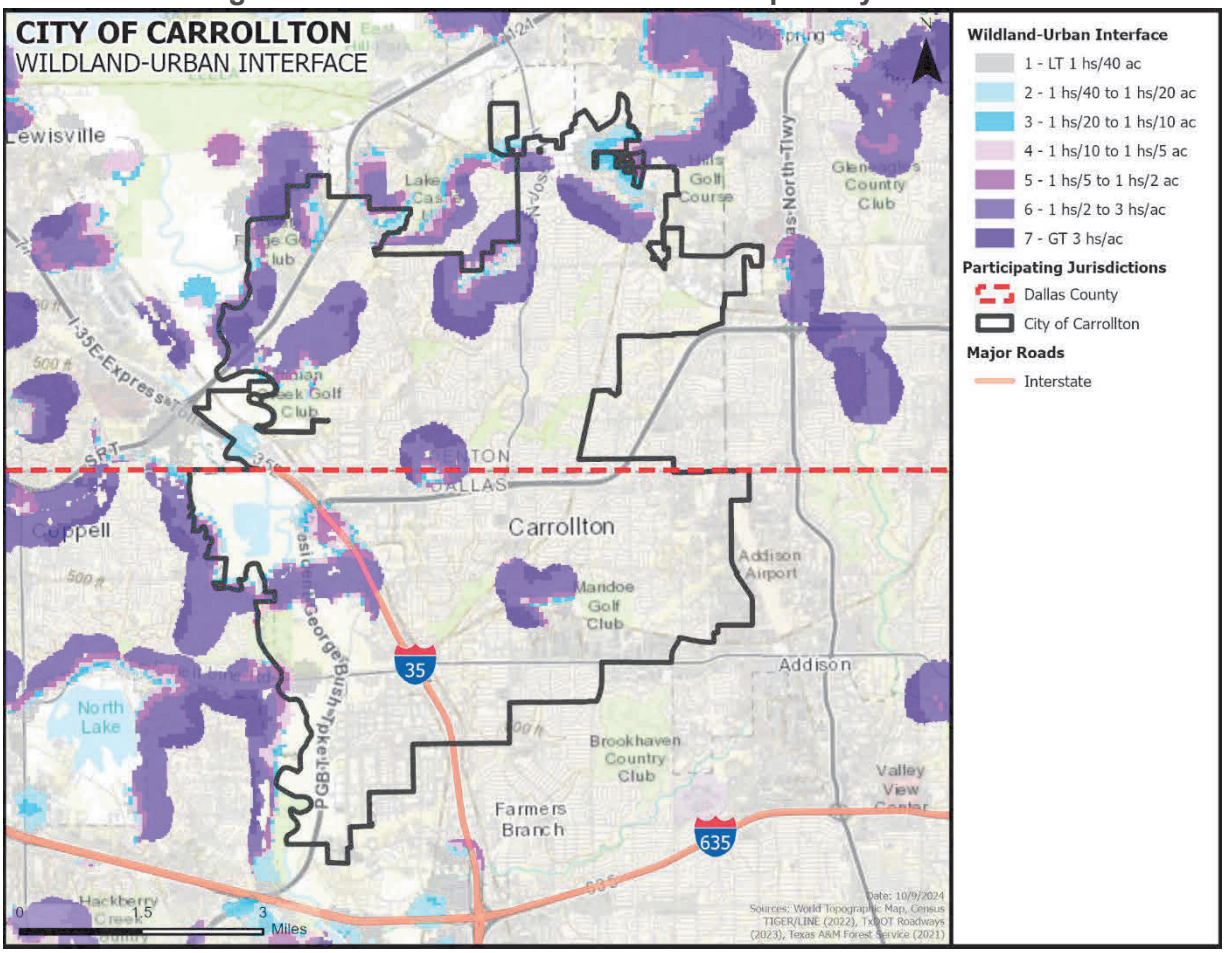
The Town of Addison has no estimated WUI boundaries. However, the entire Town is at some risk for wildfires.

Figure 14-3. Wildland Urban Interface Map – City of Balch Springs



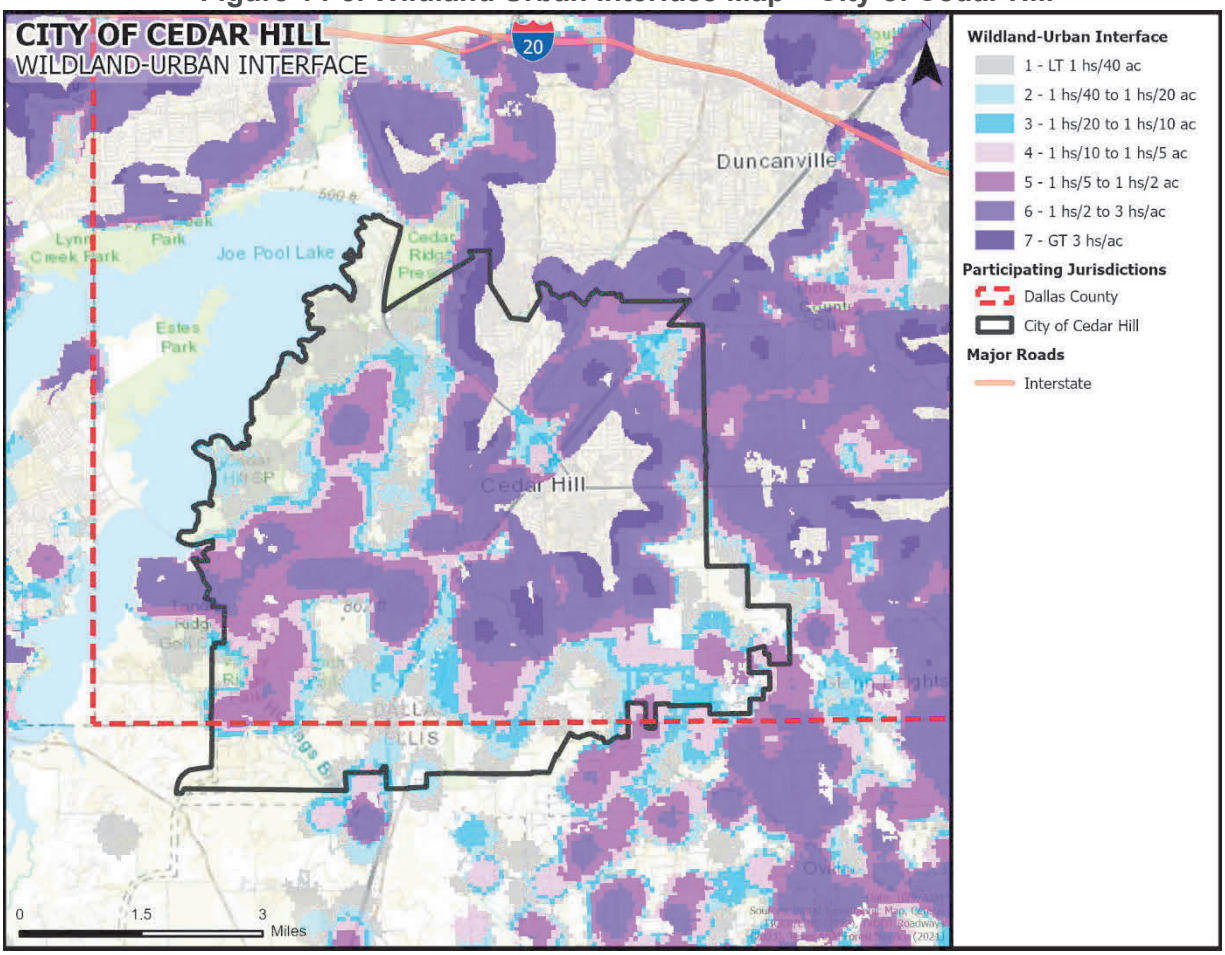
It is estimated that 36.7 percent of the total population in the City of Balch Springs live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-4. Wildland Urban Interface Map – City of Carrollton



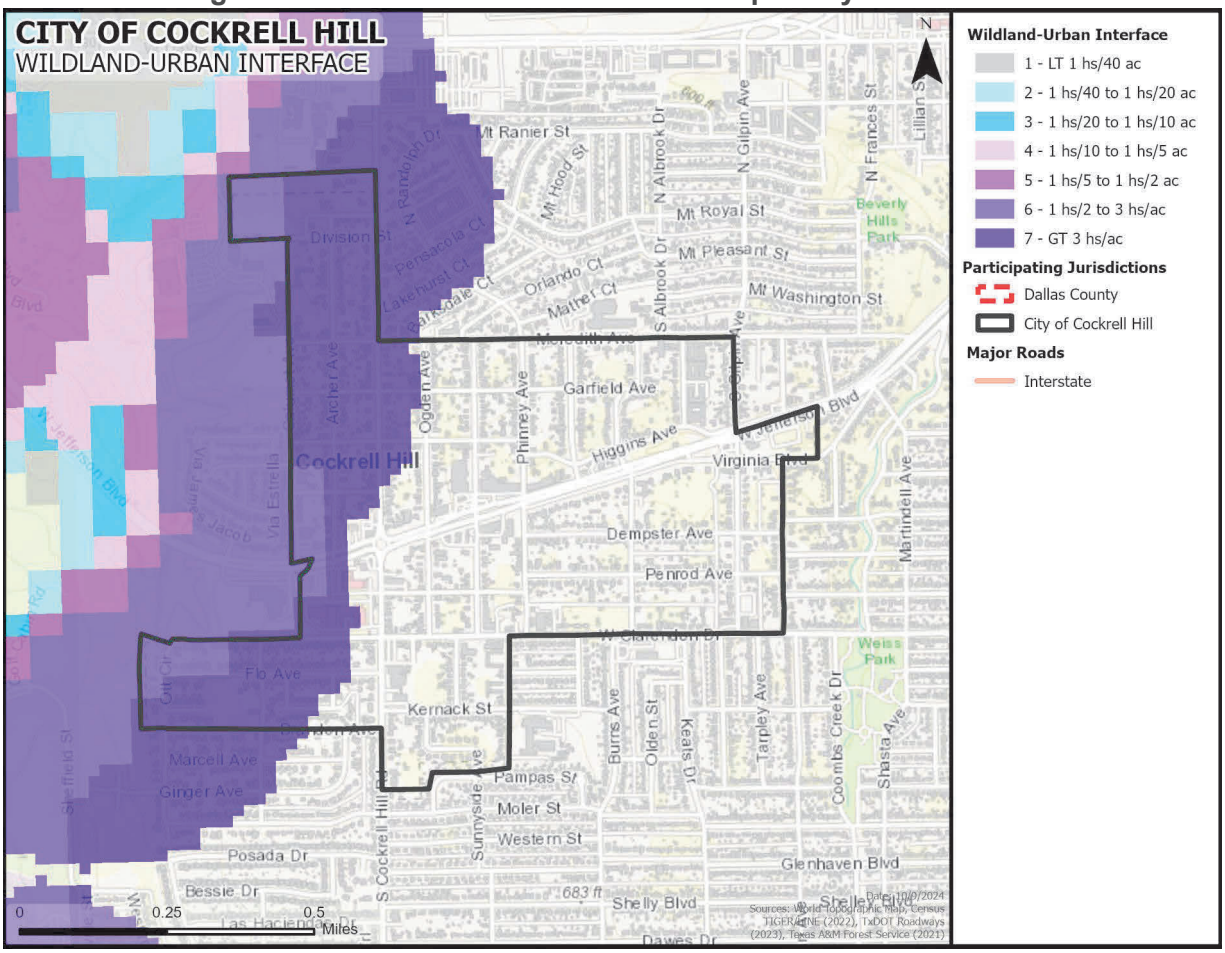
It is estimated that 12.6 percent of the total population in the City of Carrollton live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-5. Wildland Urban Interface Map – City of Cedar Hill



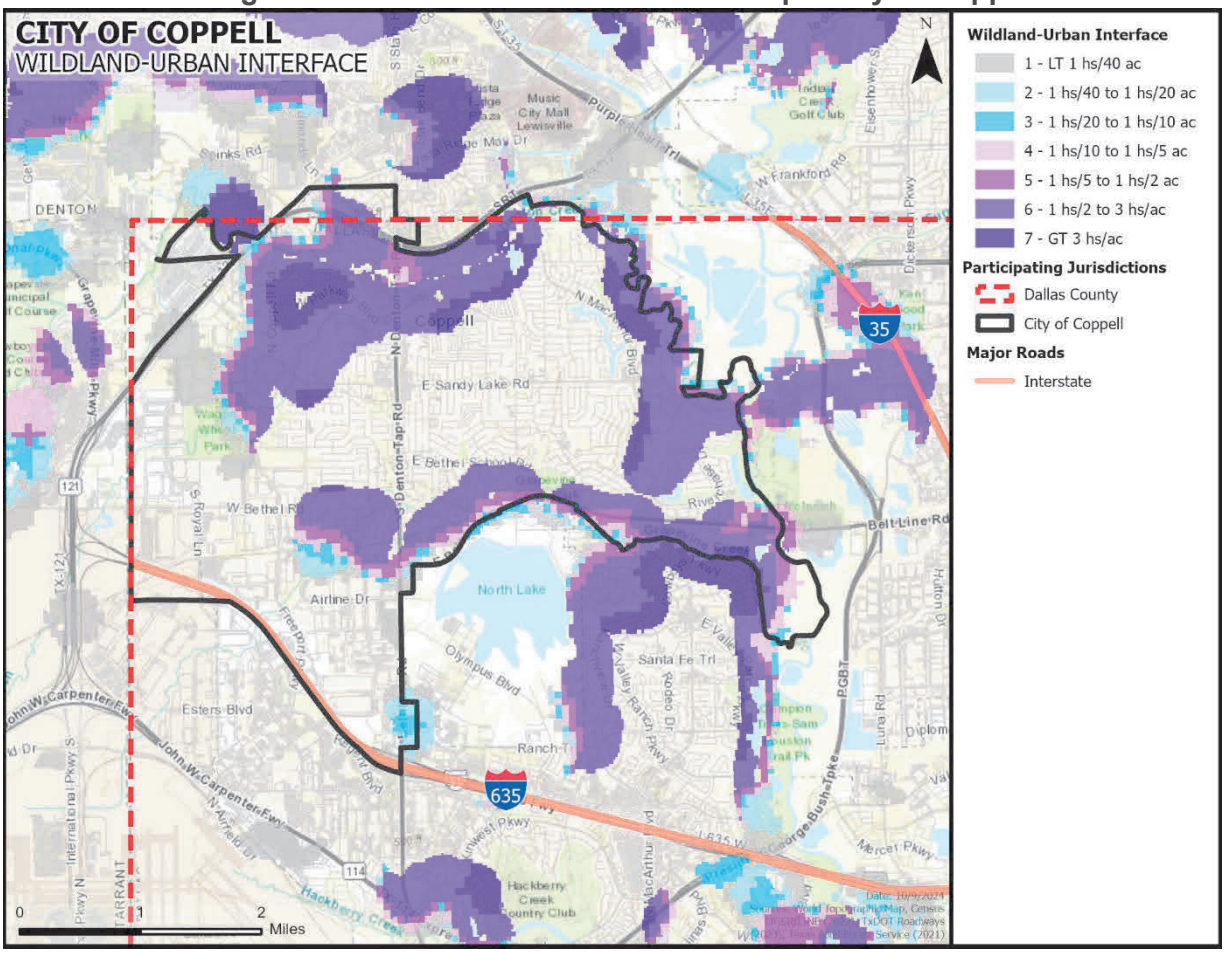
It is estimated that 64.5 percent of the total population in the City of Cedar Hill live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-6. Wildland Urban Interface Map – City of Cockrell Hill



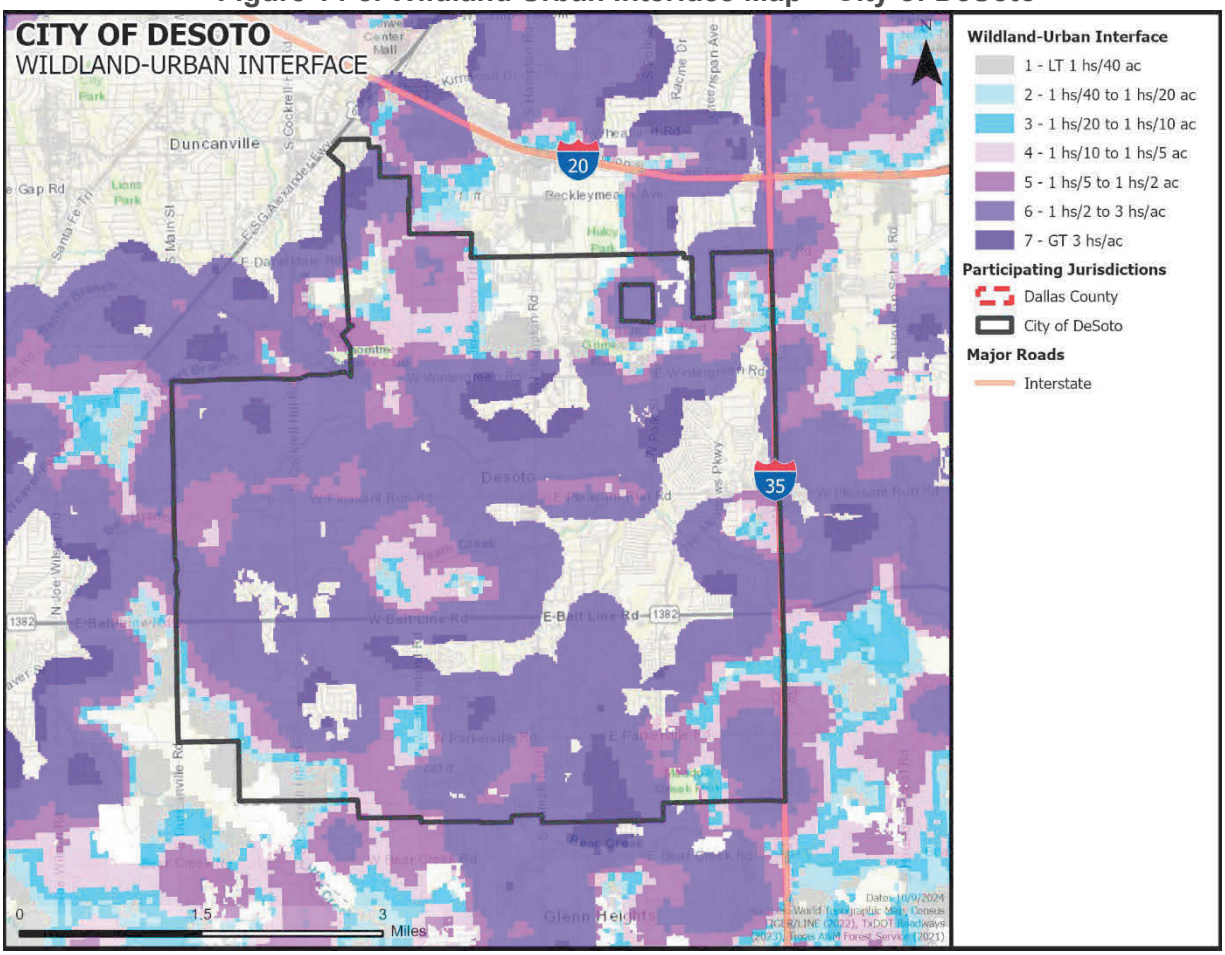
It is estimated that 25 percent of the total population in the City of Cockrell Hill live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-7. Wildland Urban Interface Map – City of Coppell



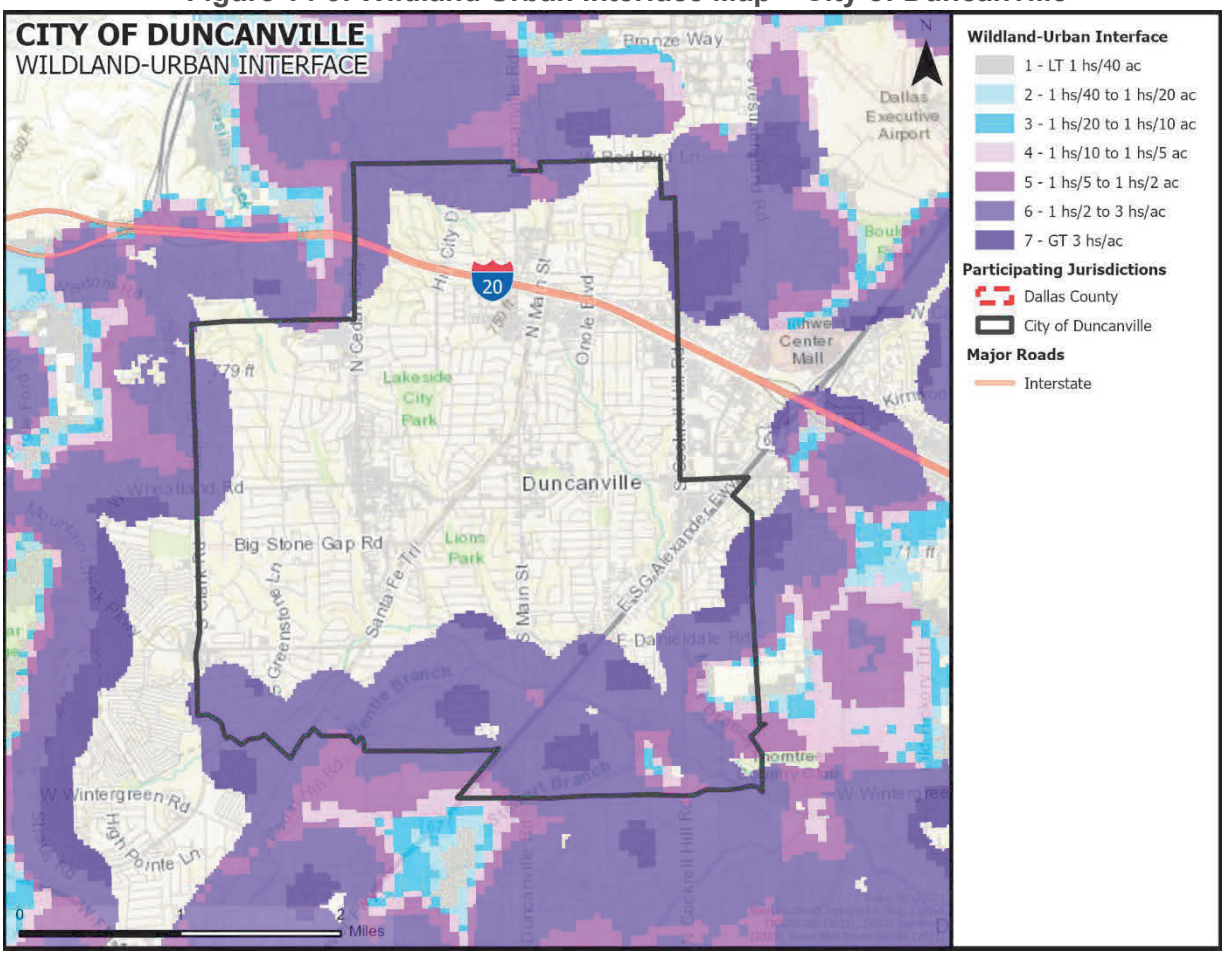
It is estimated that 35.1 percent of the total population in the City of Coppell live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-8. Wildland Urban Interface Map – City of DeSoto



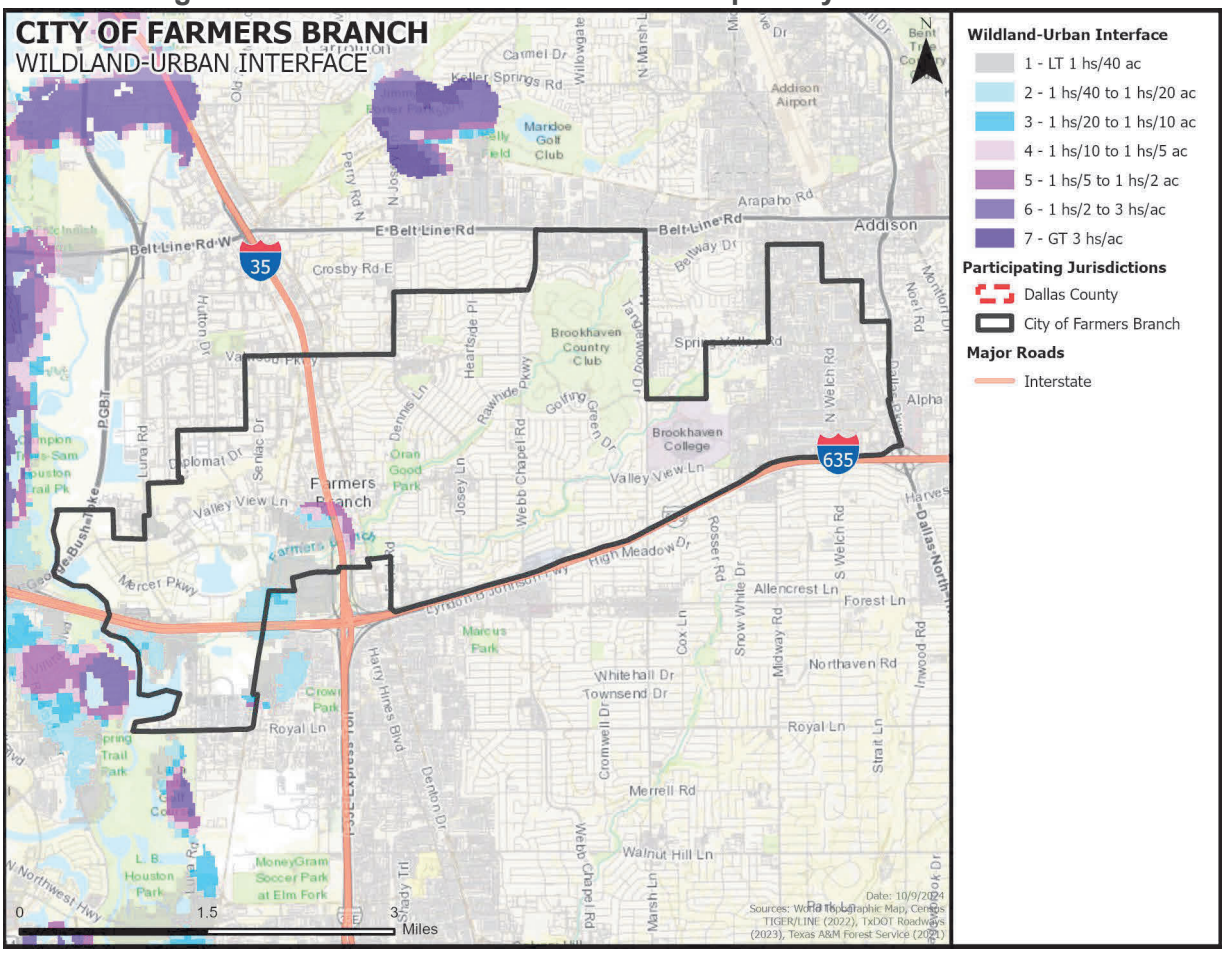
It is estimated that 72.3 percent of the total population in the City of DeSoto live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-9. Wildland Urban Interface Map – City of Duncanville



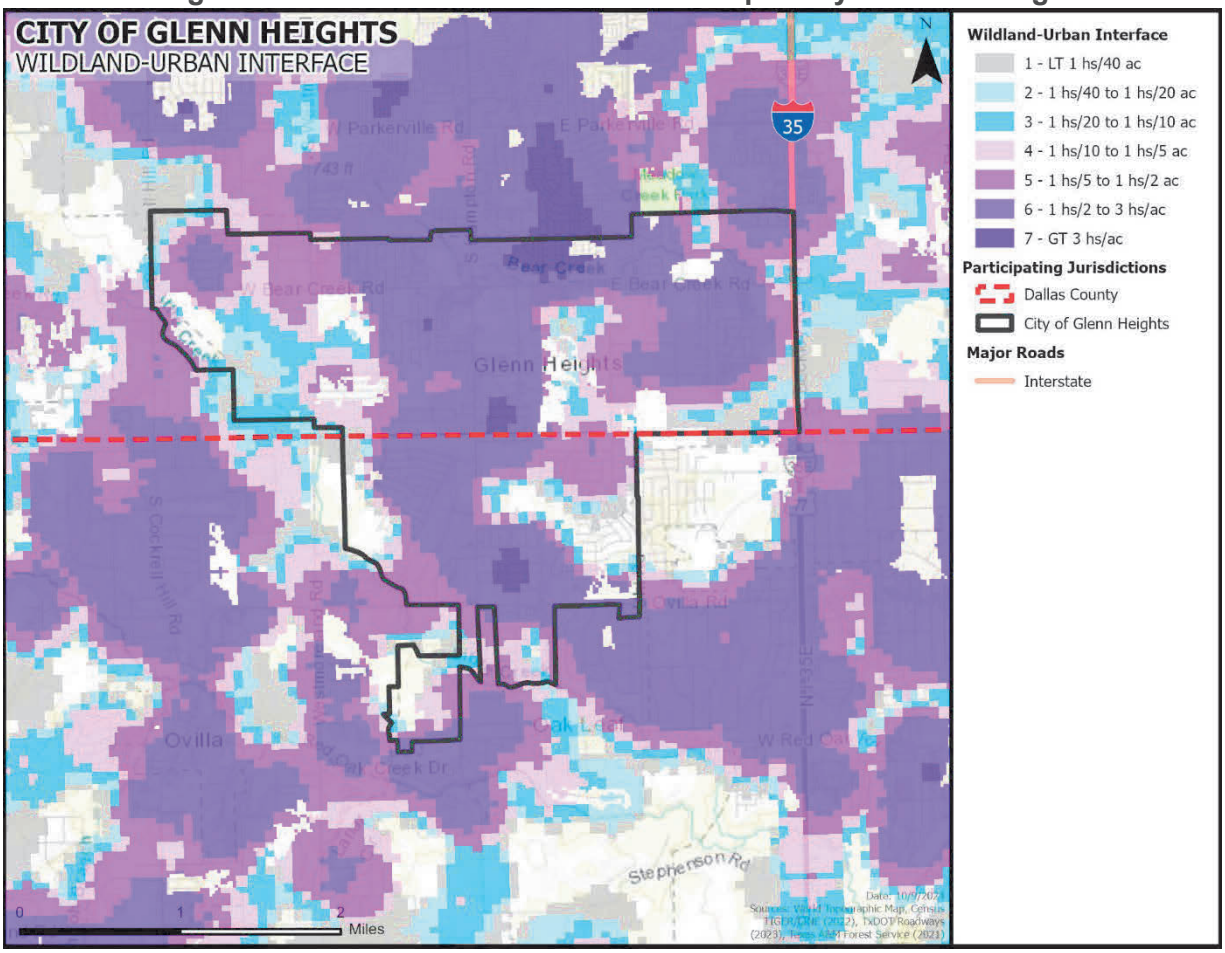
It is estimated that 26.6 percent of the total population in the City of Duncanville live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-10. Wildland Urban Interface Map – City of Farmers Branch



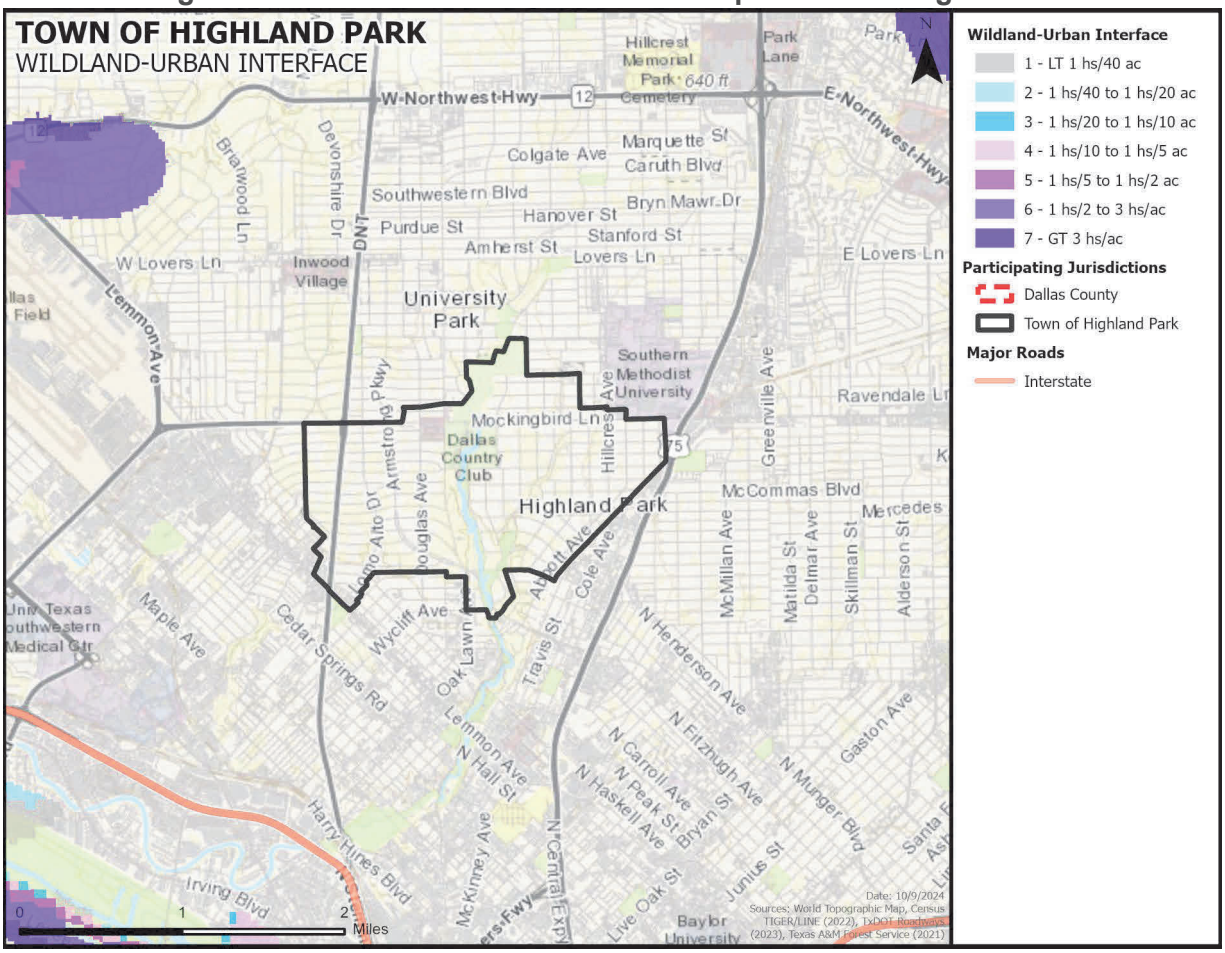
It is estimated that 0.1 percent of the total population in the City of Farmers Branch live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-11. Wildland Urban Interface Map – City of Glenn Heights



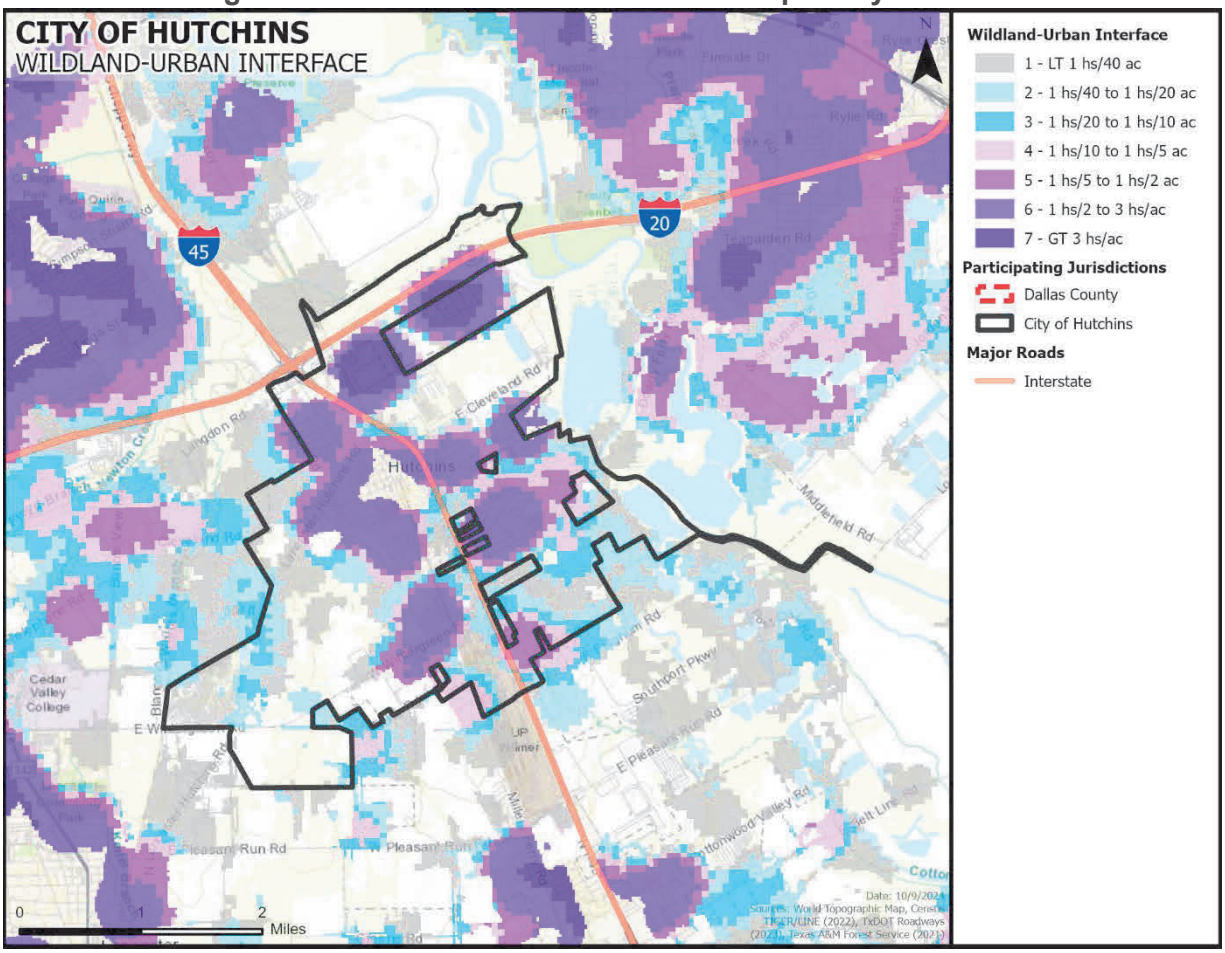
It is estimated that 97.8 percent of the total population in the City of Glenn Heights live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-12. Wildland Urban Interface Map – Town of Highland Park



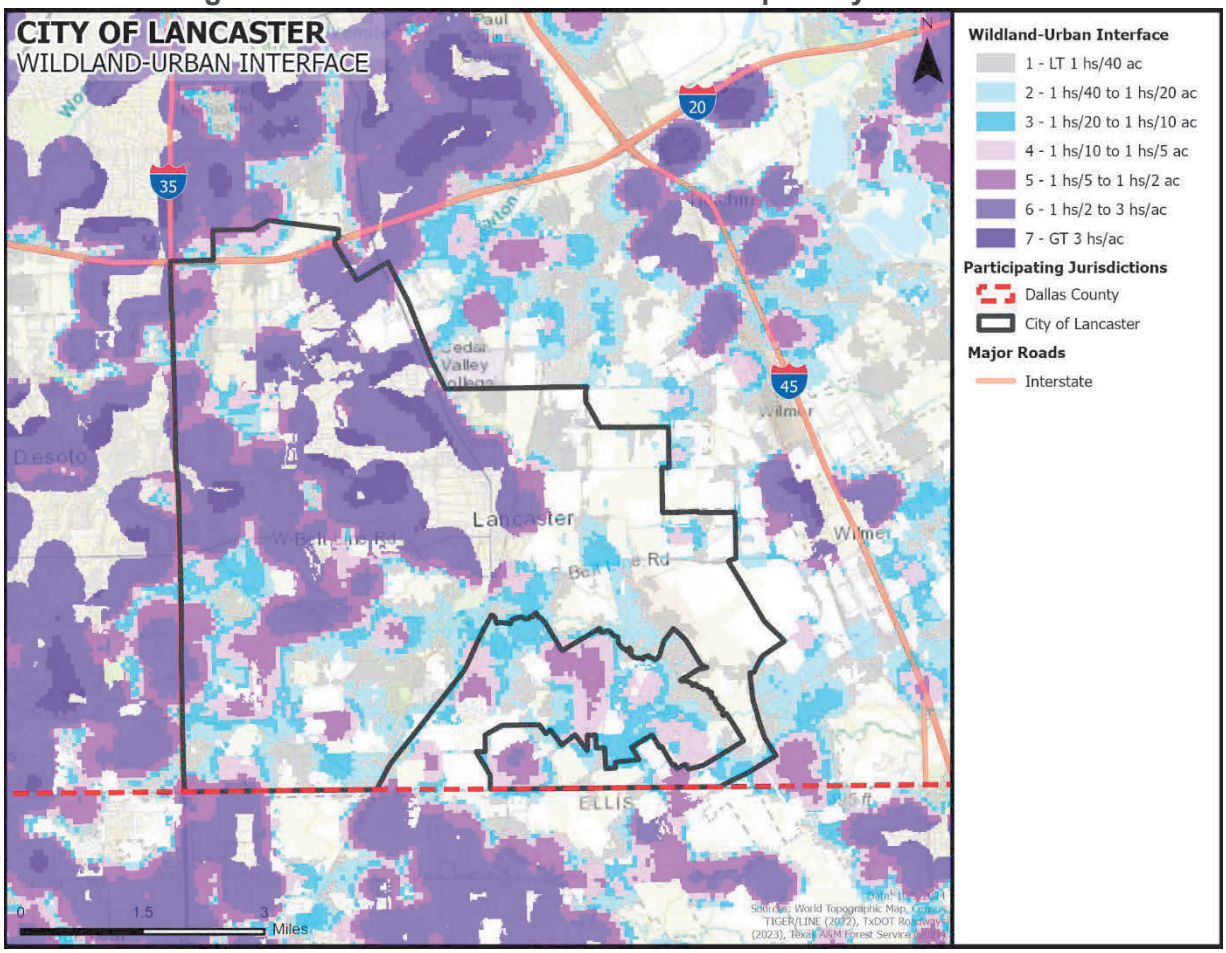
The Town of Highland Park has no estimated WUI boundaries. However, the entire Town is at some risk for wildfires.

Figure 14-13. Wildland Urban Interface Map – City of Hutchins



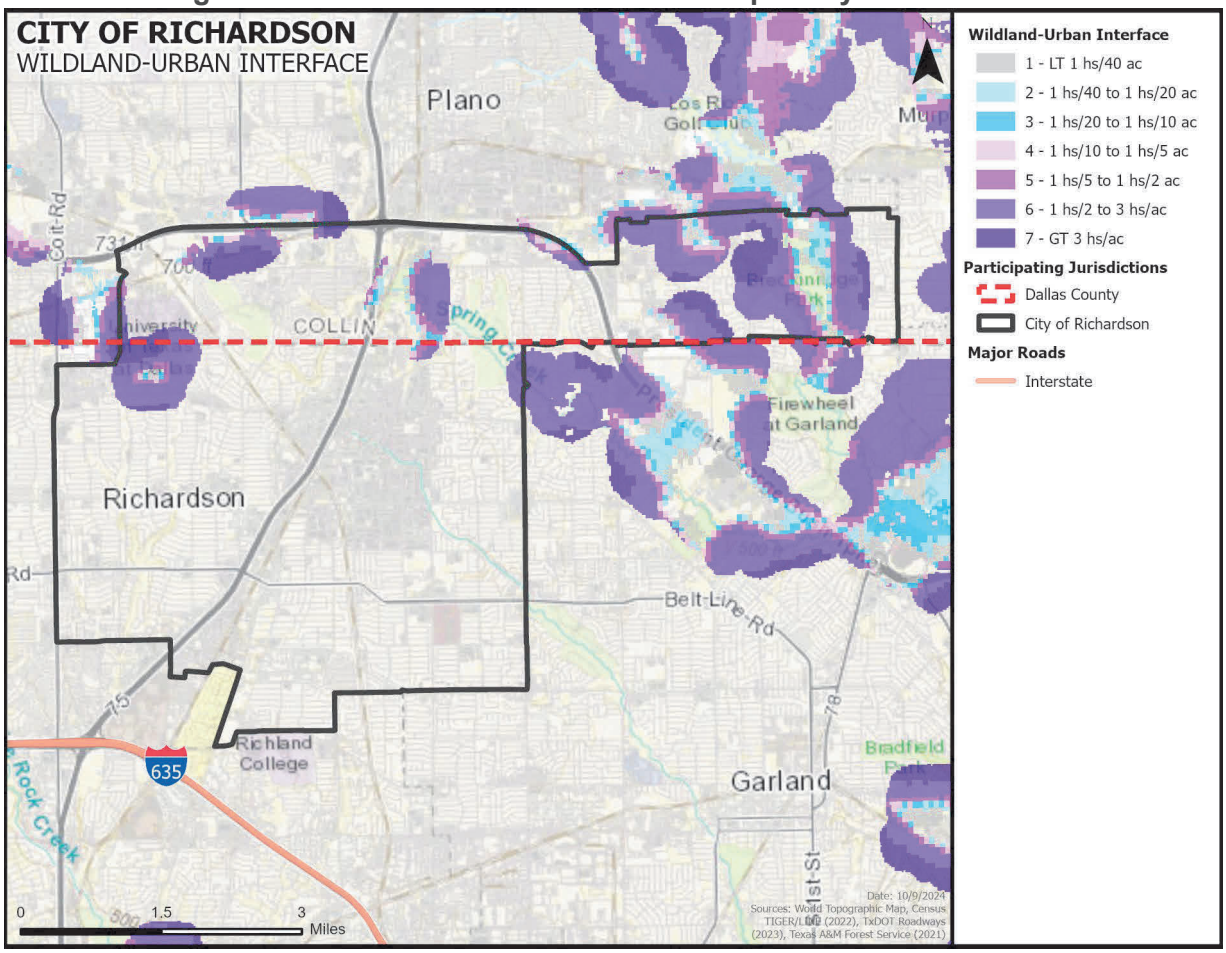
It is estimated that 95.1 percent of the total population in the City of Hutchins live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-14. Wildland Urban Interface Map – City of Lancaster



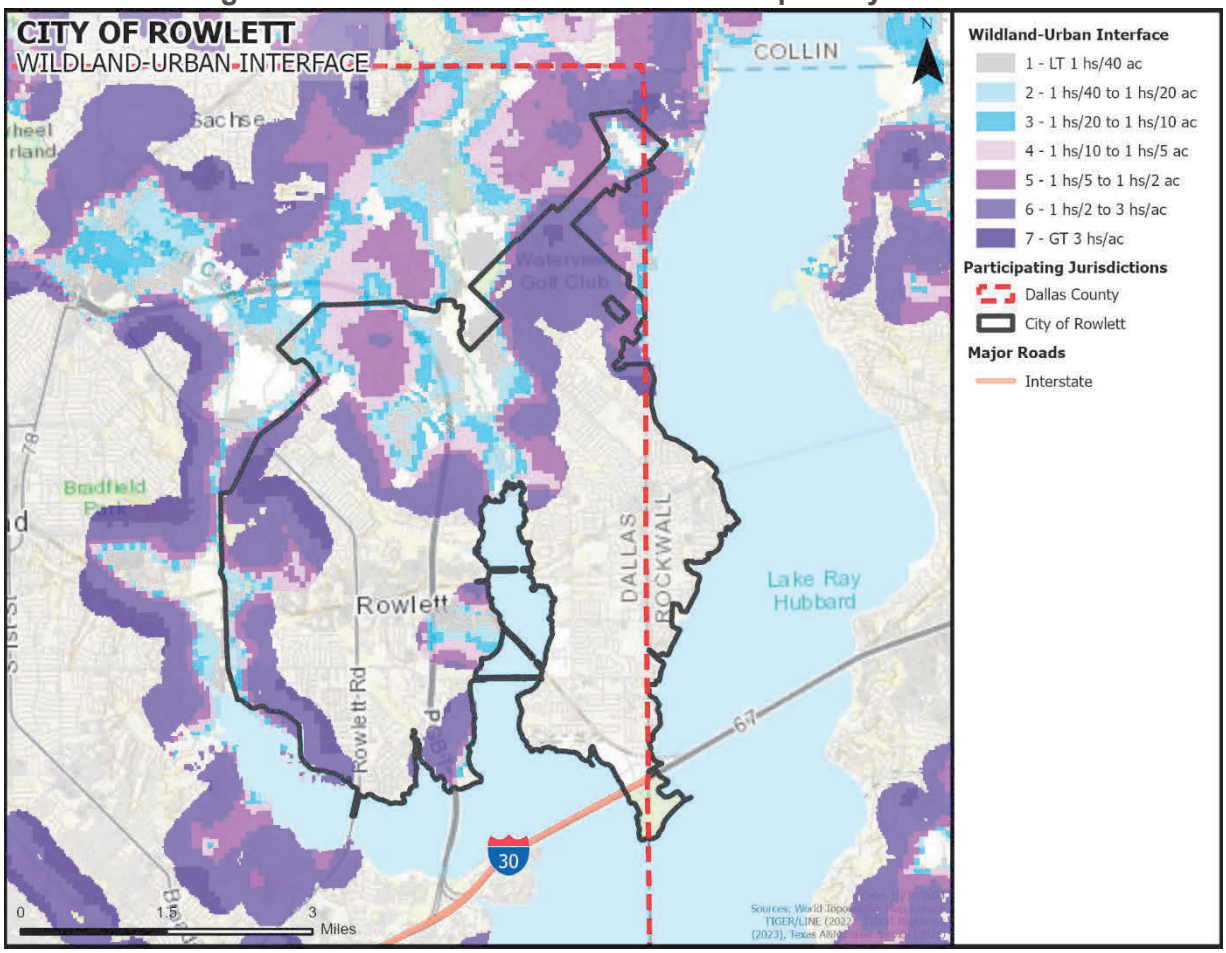
It is estimated that 74.2 percent of the total population in the City of Lancaster live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-15. Wildland Urban Interface Map – City of Richardson



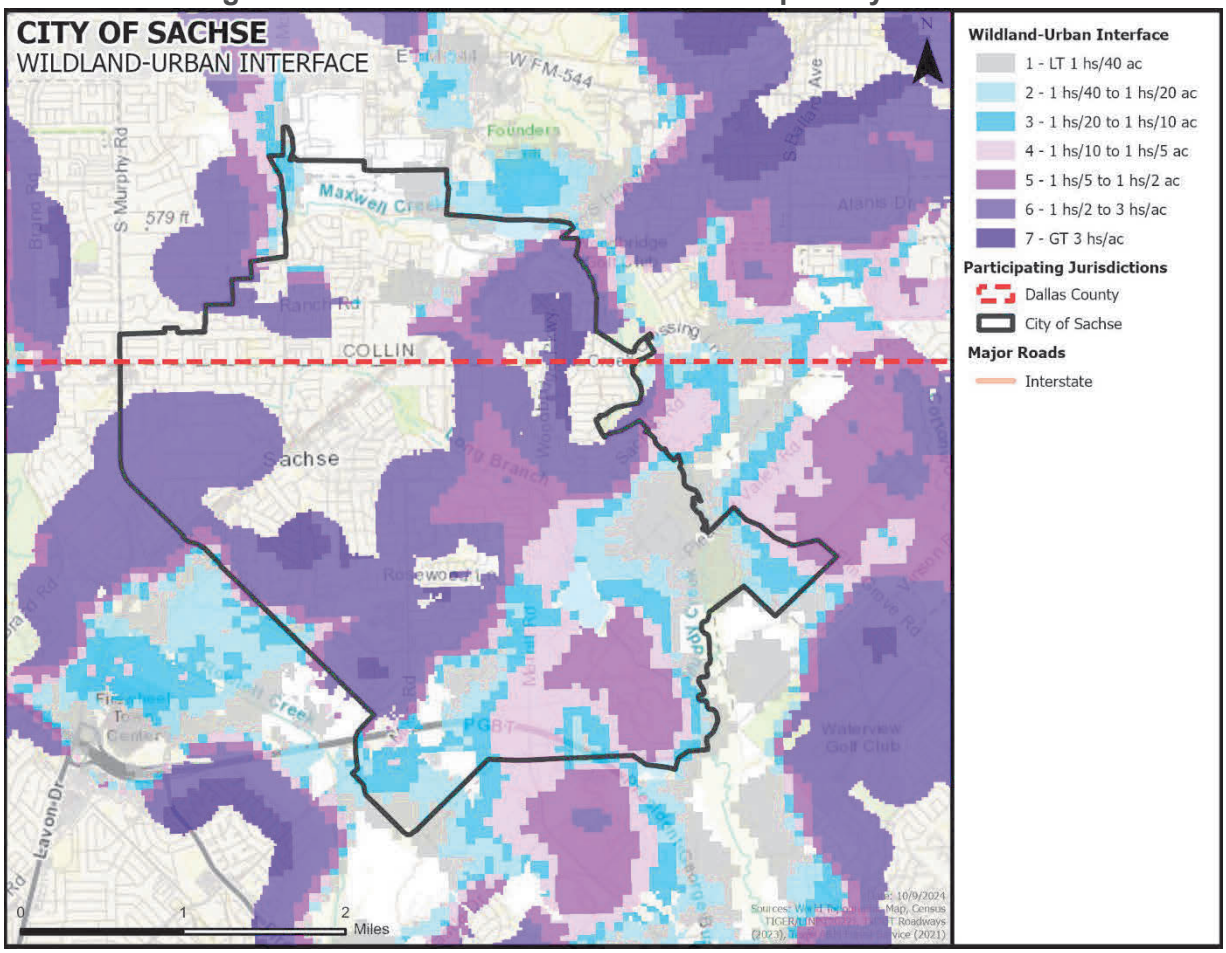
It is estimated that 12 percent of the total population in the City of Richardson live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-16. Wildland Urban Interface Map – City of Rowlett



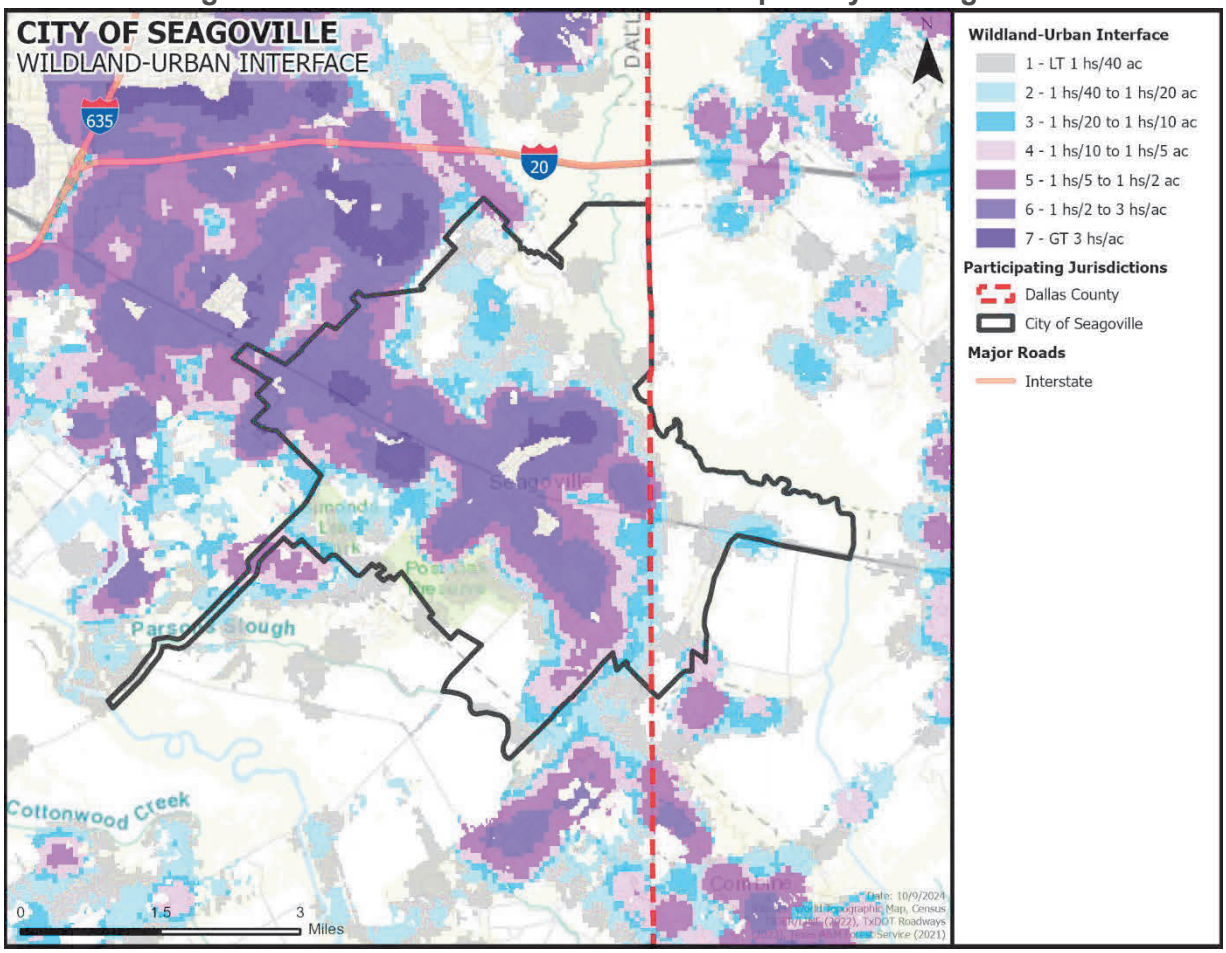
It is estimated that 24.9 percent of the total population in the City of Rowlett live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-17. Wildland Urban Interface Map – City of Sachse



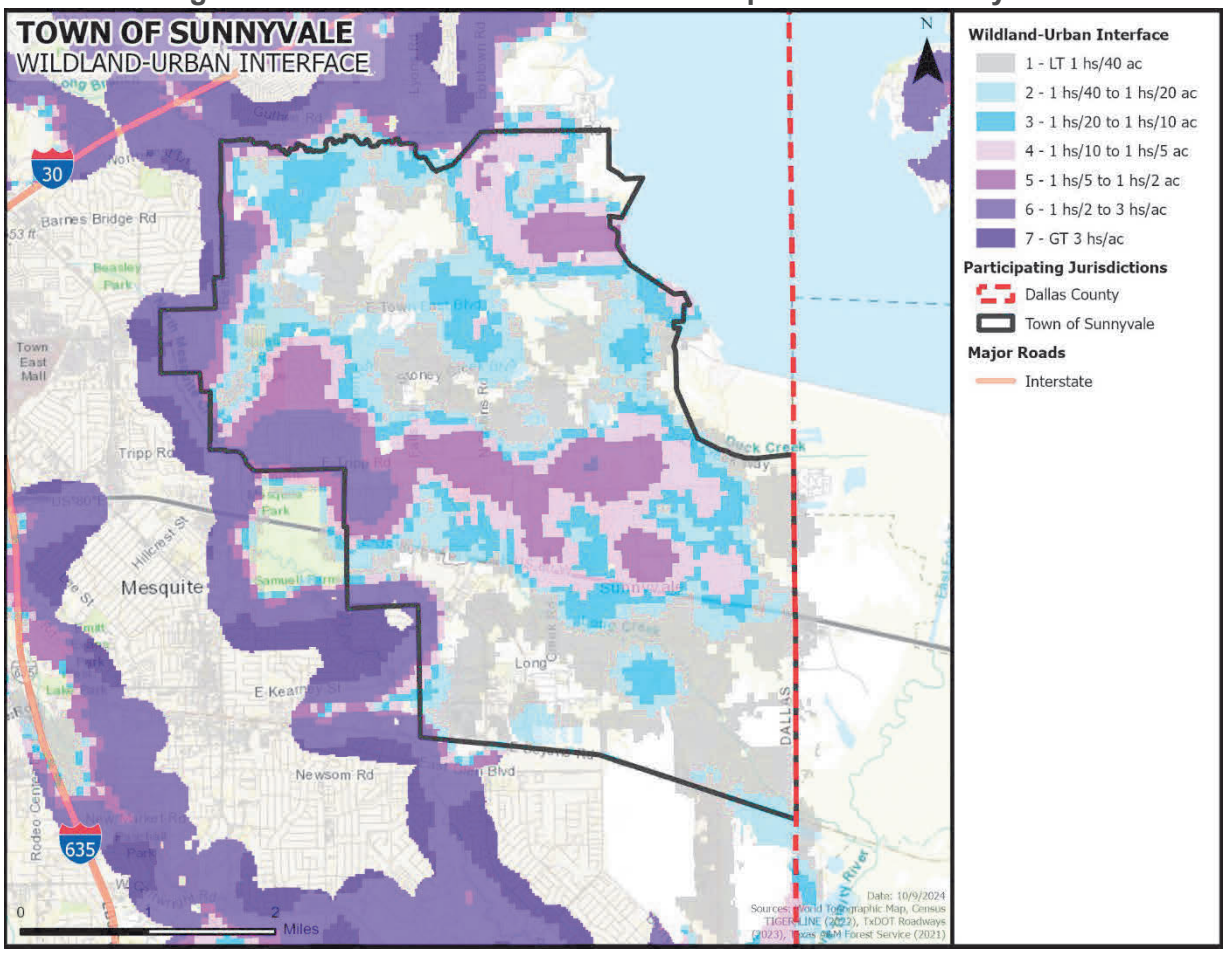
It is estimated that 50.4 percent of the total population in the City of Sachse live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-18. Wildland Urban Interface Map – City of Seagoville



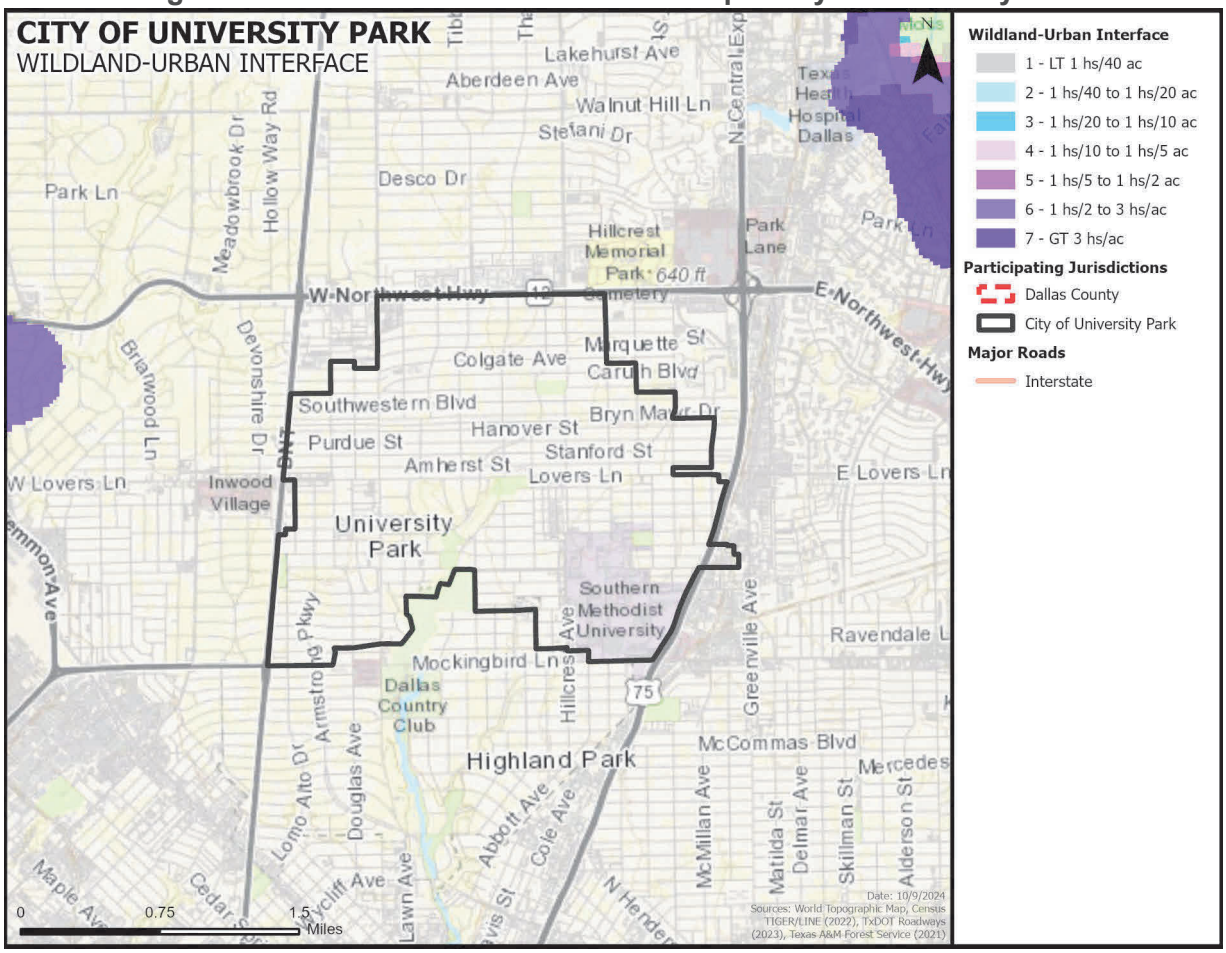
It is estimated that 93.9 percent of the total population in the City of Seagoville live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-19. Wildland Urban Interface Map – Town of Sunnyvale



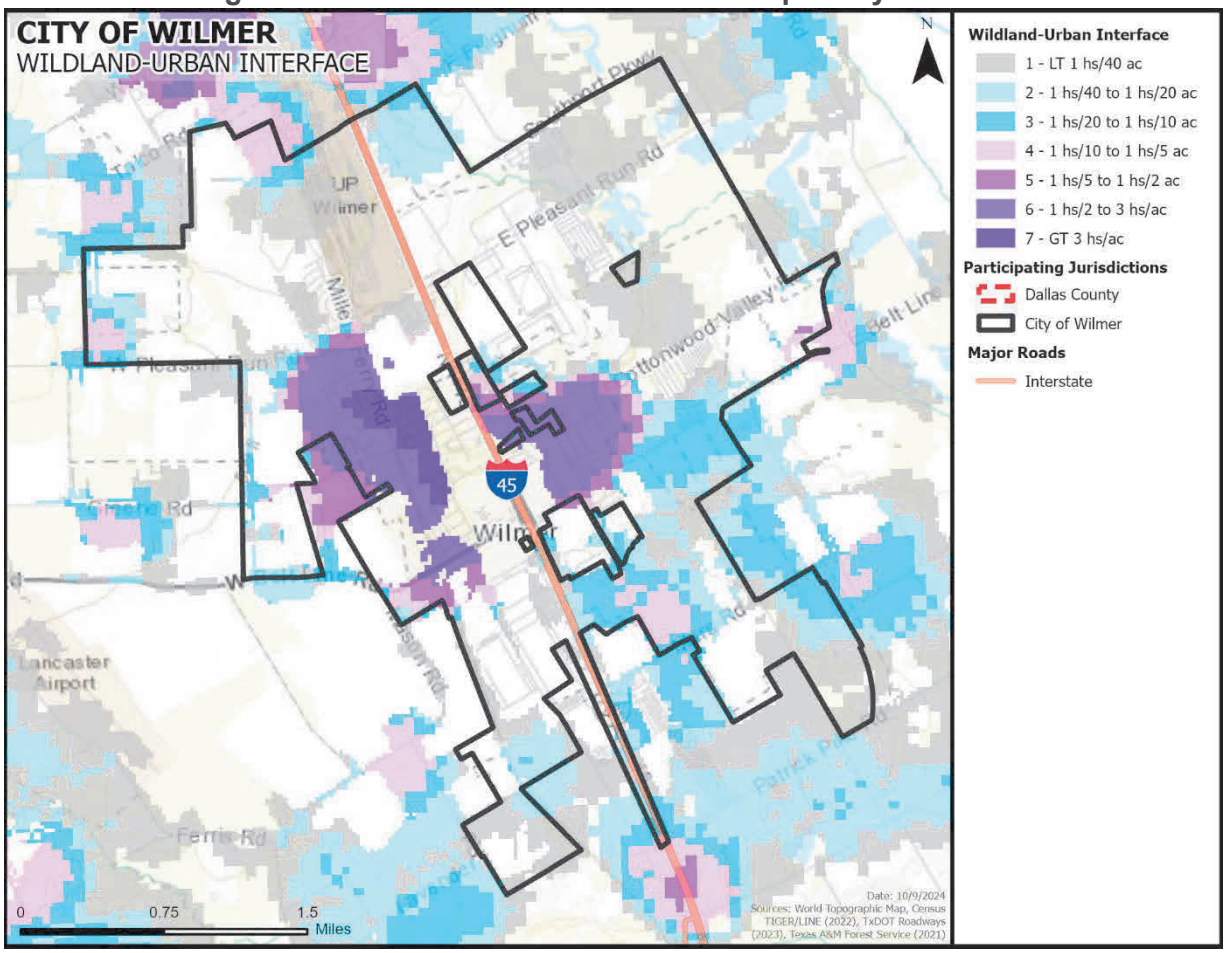
It is estimated that 99.5 percent of the total population in the Town of Sunnyvale live within the WUI. However, the entire City is at some risk for wildfires.

Figure 14-20. Wildland Urban Interface Map – City of University Park



The City of University Park has no estimated WUI boundaries. However, the entire City is at some risk for wildfires.

Figure 14-21. Wildland Urban Interface Map – City of Wilmer



It is estimated that 60.9 percent of the total population in the City of Wilmer live within the WUI. However, the entire City is at some risk for wildfires.

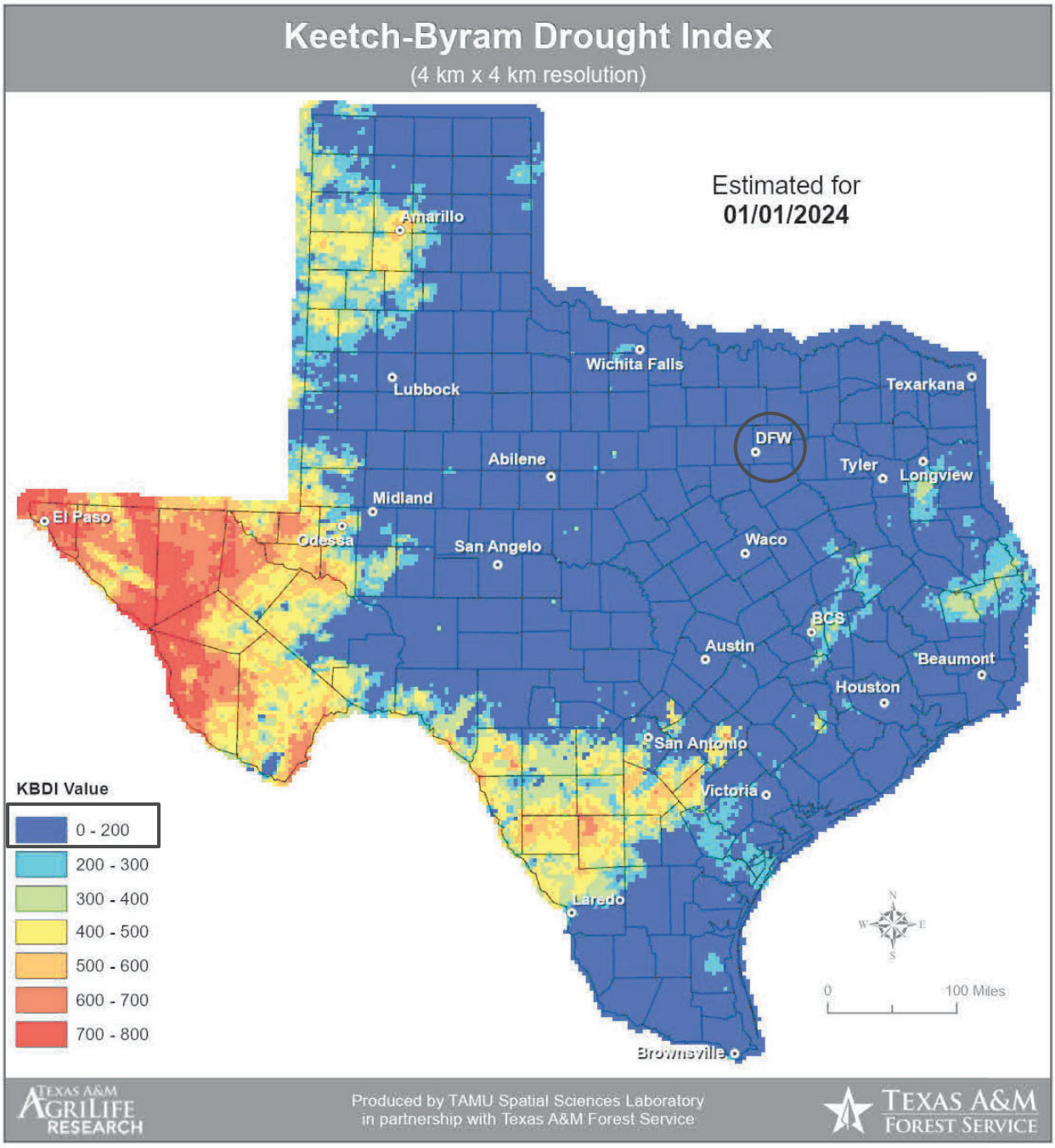
EXTENT



Risk for a wildfire event is measured in terms of magnitude and intensity using the Keetch Byram Drought Index (KBDI), a mathematical system for relating current and recent weather conditions to potential or expected fire behavior. The KBDI determines forest fire potential based on a daily water balance, derived by balancing a drought factor with precipitation and soil moisture (assumed to have a maximum storage capacity of eight inches), and is expressed in hundredths of an inch of soil moisture depletion.

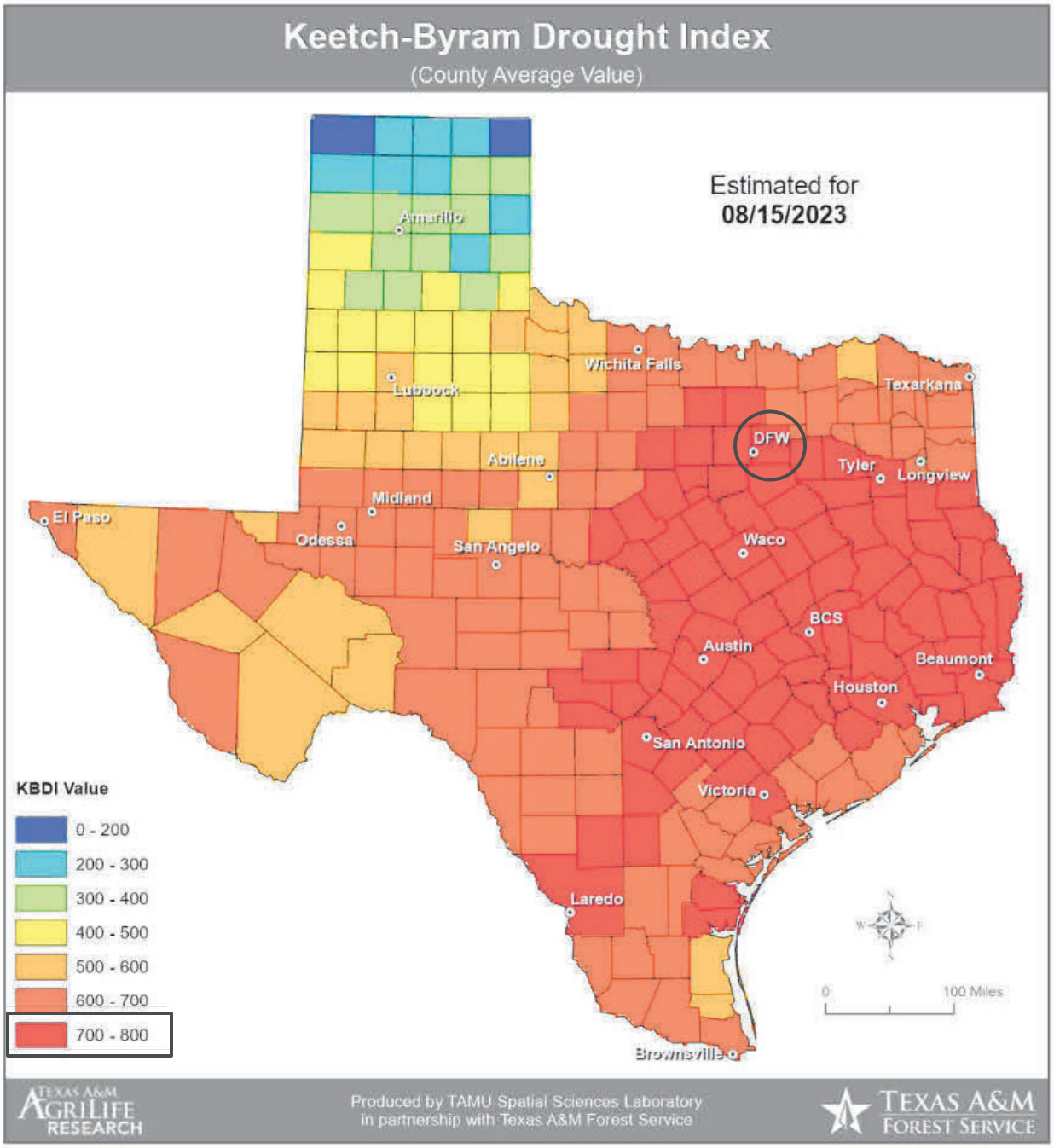
The planning area has experienced a full range of KBDI values at various dates as indicated in Figures 14-22 and 14-23. The drought index ranges from 0 to 800. A drought index of 0 represents no moisture depletion, and a drought index of 800 represents absolutely dry conditions.

Figure 14-22. Keetch-Byram Drought Index (KBDI) for the State of Texas, 1/01/2024[4]



[4] Dallas County planning area is located within the black circle.

Figure 14-23. Keetch-Byram Drought Index (KBDI) for the State of Texas, 8/15/2023



Fire behavior can be categorized at four distinct levels on the KBDI:

- **0 -200:** Soil and fuel moisture are high. Most fuels will not readily ignite or burn. However, with sufficient sunlight and wind, cured grasses and some light surface fuels will burn in spots and patches.
- **200 -400:** Fires more readily burn and will carry across an area with no gaps. Heavier fuels will not readily ignite and burn. Expect smoldering and the resulting smoke to carry into and possibly through the night.

- **400 -600:** Fires intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.
- **600 -800:** Fires will burn to mineral soil. Stumps will burn to the end of underground roots and spotting will be a major problem. Fires will burn through the night and heavier fuels will actively burn and contribute to fire intensity.

The KBDI is a good measure of the readiness of fuels for a wildfire event. It should be referenced as the area experiences changes in precipitation and soil moisture, while caution should be exercised in dryer, hotter conditions. The range of intensity for the Dallas County planning area, including all participating jurisdictions, in a wildfire event, is within 150 to 750. The average extent to be mitigated for the planning area is a KBDI of 470. Based on historical occurrences and readily available fuel, the planning area can anticipate a KBDI range from 0 to 800. At the high end of this range fires will burn to mineral soil. Stumps will burn to the end of underground roots and spotting will be a major problem. Fires will burn through the night and heavier fuels will actively burn and contribute to fire intensity.

The Texas Forest Service's Fire Intensity Scale identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist based on weighted average of four percentile weather categories. The Dallas County planning area has a potential for a full range of wildfire intensities. Figure 14-24 through 14-44 identifies the wildfire intensity for the planning area.

Figure 14-24. Fire Intensity Scale Map – Dallas County

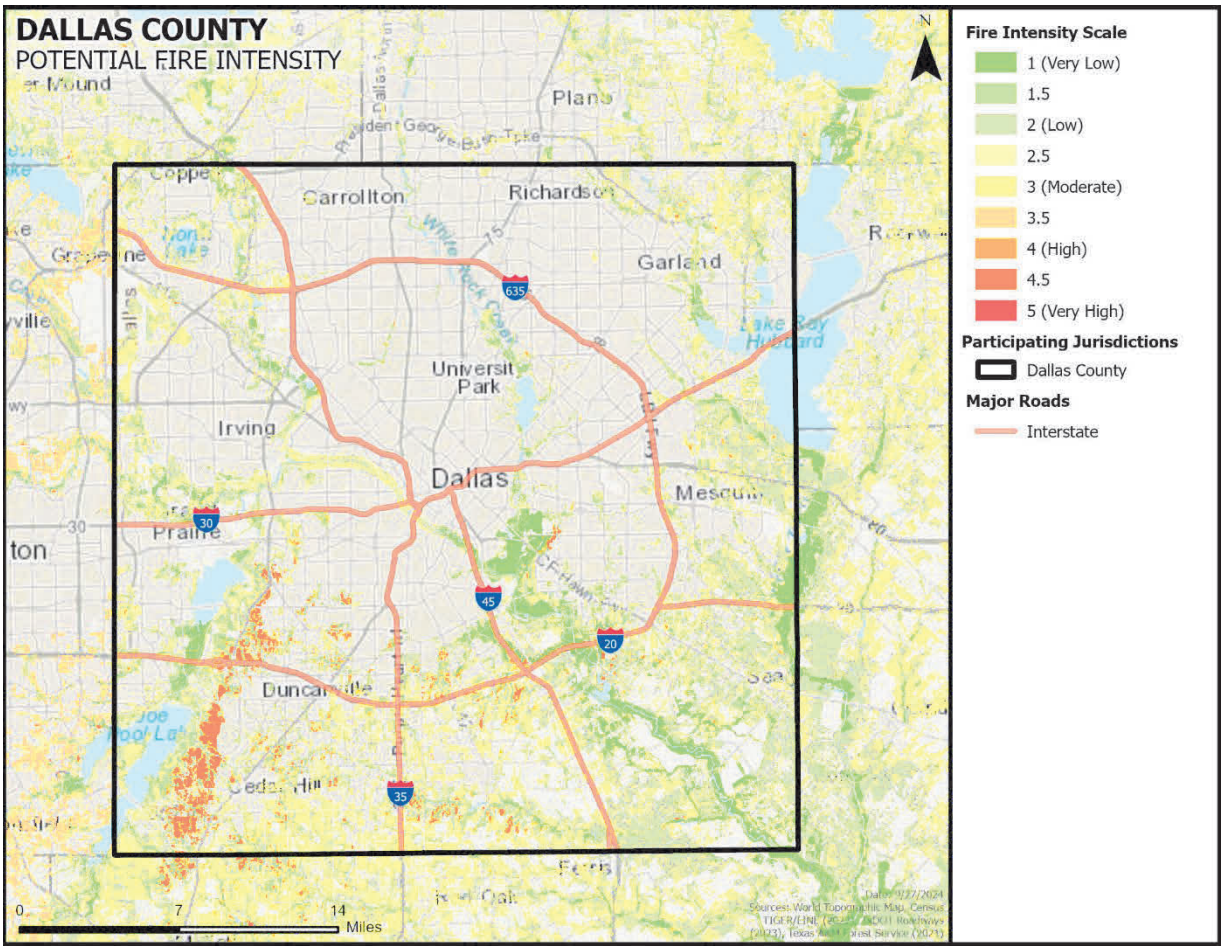


Figure 14-25. Fire Intensity Scale Map – Town of Addison

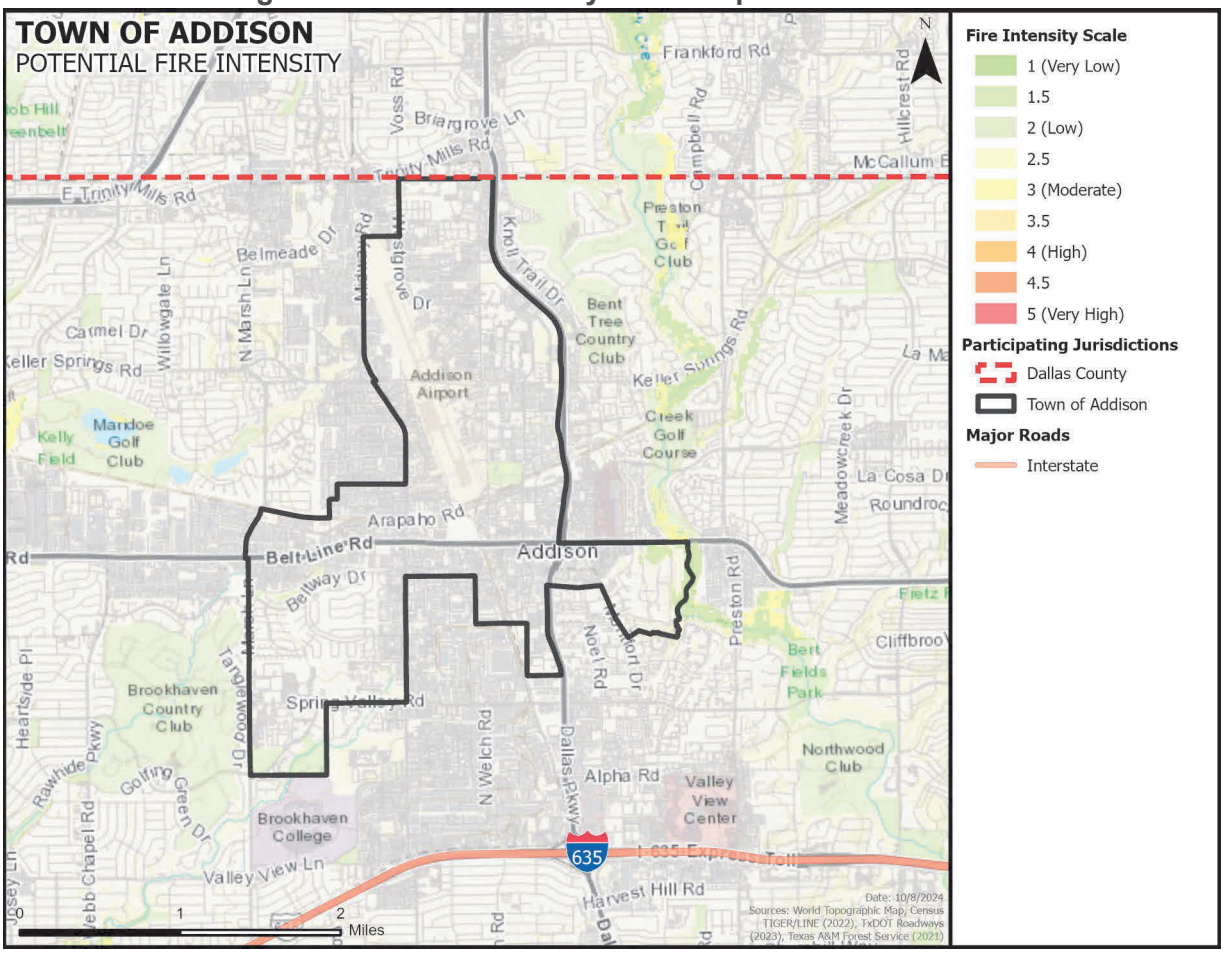


Figure 14-26. Fire Intensity Scale Map – City of Balch Springs

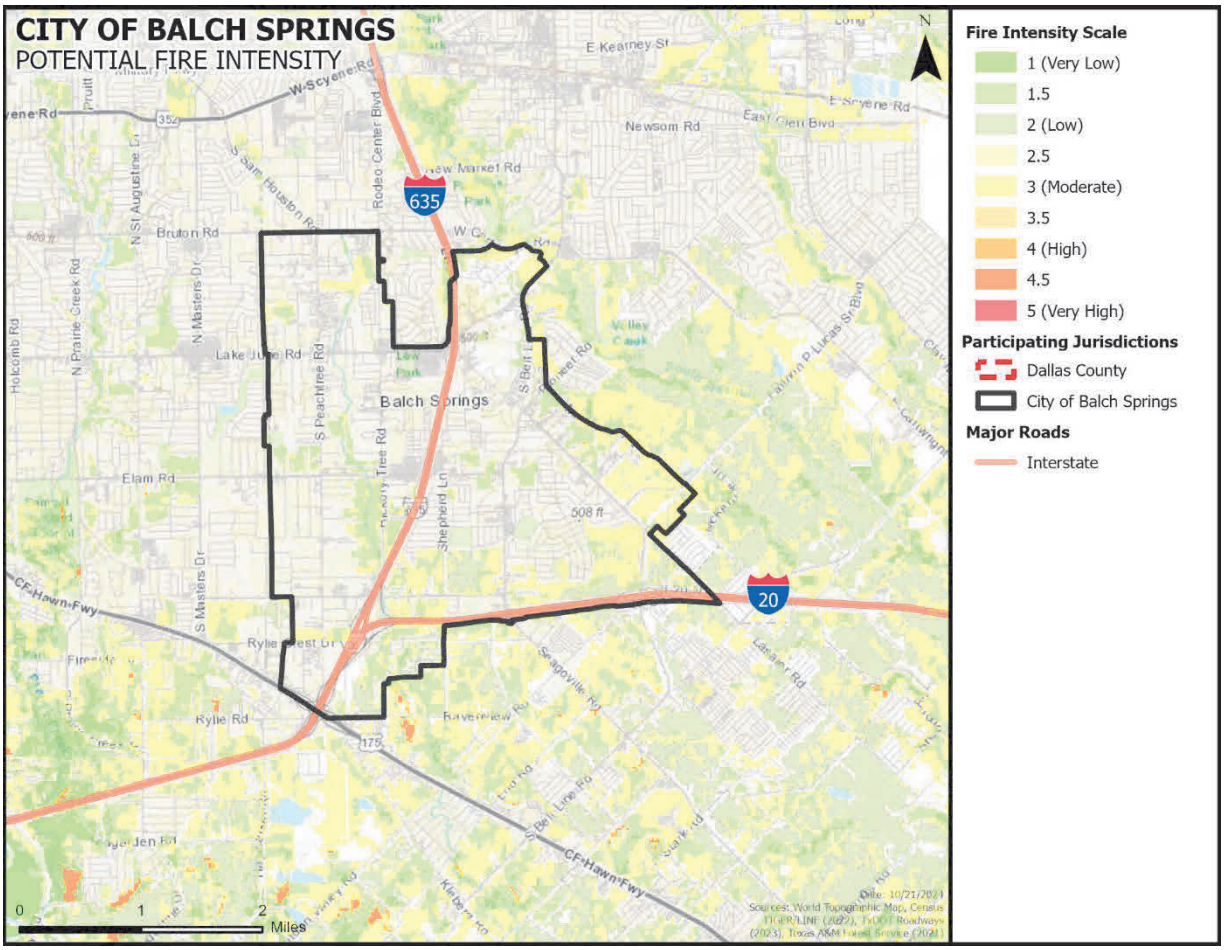


Figure 14-27. Fire Intensity Scale Map – City of Carrollton

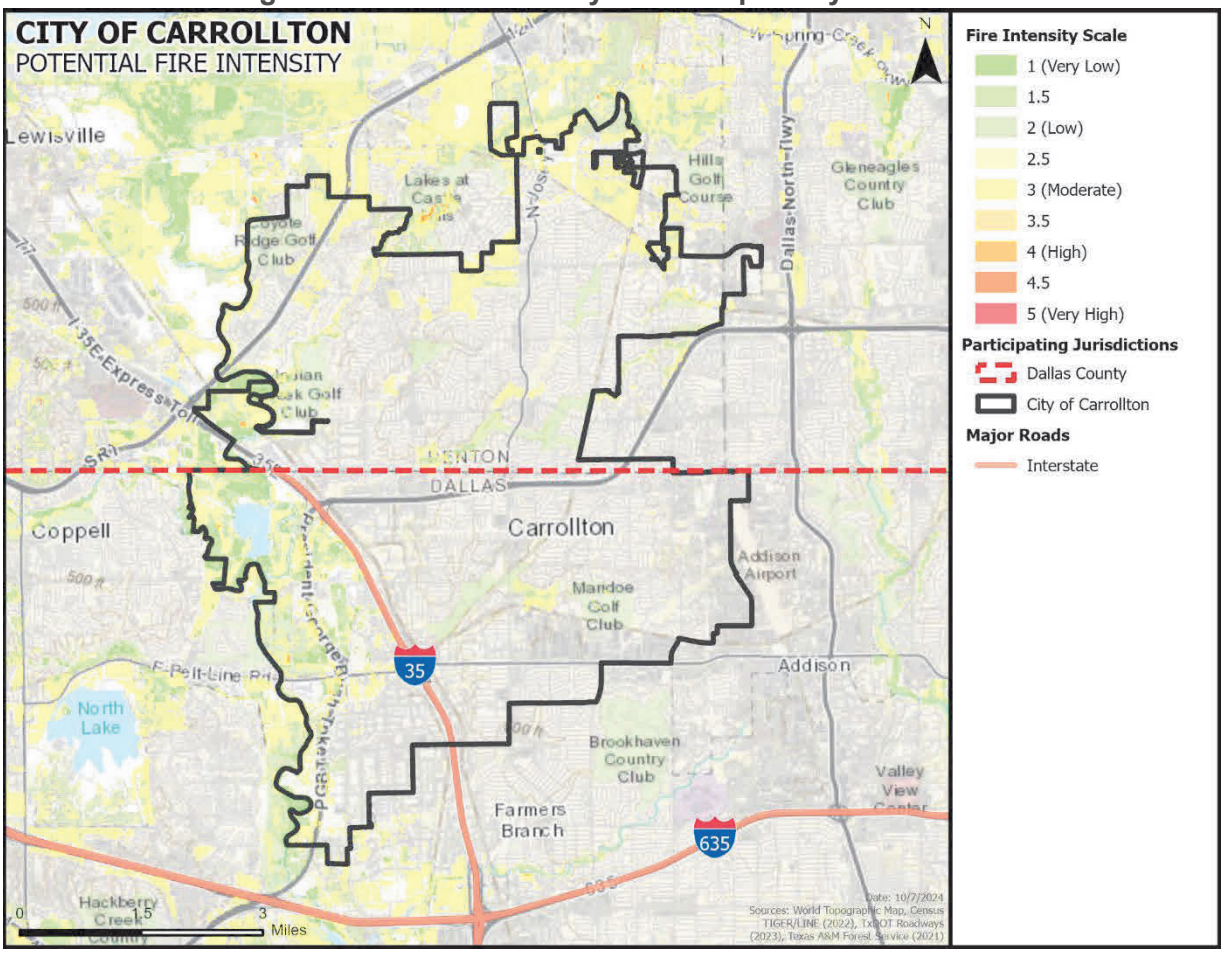


Figure 14-28. Fire Intensity Scale Map – City of Cedar Hill

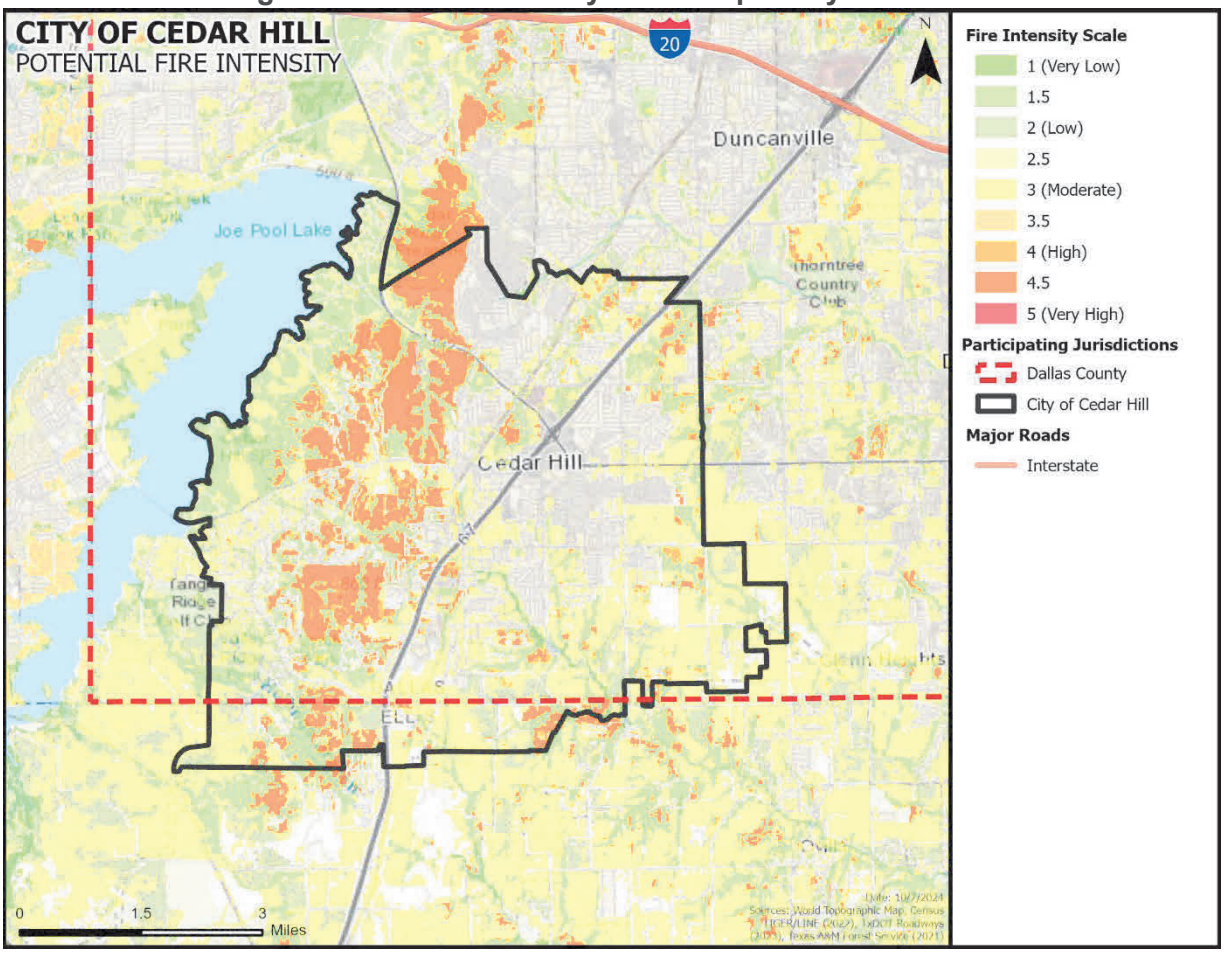


Figure 14-29. Fire Intensity Scale Map – City of Cockrell Hill

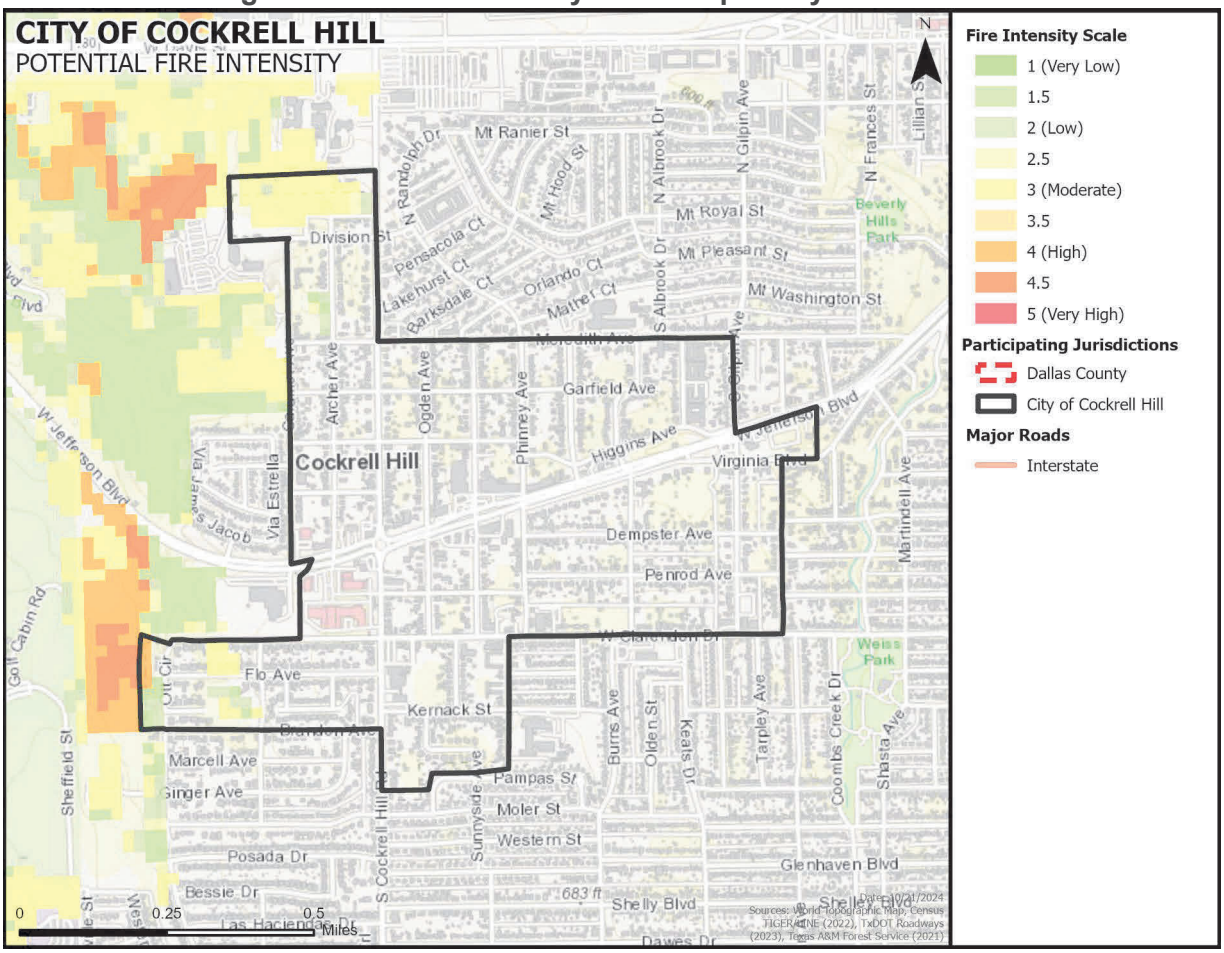


Figure 14-30. Fire Intensity Scale Map – City of Coppell

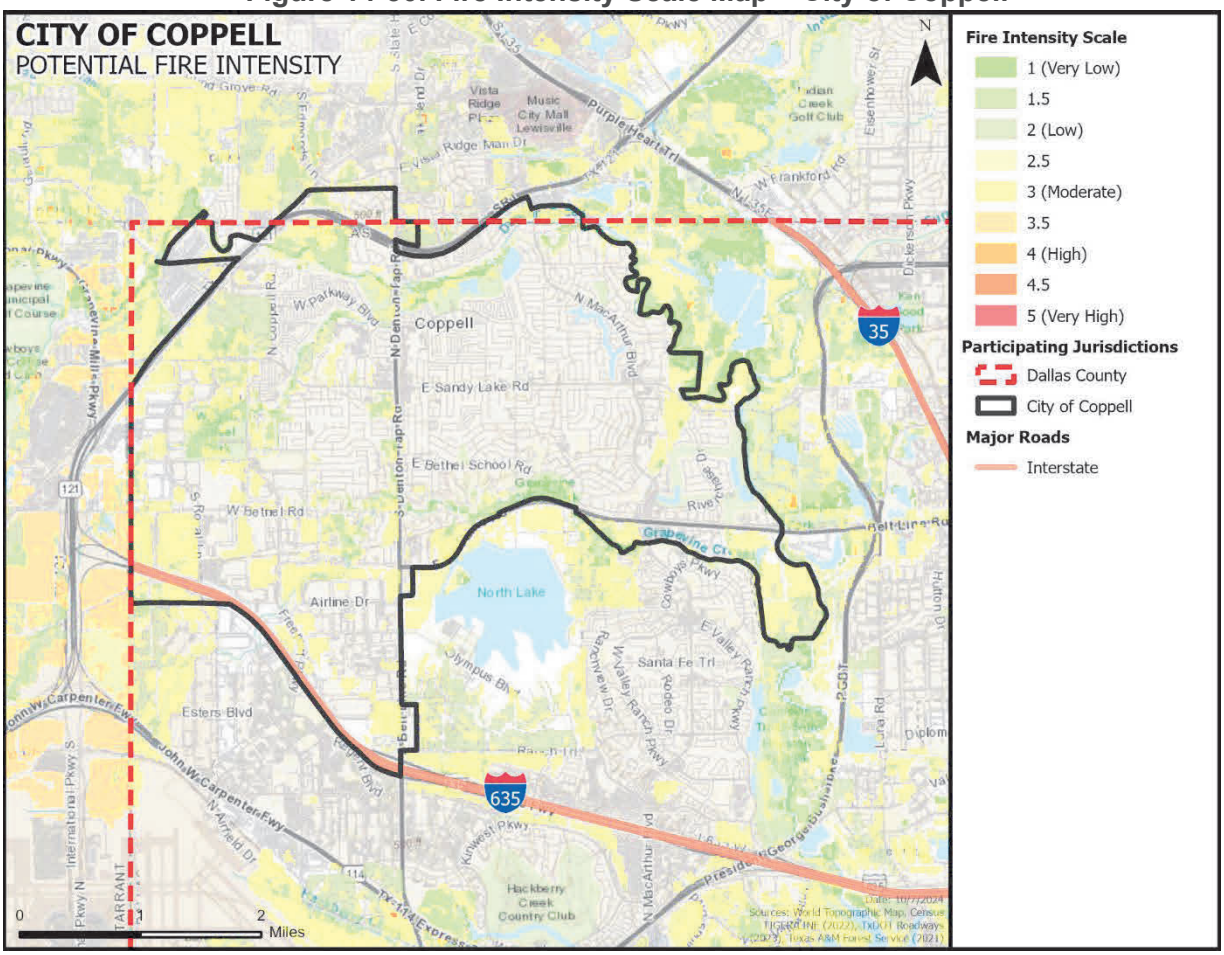


Figure 14-31. Fire Intensity Scale Map – City of DeSoto

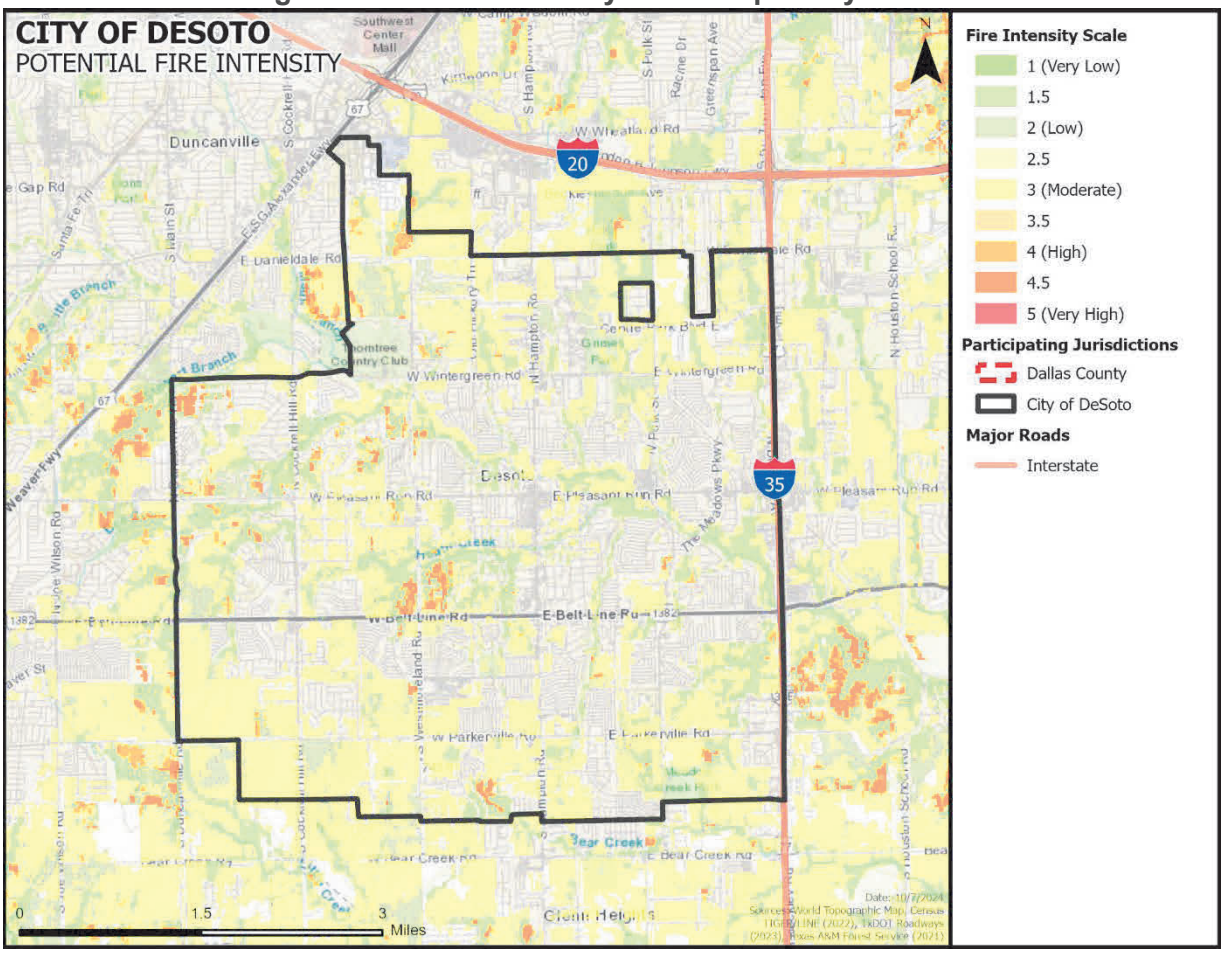


Figure 14-32. Fire Intensity Scale Map – City of Duncanville

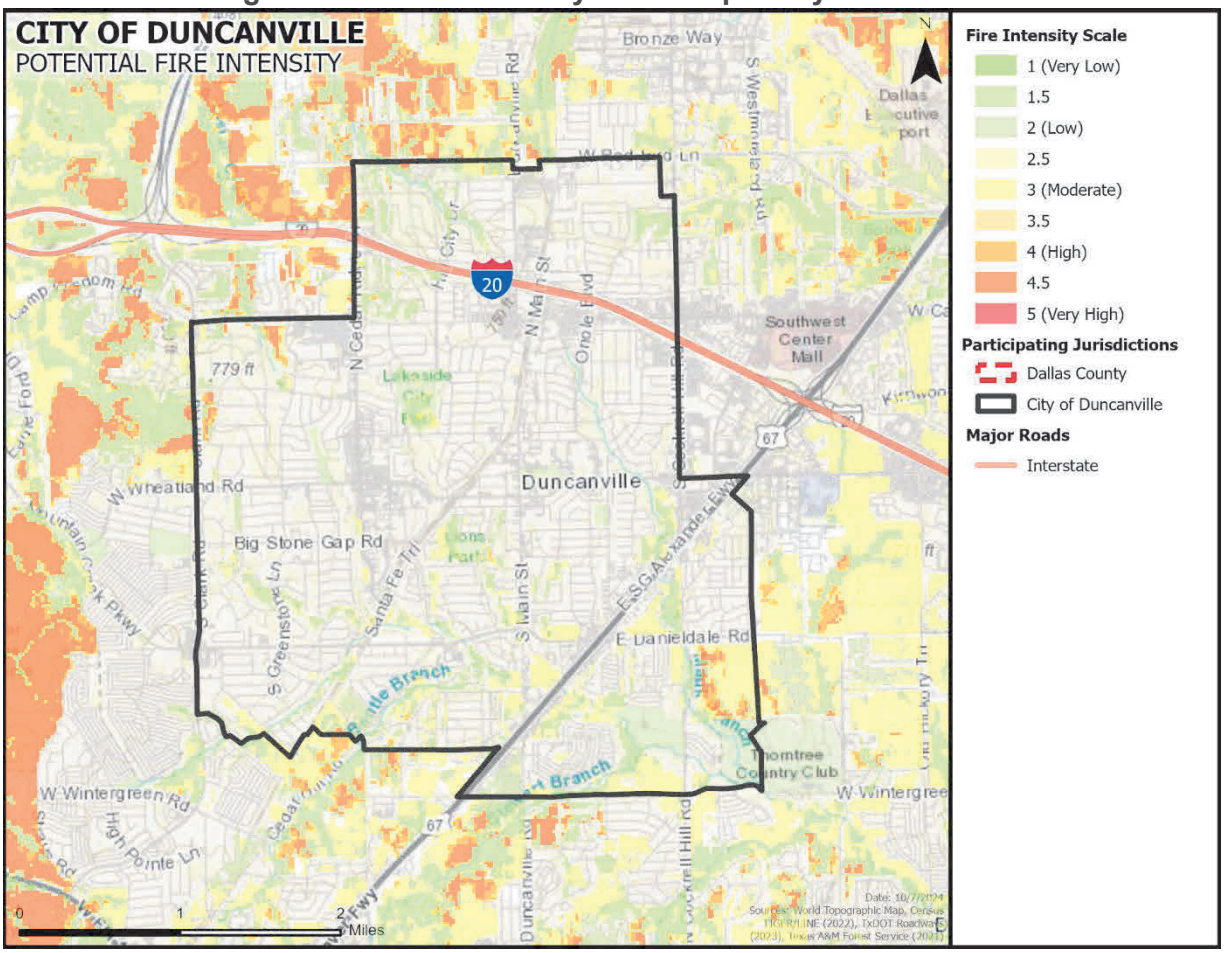


Figure 14-33. Fire Intensity Scale Map – City of Farmers Branch

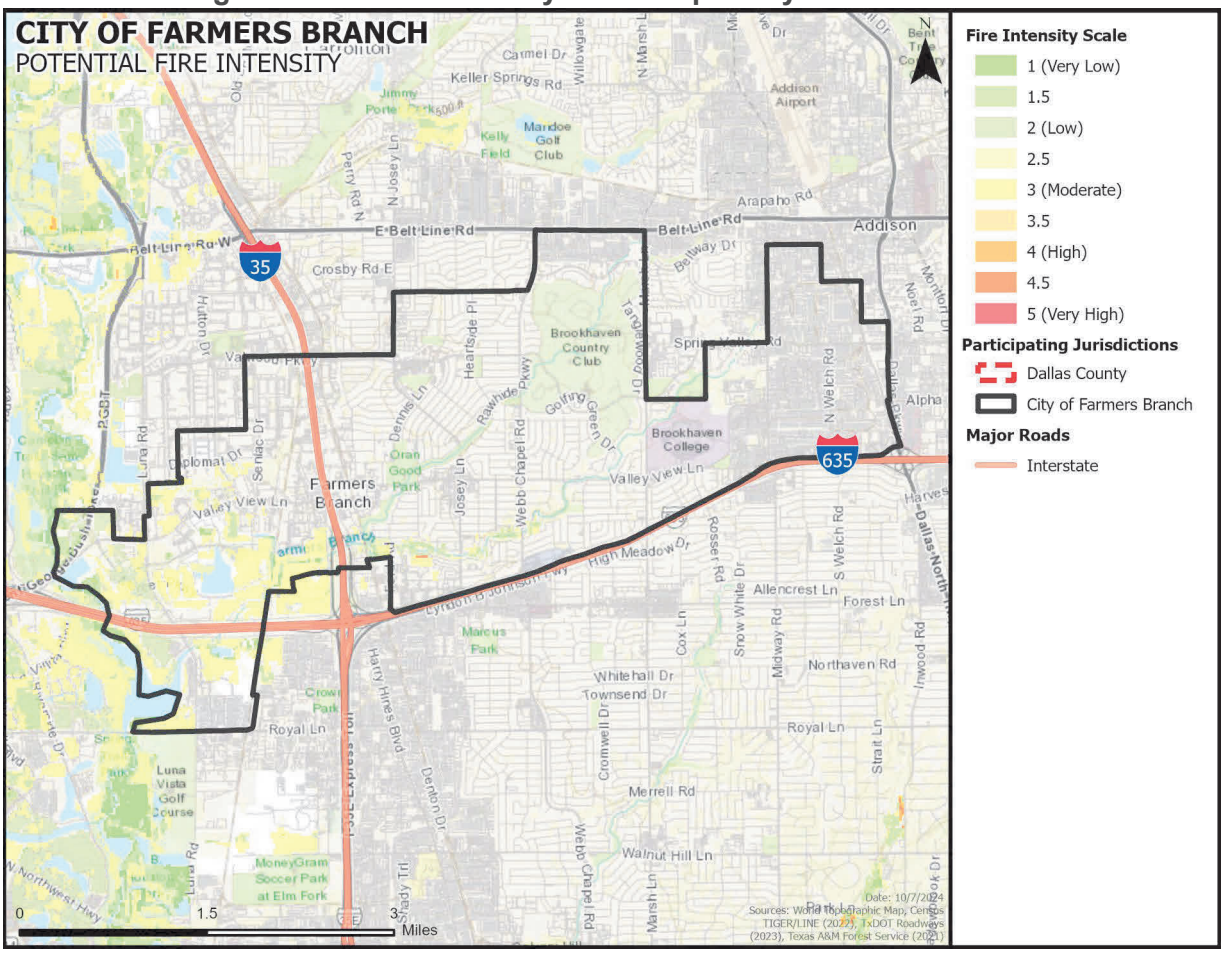


Figure 14-34. Fire Intensity Scale Map – City of Glenn Heights

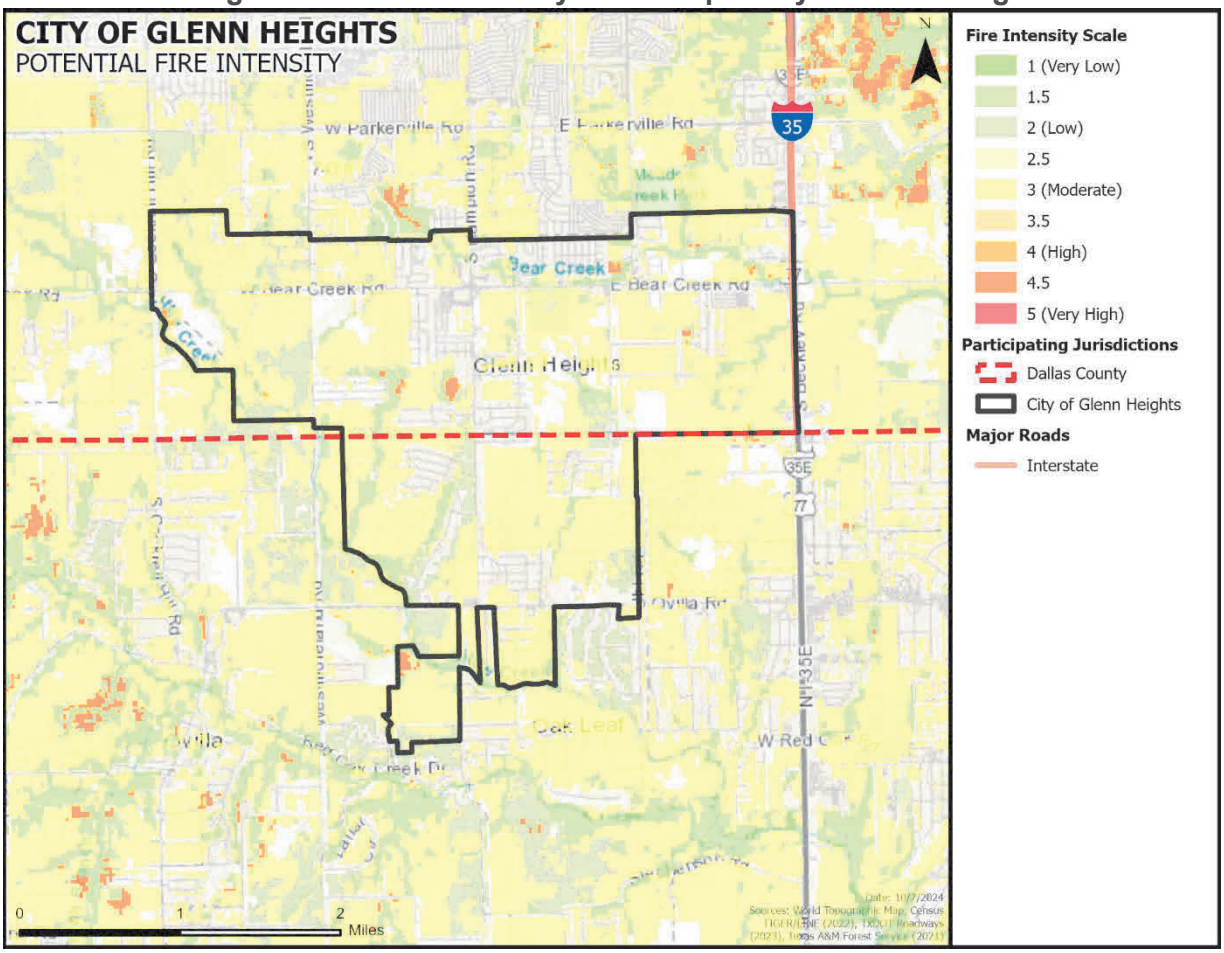


Figure 14-35. Fire Intensity Scale Map – Town of Highland Park

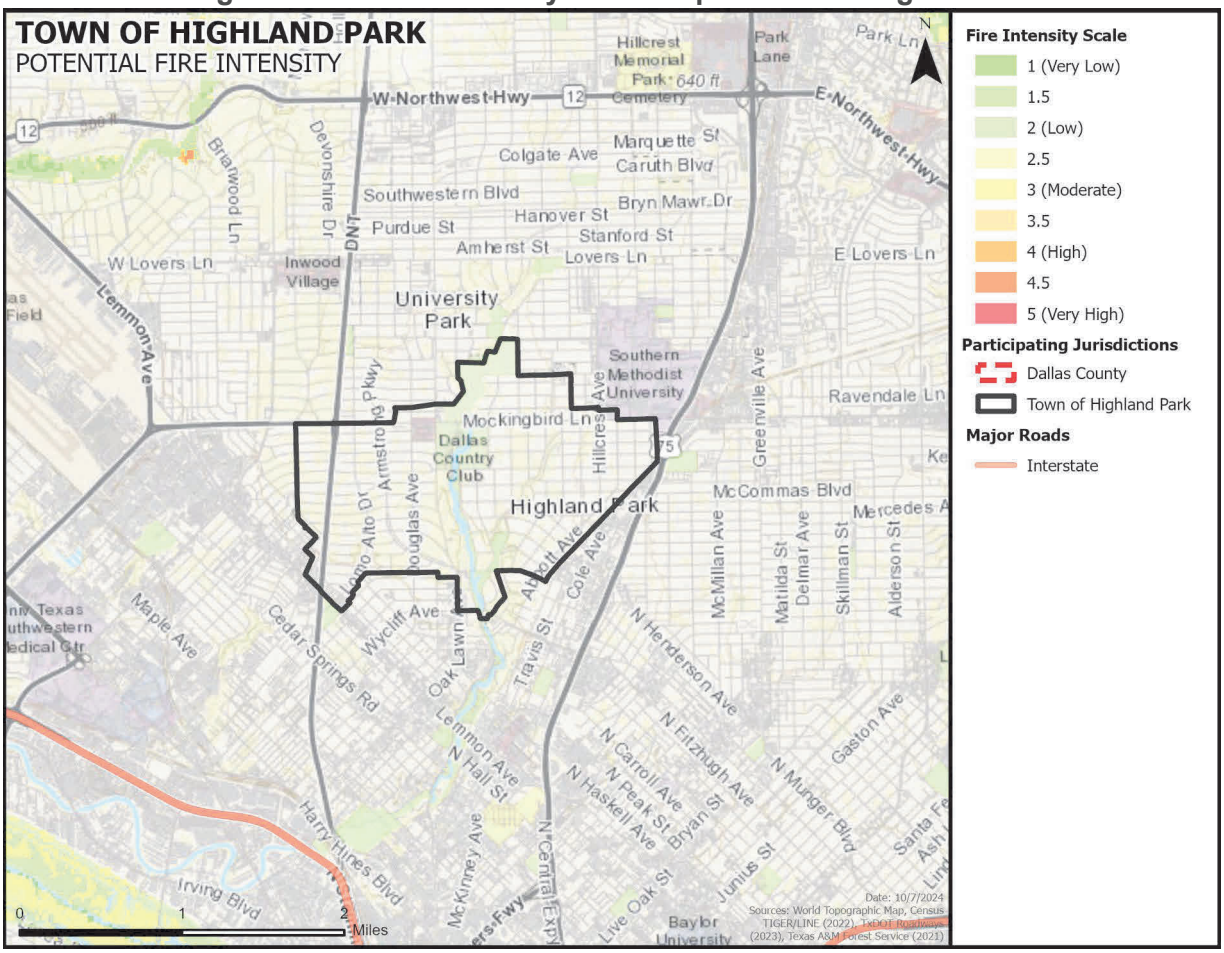


Figure 14-36. Fire Intensity Scale Map – City of Hutchins

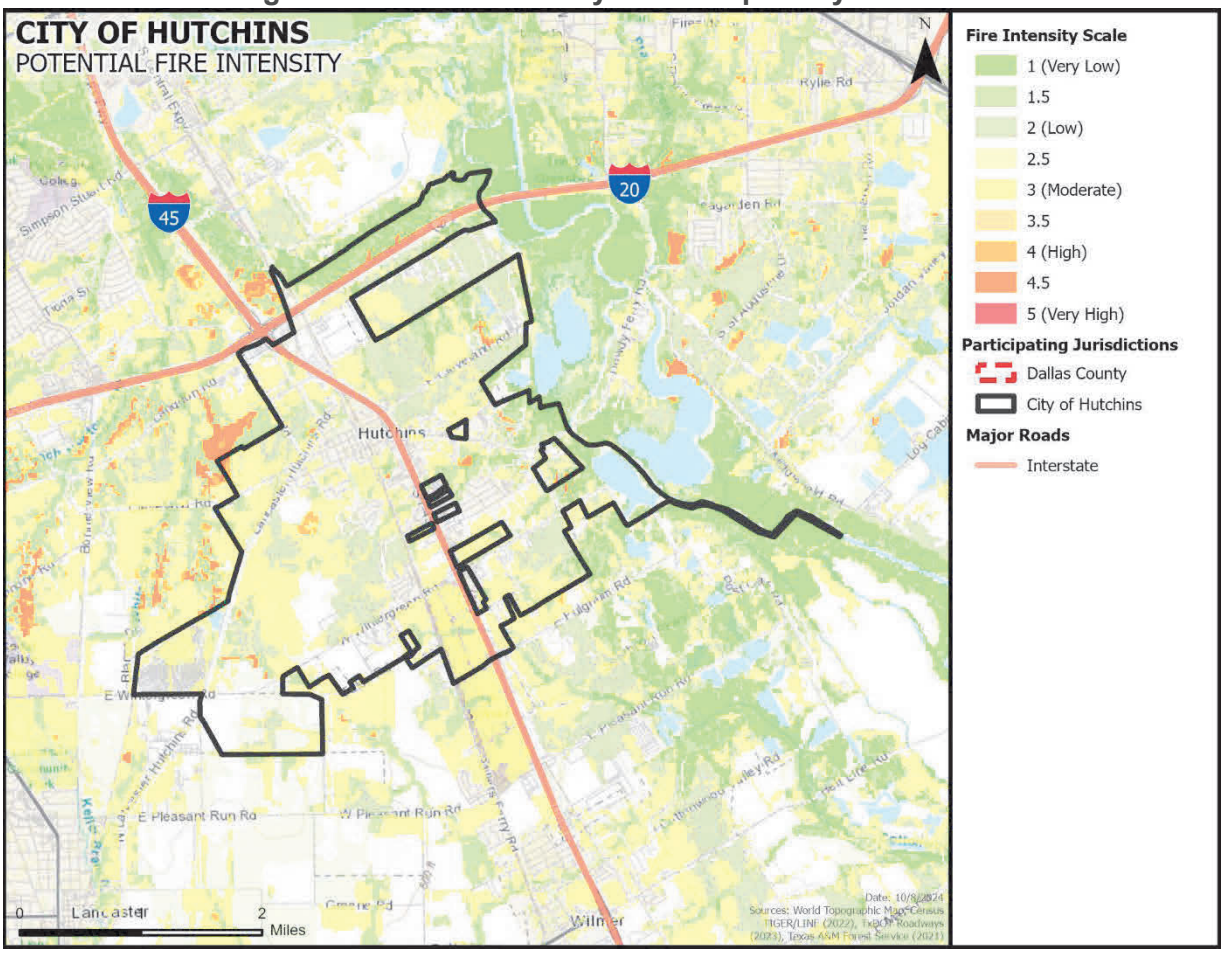


Figure 14-37. Fire Intensity Scale Map – City of Lancaster

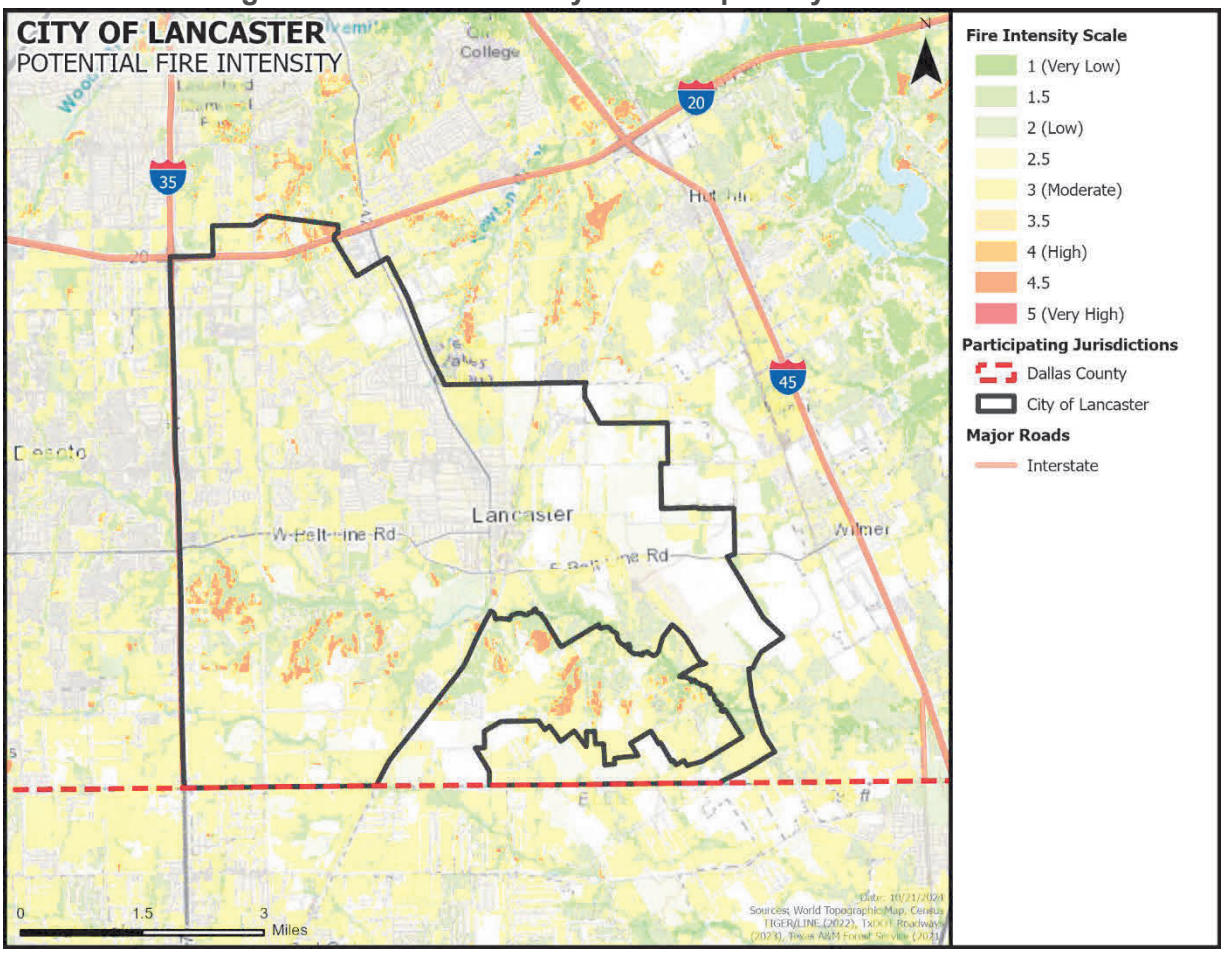


Figure 14-38. Fire Intensity Scale Map – City of Richardson

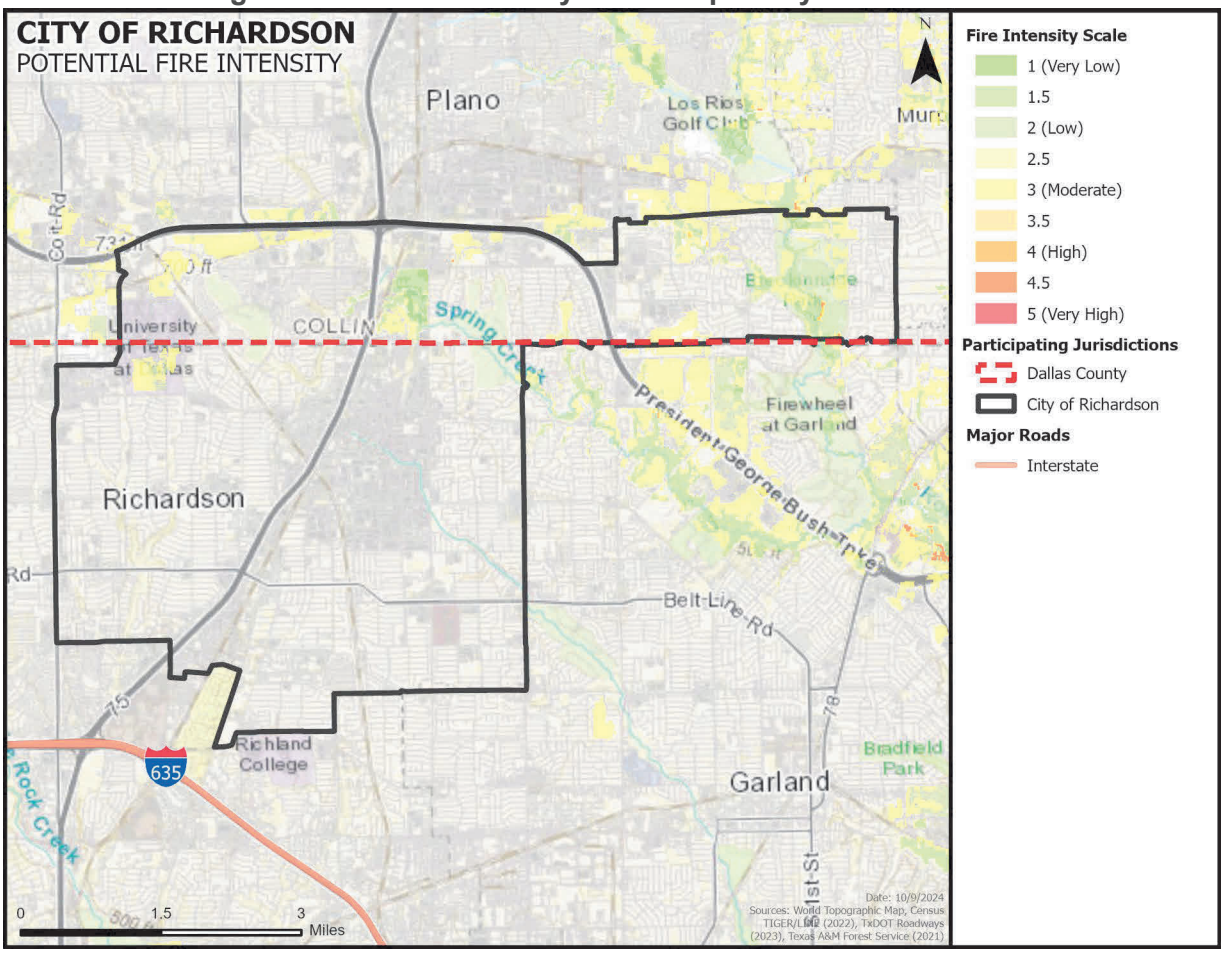


Figure 14-39. Fire Intensity Scale Map – City of Rowlett

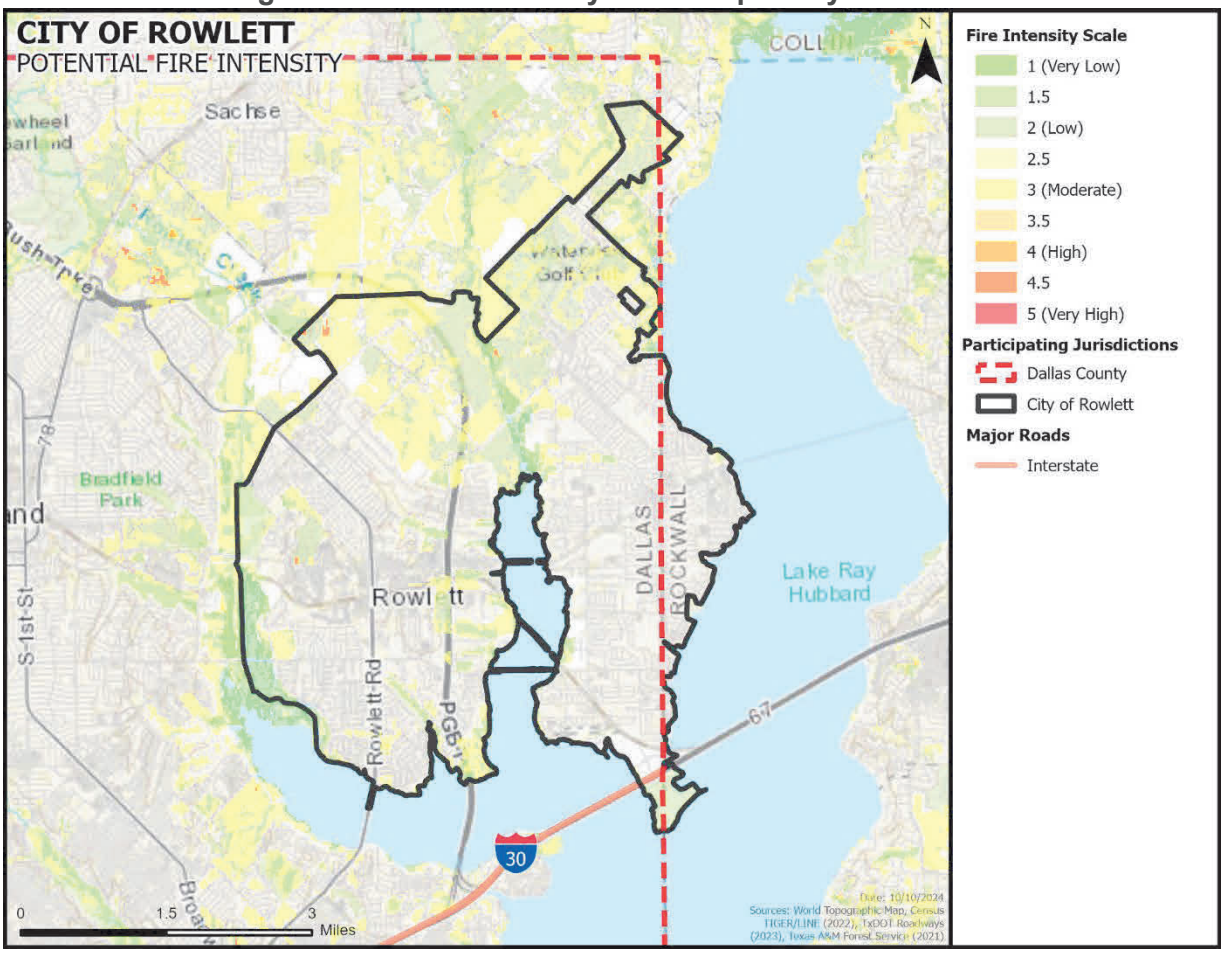


Figure 14-40. Fire Intensity Scale Map – City of Sachse

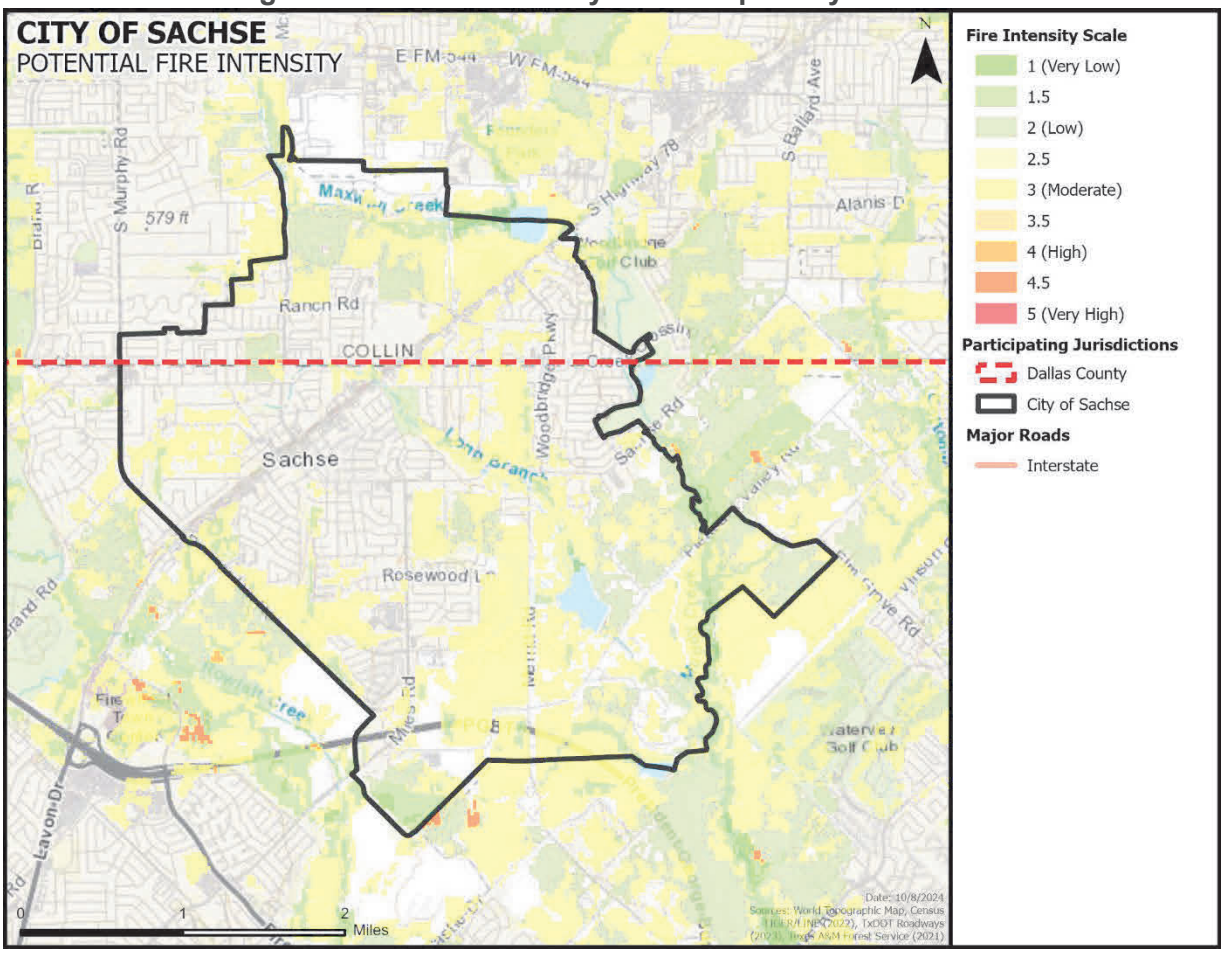


Figure 14-41. Fire Intensity Scale Map – City of Seagoville

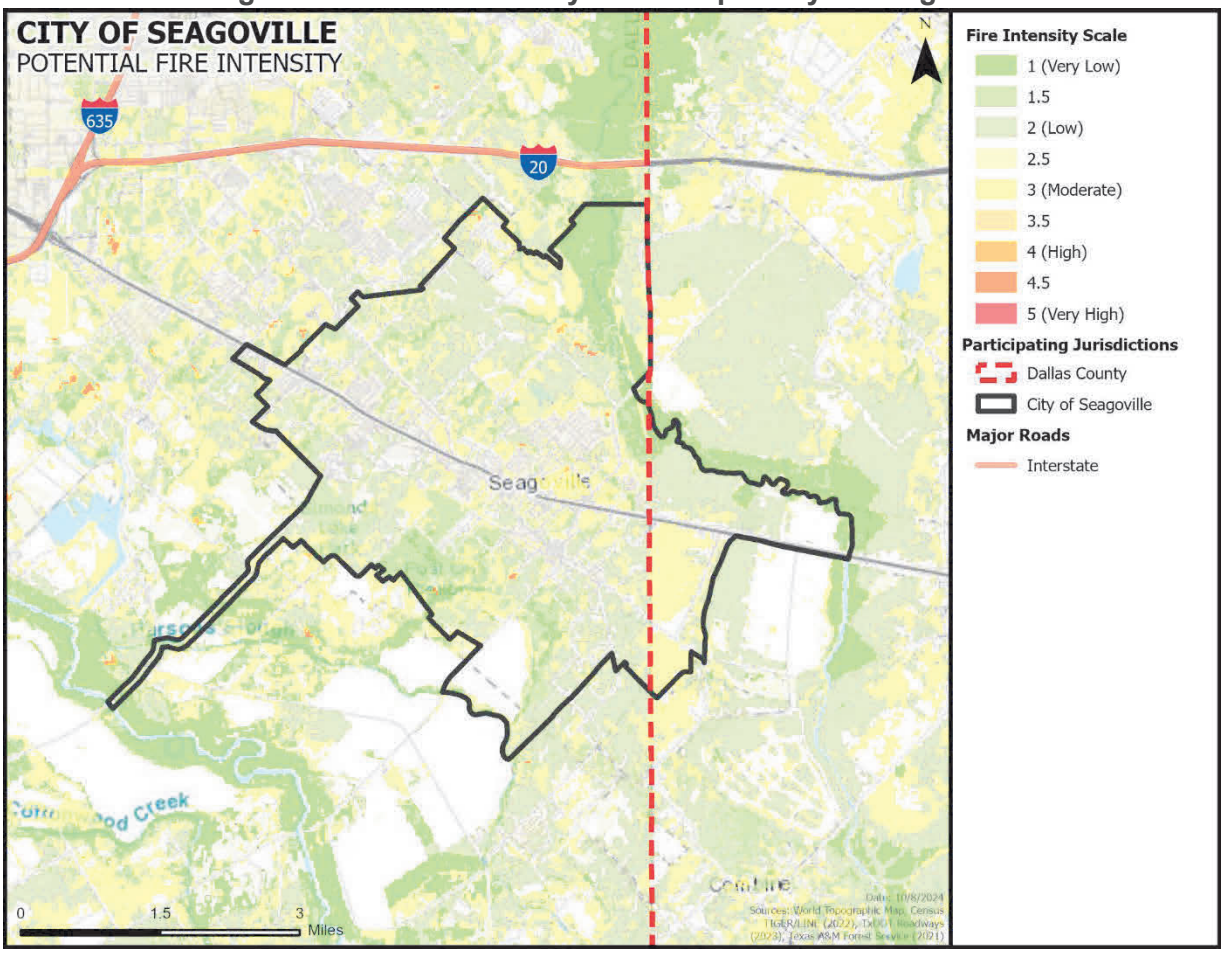


Figure 14-42. Fire Intensity Scale Map – Town of Sunnyvale

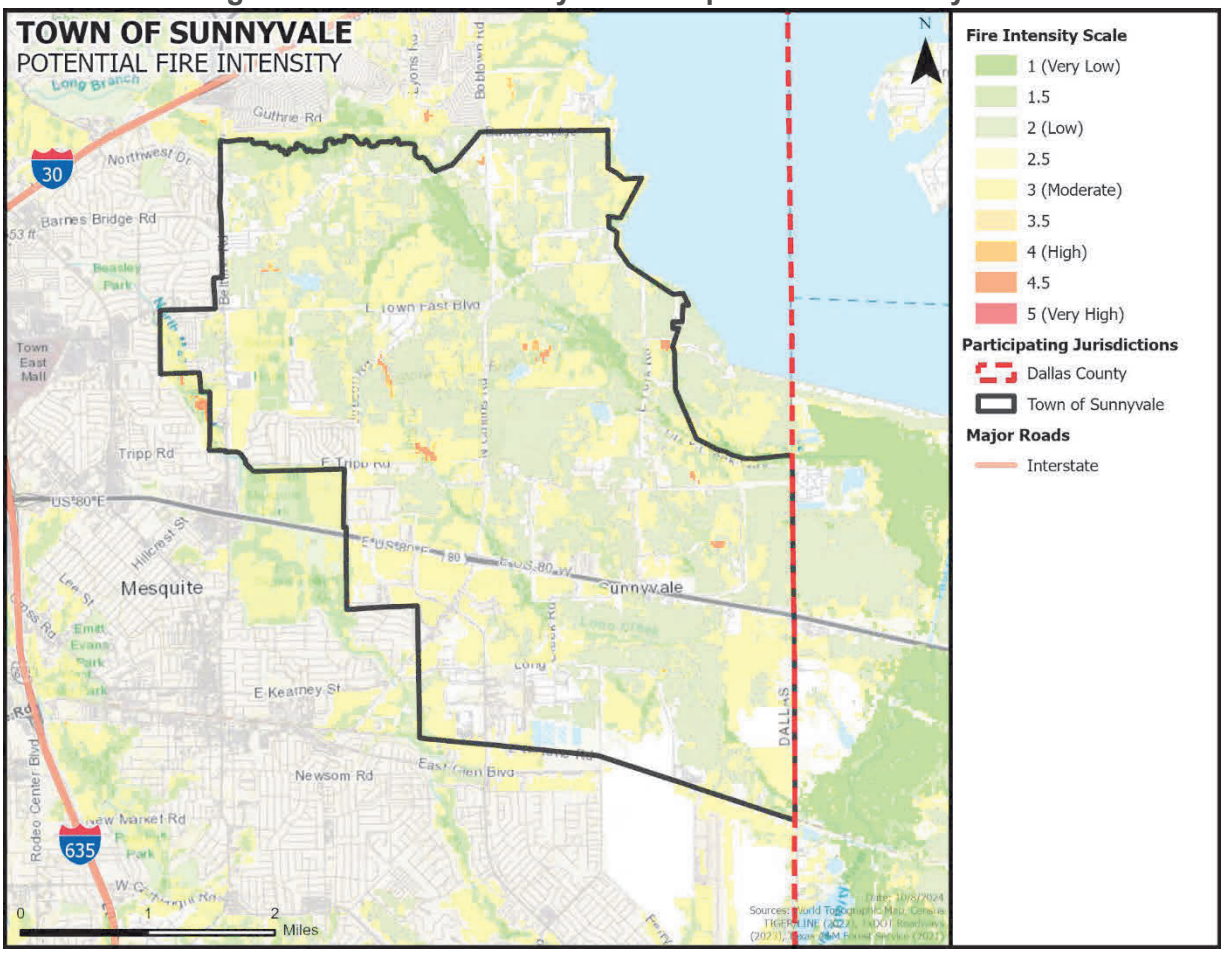


Figure 14-43. Fire Intensity Scale Map – City of University Park

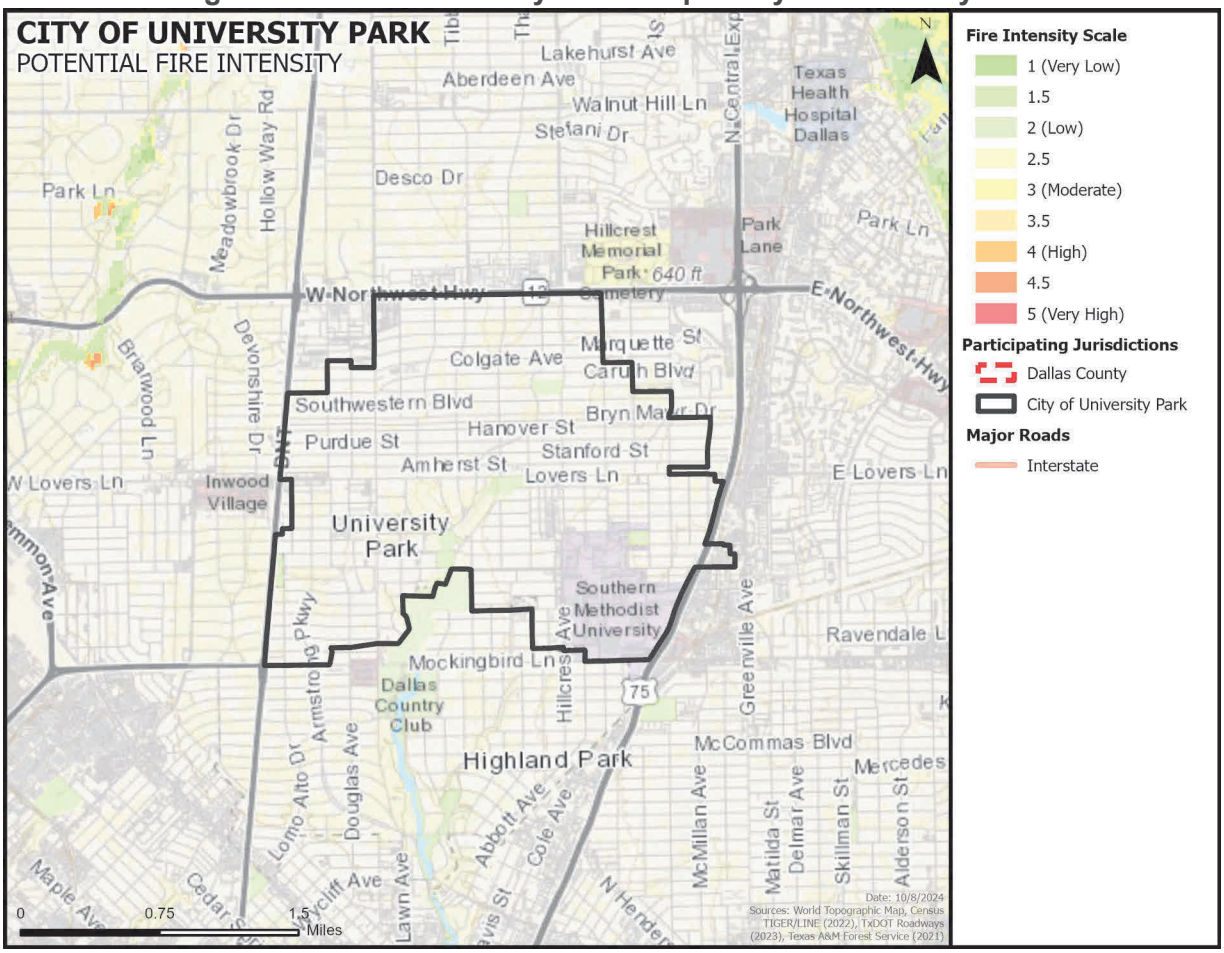
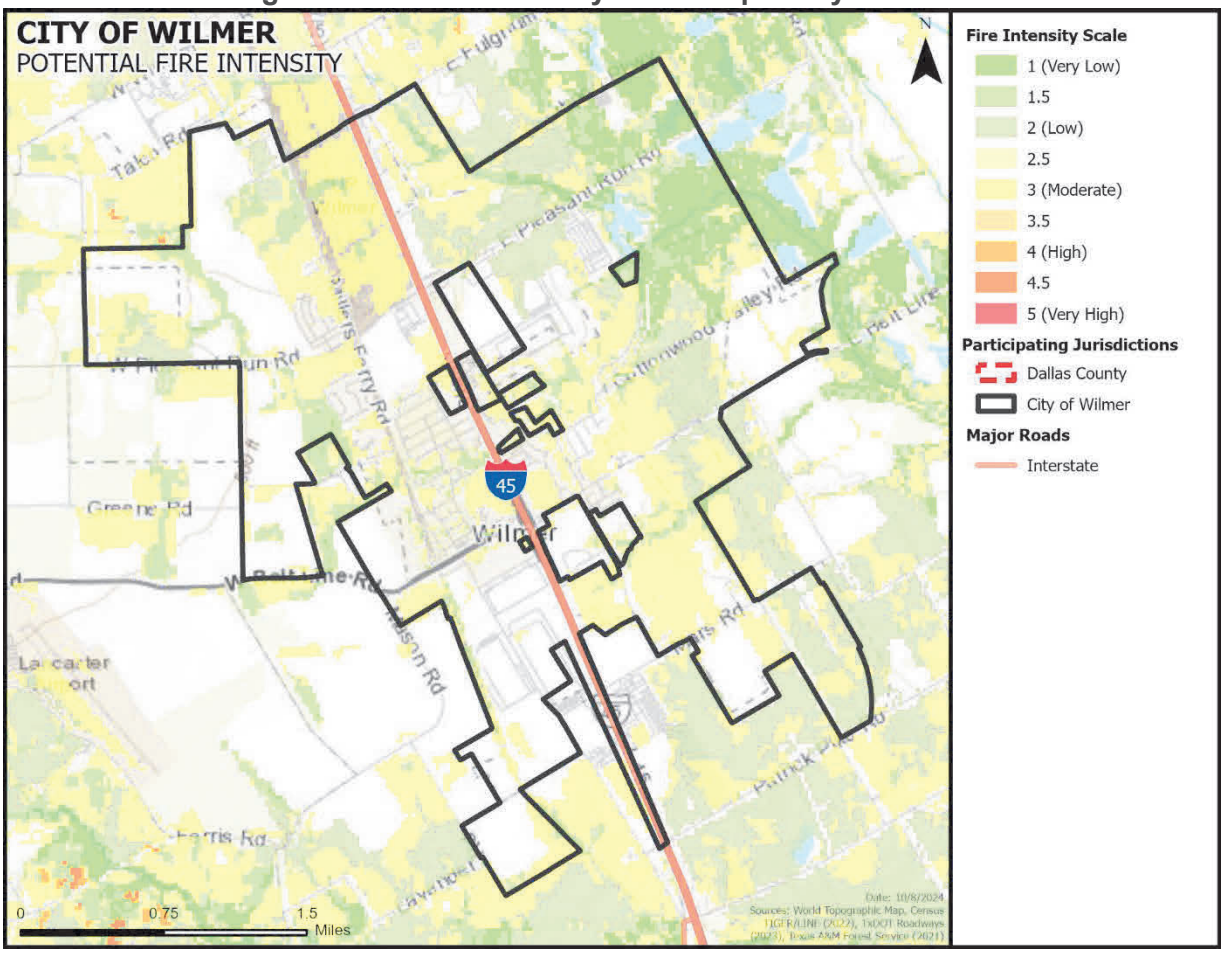


Figure 14-44. Fire Intensity Scale Map – City of Wilmer



HISTORICAL OCCURRENCES

The Texas Forest Service reported 1,700 wildfire events for the Dallas County planning area between 2005 and 2021. The NCEI Storm Events Database includes three records of wildfire events during this same reporting period. The Texas A&M Forest Service (TFS) started collecting wildfire reported by volunteer fire departments in 2005. Due to a lack of recorded data for wildfire events prior to 2005 and after 2021, frequency calculations are based on a 17-year reporting period, using only data from recorded years. The map below shows approximate locations of wildfires, which can be grass or brushfires of any size (Figure 14-45). Tables 14-1 through 14-3 identify the number of wildfires and total acreage burned each year within the county boundaries.

Figure 14-45. Location and Historic Wildfire Events in Dallas County

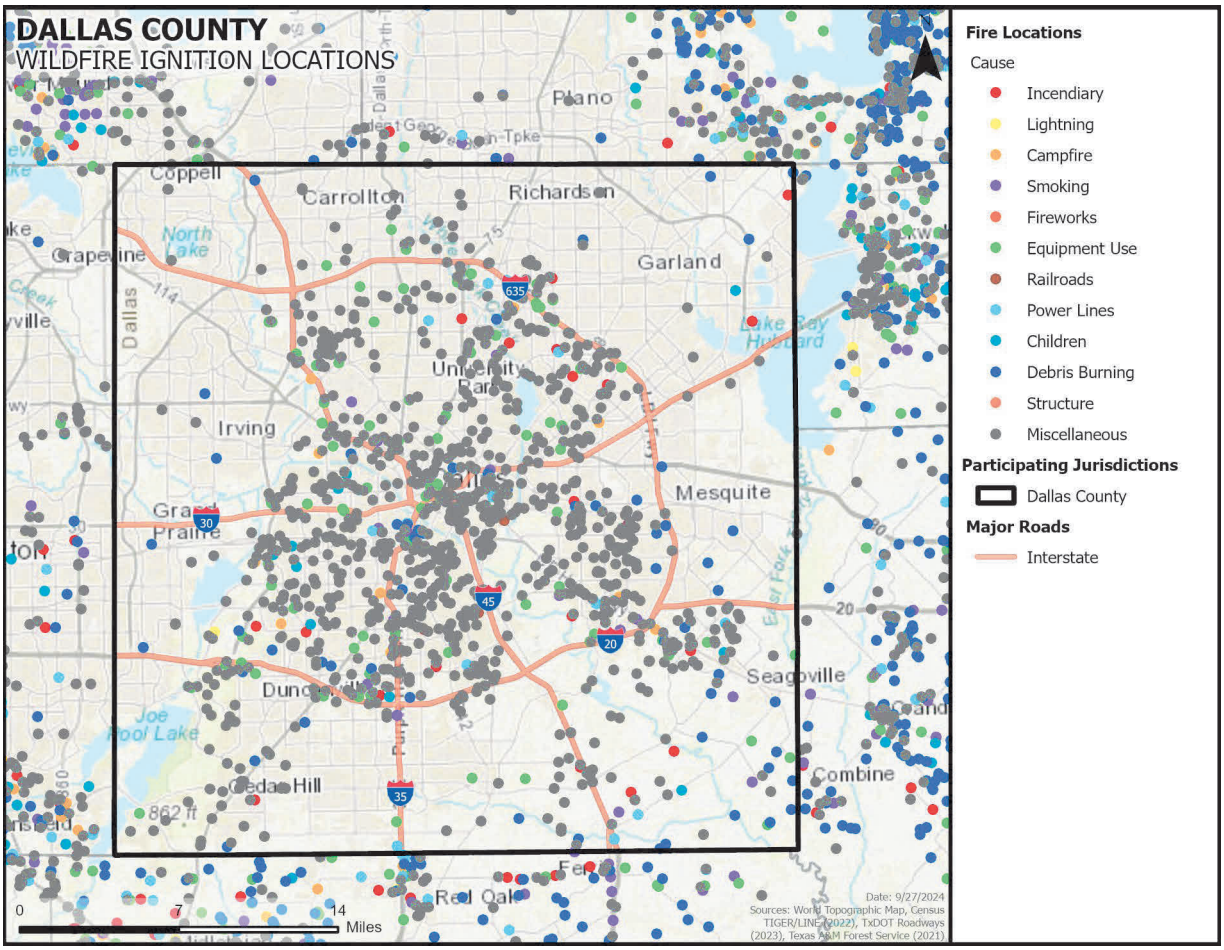


Table 14-1. Historical Wildfire Events Summary, 2005 - 2021[5]

JURISDICTION	NUMBER OF EVENTS	ACRES BURNED
Dallas County	1,572	1,381
Town of Addison	1	0
City of Balch Springs	2	0
City of Carrollton	4	10
City of Cedar Hill	46	88
City of Cockrell Hill	1	10
City of Coppell	2	4
City of DeSoto	1	2
City of Duncanville	2	0
City of Farmers Branch	7	1
City of Glenn Heights	2	16
Town of Highland Park	1	0
City of Hutchins	1	0
City of Lancaster	5	21
City of Richardson	8	5
City of Rowlett	4	51
City of Sachse	2	10
City of Seagoville	12	92
Town of Sunnyvale	0	0
City of University Park	3	0
City of Wilmer	24	39

[5] Source: Texas A&M Forest Service

Table 14-2. Historical Wildfire Events by Year

JURISDICTION	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Dallas County	2	9	3	17	4	15	57	15	21	226	776	410	14	3	0	0	0	**1,572**
Town of Addison	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**1**
City of Balch Springs	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	**2**
City of Carrollton	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	**4**
City of Cedar Hill	0	1	0	1	0	10	6	1	9	11	0	5	0	2	0	0	0	**46**
City of Cockrell Hill	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**1**
City of Coppell	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
City of DeSoto	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
City of Duncanville	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	**2**
City of Farmers Branch	0	0	0	0	0	0	0	0	0	4	2	1	0	0	0	0	0	**7**
City of Glenn Heights	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
Town of Highland Park	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**1**
City of Hutchins	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
City of Lancaster	0	0	0	0	0	0	2	1	1	1	0	0	0	0	0	0	0	**5**
City of Richardson	0	0	0	0	0	1	1	1	2	1	2	0	0	0	0	0	0	**8**
City of Rowlett	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	**4**
City of Sachse	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	**2**
City of Seagoville	0	1	0	3	0	0	0	3	0	1	3	0	1	0	0	0	0	**12**
Town of Sunnyvale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of University Park	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	**3**
City of Wilmer	0	0	0	1	0	0	23	0	0	0	0	0	0	0	0	0	0	**24**

Based on the list of historical wildfire events for the Dallas County planning area (Table 14-2), no events have occurred since the 2020 plan.

Table 14-3. Acreage of Suppressed Wildfire by Year

JURISDICTION	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Dallas County	23	149	34	197	8	91	226	54	93	118	158	128	96	6	0	0	0	**1,381**
Town of Addison	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of Balch Springs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of Carrollton	3	1	0	0	0	0	0	0	1	5	0	0	0	0	0	0	0	**10**
City of Cedar Hill	0	20	0	10	0	10	22	0	15	7	0	4	0	0	0	0	0	**88**
City of Cockrell Hill	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	**10**
City of Coppell	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
City of DeSoto	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
City of Duncanville	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of Farmers Branch	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**1**
City of Glenn Heights	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	**16**
Town of Highland Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of Hutchins	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of Lancaster	0	0	0	0	0	0	14	5	2	0	0	0	0	0	0	0	0	**21**
City of Richardson	0	0	0	0	0	0	3	0	1	1	0	0	0	0	0	0	0	**5**
City of Rowlett	0	0	0	0	1	0	10	0	40	0	0	0	0	0	0	0	0	**51**
City of Sachse	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	**10**
City of Seagoville	0	20	0	30	0	0	0	11	0	1	0	0	30	0	0	0	0	**92**
Town of Sunnyvale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of University Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
City of Wilmer	0	0	0	2	0	0	37	0	0	0	0	0	0	0	0	0	0	**39**

SIGNIFICANT EVENTS

There have been 4 declared disasters related to wildfire in Dallas County between 1996 and 2024 (Table 14-4). Additional details on certain wildfire events are described below.

Table 14-4. Disaster Declarations for Wildfire, 1996-2024

YEAR	DECLARATION TITLE	DECLARATION TYPE	DISASTER NO.
1996	Texas Fire Emergency	EM	3117
1999	Texas Extreme Fire Hazards	EM	3142
2006	Extreme Wildfire Threat in Texas	DR	1624
2008	Wildfires in Texas	EM	3284

August 16, 2011
Elevated fire weather conditions persisted for most of the month due to the extreme heat and the ongoing historic drought. Many wildfires occurred during the month, burning over 40,000 acres of land, several homes, and lots of personal property across the region. A grass fire damaged a group of vacant manufactured homes off Jimmy Lane in Combine. One home was destroyed, and five others were badly damaged. Only one of the homes was occupied at the time. A few vehicles and some sheds were also burned in the fire. This event caused $410,900 (2024 dollars) in damages.

PROBABILITY OF FUTURE EVENTS

Wildfires can occur at any time of the year. As Dallas County communities move into wildland, the potential area of occurrence of wildfire increases. With 1,700 events in a 17-year reporting period, an event within the Dallas County planning area is “Highly Likely”, meaning an event is probable within the next year. According to NOAA, research shows that changes in climate create warmer, drier conditions, leading to longer and more active fire seasons, indicating an increase in the frequency and severity of events in the planning area going forward.

VULNERABILITY AND IMPACT

Periods of drought, dry conditions, high temperatures, and low humidity are factors that contribute to the occurrence of a wildfire event. Less developed areas, such as along interstates or in more remote areas where fuels are more prevalent have an increased risk of being affected by wildfire.

The more heavily populated areas of the planning area are not highly likely to experience large, sweeping fires. Unoccupied buildings and open spaces that have not been maintained have the greatest vulnerability to wildfire. The overall level of concern for wildfires is located across the county where wildland and urban areas interface. Figures 14-45 through 14-65[6] illustrates the areas that are the most vulnerable to wildfire throughout the Dallas County planning area.

The Dallas County Planning Team identified the following critical facilities (Table 14-5) as assets that are considered the most important to the planning area and are located in the WUI and susceptible to a range of impacts caused by wildfire events. For a comprehensive list by participating jurisdiction, please see Appendix C.

[6] Source: TxWRAP portal at the following site: https://texaswildfirerisk.com/

Table 14-5. Critical Facilities/Critical Services Vulnerable to Wildfire Events

CRITICAL FACILITIES	CRITICAL FACILITIES AT RISK	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers	Dallas County: 1 EMS, 1 Fire Station, 4 Health Services, 3 Federal Government Facilities (Military) City of Balch Springs: 1 Health Services City of Carrolton: 1 Health Services, 1 EOC City of Cedar Hill: 4 Fire Stations, 1 Police Station City of Coppell: 4 Fire Stations City of DeSoto: 3 Fire Stations, 1 Health Service City of Duncanville: 2 Fire Stations City of Glenn Heights: 1 Fire Station City of Hutchins: 2 Fire Stations, 1 Police Station City of Lancaster: 3 Fire Stations, 1 Health Service, 1 Police Station City of Richardson: 1 Fire Station, 2 Health Services City of Rowlett: 1 Fire Station, 1 Health Service City of Sachse: 1 Fire Station, 1 Health Service City of Seagoville: 1 Fire Station, 2 Police Stations, 2 Federal Government	• Emergency services may be disrupted during a wildfire if facilities are impacted, roadways are inaccessible, or personnel are unable to report for duty. • First responders are at greater risk of injury when in close proximity to the hazard while extinguishing flames, protecting property, or evacuating residents in the area. • Critical city departments may not be able to function and provide necessary services depending on the location of the fire and the structures or personnel impacted. • Roadways in or near the WUI could be damaged or closed due to smoke and limited visibility, slowing or preventing access for emergency response vehicles. • Fire suppression costs can be substantial, exhausting the financial resources of the community. • First responders can experience heart disease, respiratory problems, and other long-term related illnesses from prolonged exposure to smoke, chemicals, and heat. • Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications. • Power outages could disrupt communications, delaying emergency response times. • Structures can be damaged or destroyed in the path of the wildfire. • Power outages could disrupt critical care. • Backup power sources could be damaged or destroyed. • Critical staff may be injured or otherwise unable to report for duty, limiting response capabilities.

CRITICAL FACILITIES	CRITICAL FACILITIES AT RISK	POTENTIAL IMPACTS
	Facilities (Administration and Military) Town of Sunnyvale: 1 EMS, 2 Fire Stations, 3 Health Services, 1 Police Station City of Wilmer: 1 Fire Station, 1 Police Station	
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities	Dallas County: 2 Municipal, 51 Schools, 1 Transportation City of Balch Springs: 1 Municipal City of Carrolton: 11 Schools, 1 Transportation City of Cedar Hill: 1 Community Facility, 1 Evacuation Shelter, 4 Municipal, 11 Schools City of Coppell: 2 Community Facility, 1 Evacuation Shelter, 5 Municipal, 3 Residential (Vulnerable Populations), 9 Schools City of DeSoto: 3 Community Facilities, 3 Evacuation Shelters, 2 Municipal, 4 Residential (Vulnerable Populations), 9 Schools City of Duncanville: 1 Evacuation Shelter, 1 Municipal, 6 Schools City of Glenn Heights: 1 Community Facility, 3 Municipal	• Facilities or infrastructure may be damaged, destroyed or otherwise inaccessible. • Essential supplies like medicines, water, food, and equipment deliveries may be significantly delayed. • Additional emergency responders and critical aid workers may not be able to reach the area for days. • Power outages and infrastructure damage may prevent larger airports from acting as temporary command centers for logistics, communications, and emergency operations.

CRITICAL FACILITIES	CRITICAL FACILITIES AT RISK	POTENTIAL IMPACTS
	City of Hutchins: 2 Community Facilities, 1 Municipal/ Government Facility City of Lancaster: 3 Community Facilities, 2 Municipal, 2 Residential (Vulnerable Populations), 14 Schools, 1 Transportation City of Richardson: 7 Residential (Vulnerable Populations), 1 School City of Rowlett: 1 Evacuation and Shelter, 6 Schools City of Sachse: 2 Community Facilities, 1 Municipal, 2 Residential (Vulnerable Populations), 4 Schools City of Seagoville: 2 Municipal, 3 Schools Town of Sunnyvale: 3 Municipal, 4 Schools City of Wilmer: 1 Evacuation Shelter, 3 Municipal	
Commercial Supplier (food, fuel, etc.)	N/A	• Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Essential supplies like medicines, water, food, and equipment deliveries may be delayed. • Economic disruption due to power outages and fires negatively impact services as well as area businesses reliant on commercial suppliers.
Utility Services and Infrastructure (electric, water, wastewater, communications)	Dallas County: 2 Air Quality Monitoring, 3 Energy Utility, 2 Sewage and Water	• Wastewater and drinking water facilities and infrastructure may be damaged or destroyed resulting in service disruption or outage for multiple days or weeks.

CRITICAL FACILITIES	CRITICAL FACILITIES AT RISK	POTENTIAL IMPACTS
	City of Balch Springs: 5 Sewage and Water City of Carrolton: 1 Dam, 5 Sewage and Water City of Cedar Hill: 13 Communications, 24 Sewage and Water City of Coppell: 1 Communications, 3 Sewage and Water City of DeSoto: 9 Communications, 2 Sewage and Water City of Duncanville: 3 Communications, 4 Sewage and Water City of Farmers Branch: 1 Sanitation/Waste, 1 Sewage and Water City of Glenn Heights: 1 Sewage and Water City of Lancaster: 12 Communications, 4 Sewage and Water City of Richardson: 3 Communications, 2 Sewage and Water City of Rowlett: 14 Sewage and Water City of Sachse: 11 Communications, 8 Sewage and Water City of Seagoville: 1 Communications, 2 Energy Utility, 15 Sewage and Water	• Disruptions and outages impact public welfare as safe drinking water is critical. • A break in essential and effective wastewater collection and treatment is a health concern, potentially spreading disease. • Exposure to untreated wastewater is harmful to people and the environment. • Any service disruptions can negatively impact or delay emergency management operations. • Power losses

CRITICAL FACILITIES	CRITICAL FACILITIES AT RISK	POTENTIAL IMPACTS
	Town of Sunnyvale: 5 Sewage and Water City of Wilmer: 10 Sewage and Water	

Within the Dallas County planning area, a total of 1,700 fire events were reported from 2005 through 2021 by Texas A&M Forest Service. All events were suspected wildfires. Historic acreage losses and annualized estimates of acres burned due to wildfires are presented in Table 14-6 below. The average annual frequency is approximately 100 events every year.

Table 14-6. Average Annualized Acreage Losses[7]

JURISDICTION	TOTAL ACRES BURNED	AVERAGE ANNUAL ACRE LOSSES[8]
Dallas County	1,381	81
Town of Addison	0	0
City of Balch Springs	0	0
City of Carrollton	10	1
City of Cedar Hill	88	5
City of Cockrell Hill	10	1
City of Coppell	4	0
City of DeSoto	2	0
City of Duncanville	0	0
City of Farmers Branch	1	0
City of Glenn Heights	16	1
Town of Highland Park	0	0
City of Hutchins	0	0
City of Lancaster	21	1
City of Richardson	5	0
City of Rowlett	51	3
City of Sachse	10	1

[7] Events divided by 17 years of data.
[8] Average annual acre loss is rounded to the nearest whole number for jurisdictions with less than one acre lost per year.

JURISDICTION	TOTAL ACRES BURNED	AVERAGE ANNUAL ACRE LOSSES[8]
City of Seagoville	92	5
Town of Sunnyvale	0	0
City of University Park	0	0
City of Wilmer	39	2
TOTAL	**1,730**	**102**

Wildfire Ignition Density shows the likelihood of a wildfire starting based on historical ignition patterns. Occurrence is derived by modeling historic wildfire ignition locations to create an average ignition rate map. The ignition rate is measured in the number of fires per year per 1,000 acres. Wildfire Ignition Density is a key input into the calculation of the Wildfire Threat output. With most Texas fires being human caused, there is a repeatable spatial pattern of fire ignitions over time. This pattern identifies areas where wildfires are most likely to ignite, and prevention efforts can be planned accordingly.[9]

Figures 14-45 through 14-65 show the threat of wildfire to the Dallas County planning area.

[9] Source: TxWRAP portal at the following site: https://texaswildfirerisk.com/

Figure 14-45. Wildfire Ignition Density – Dallas County

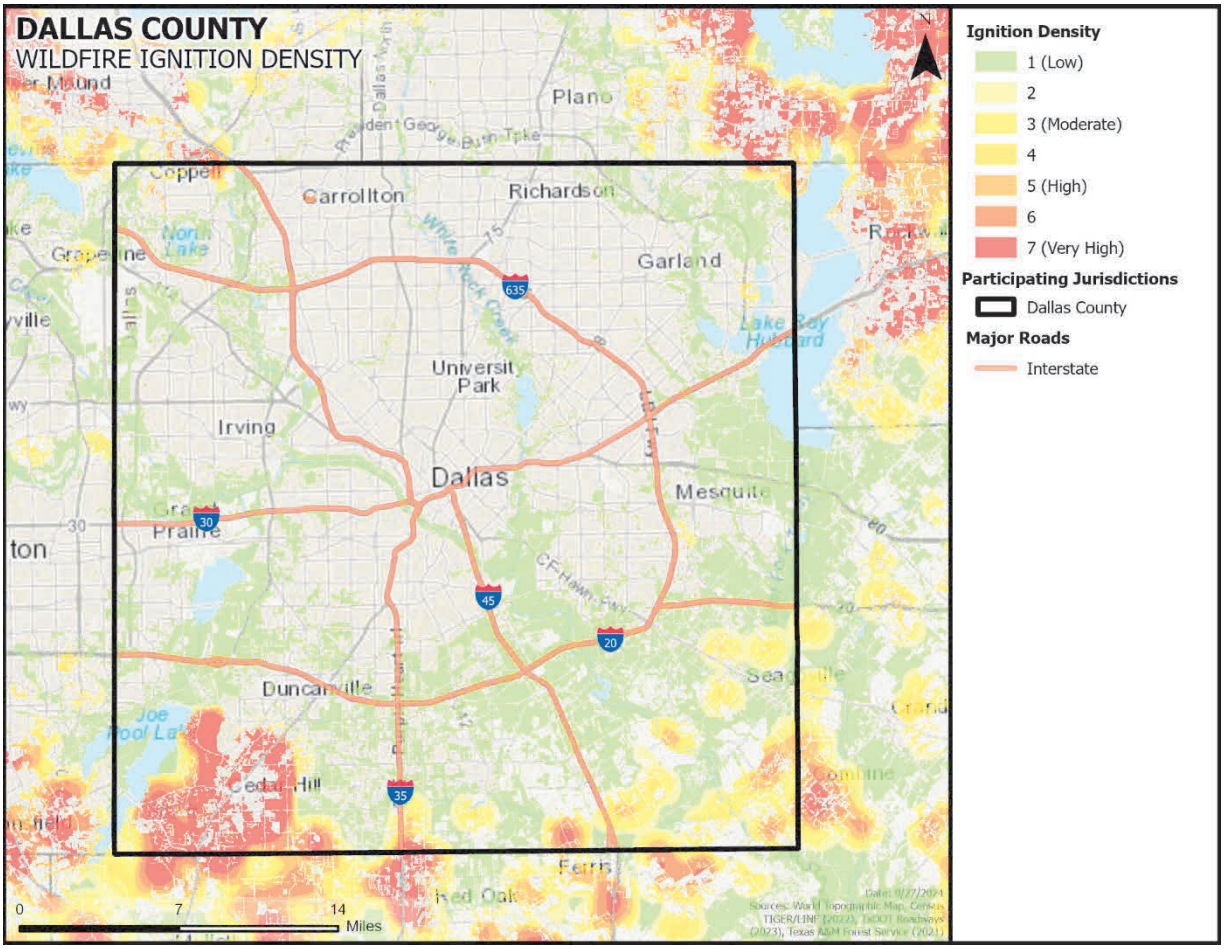


Figure 14-46. Wildfire Ignition Density – Town of Addison

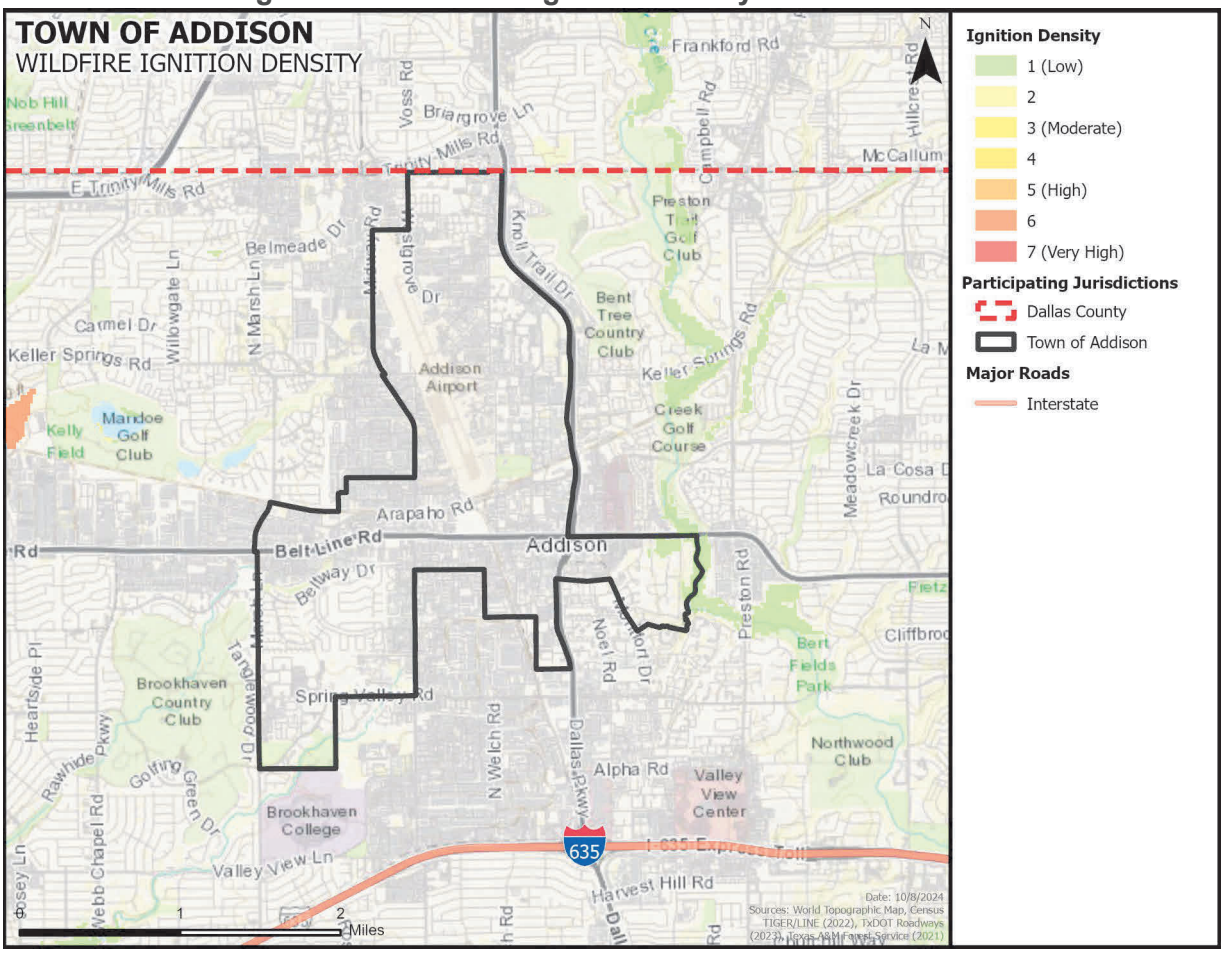


Figure 14-47. Wildfire Ignition Density Map – City of Balch Springs

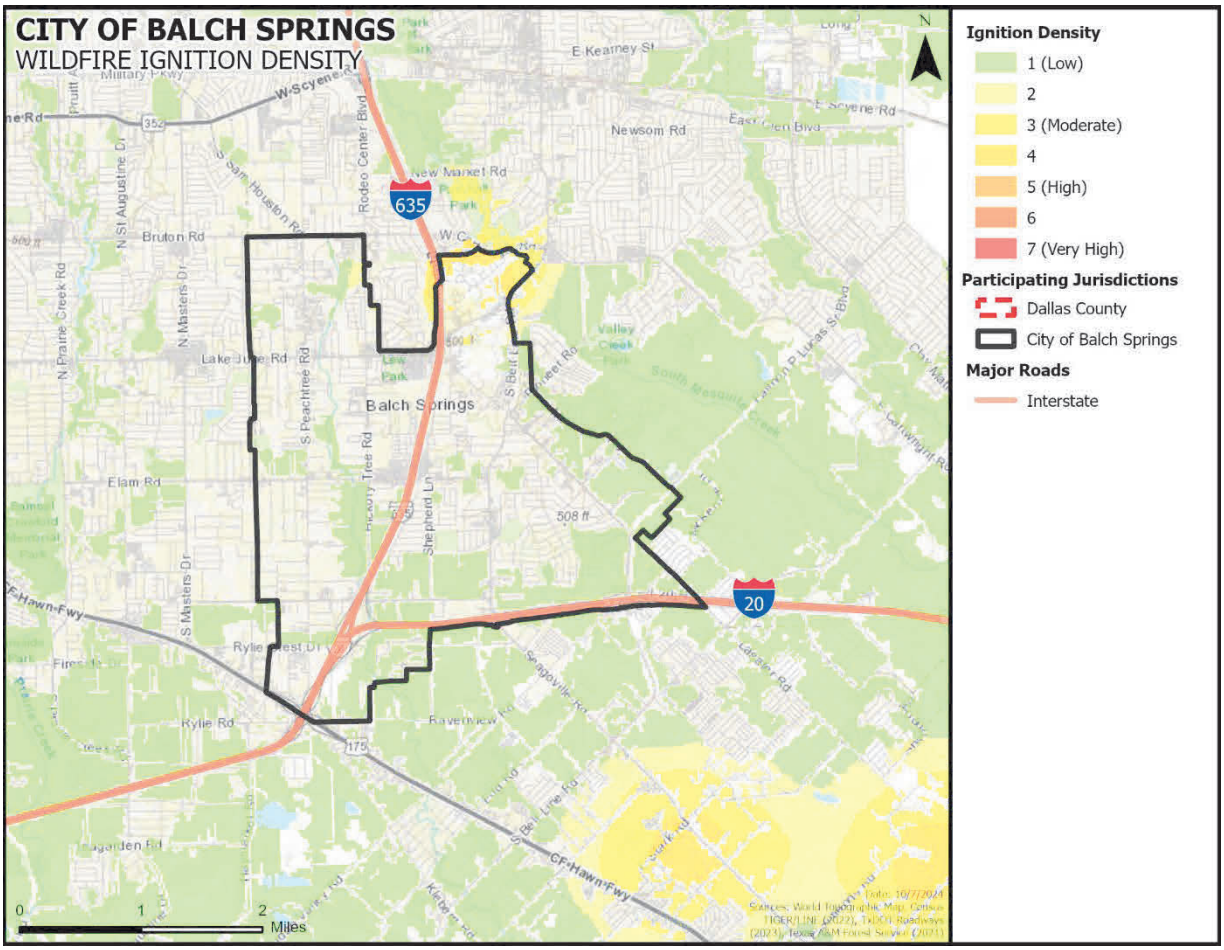


Figure 14-48. Wildfire Ignition Density – City of Carrollton

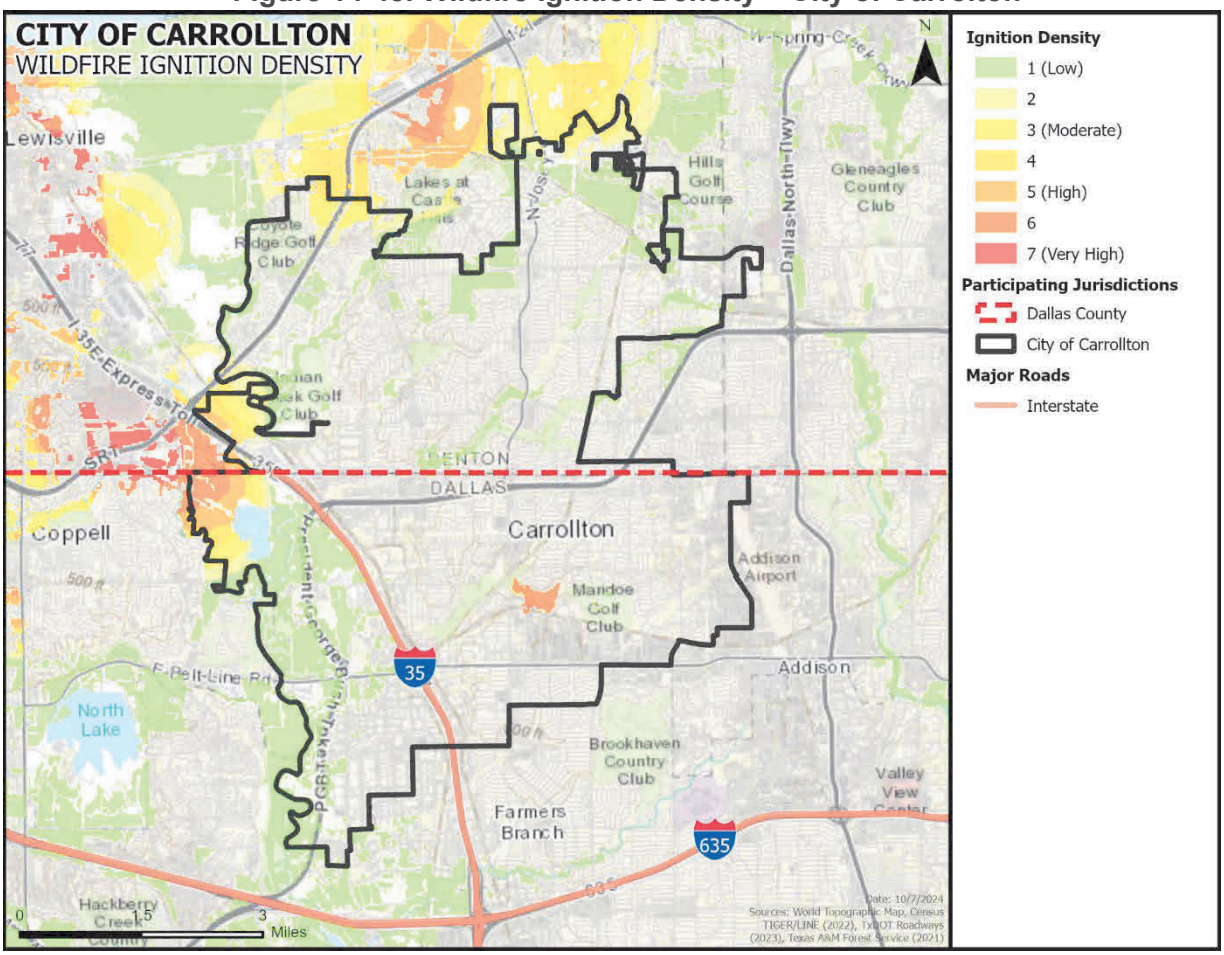


Figure 14-49. Wildfire Ignition Density – City of Cedar Hill

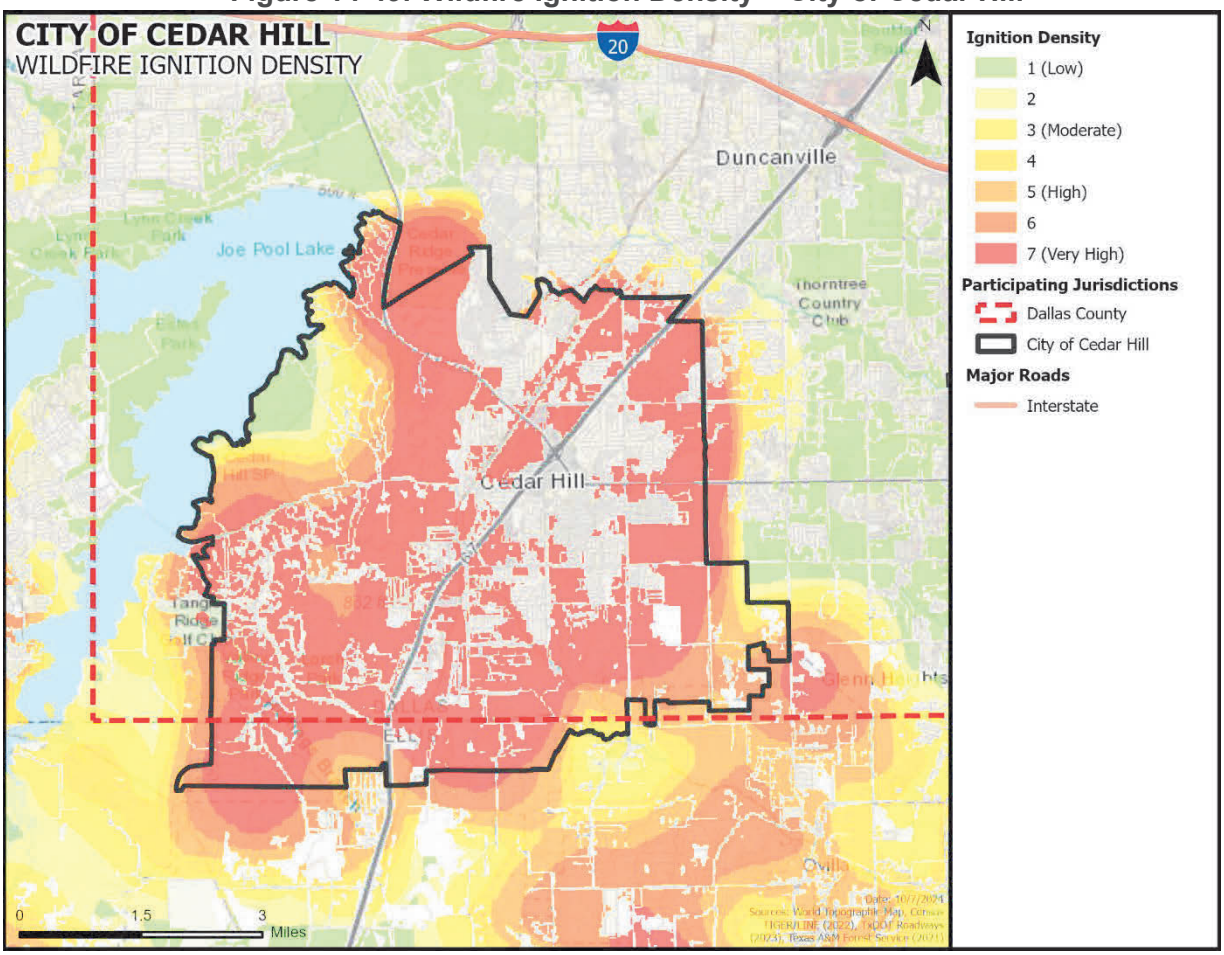


Figure 14-50. Wildfire Ignition Density – City of Cockrell Hill

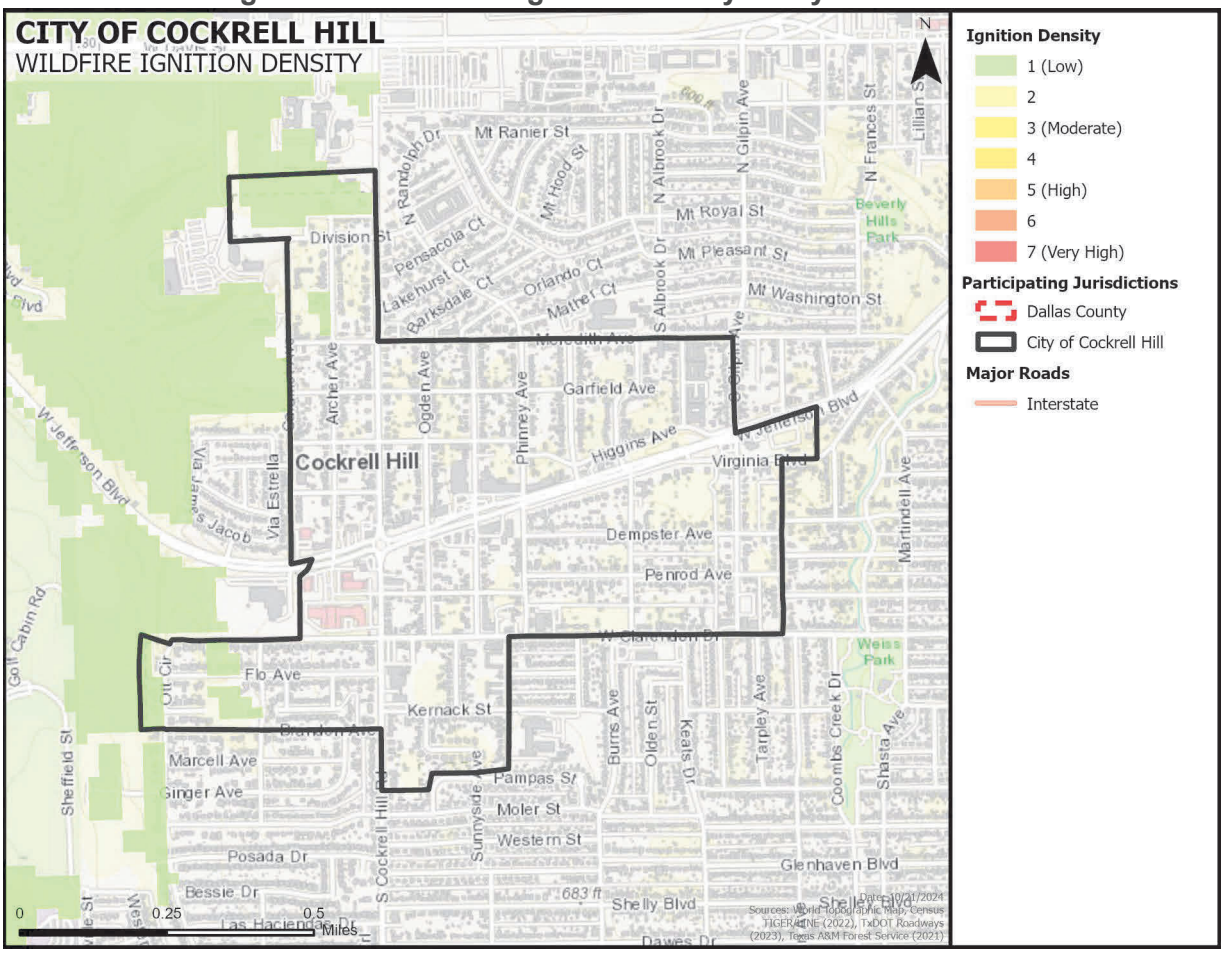


Figure 14-51. Wildfire Ignition Density – City of Coppell

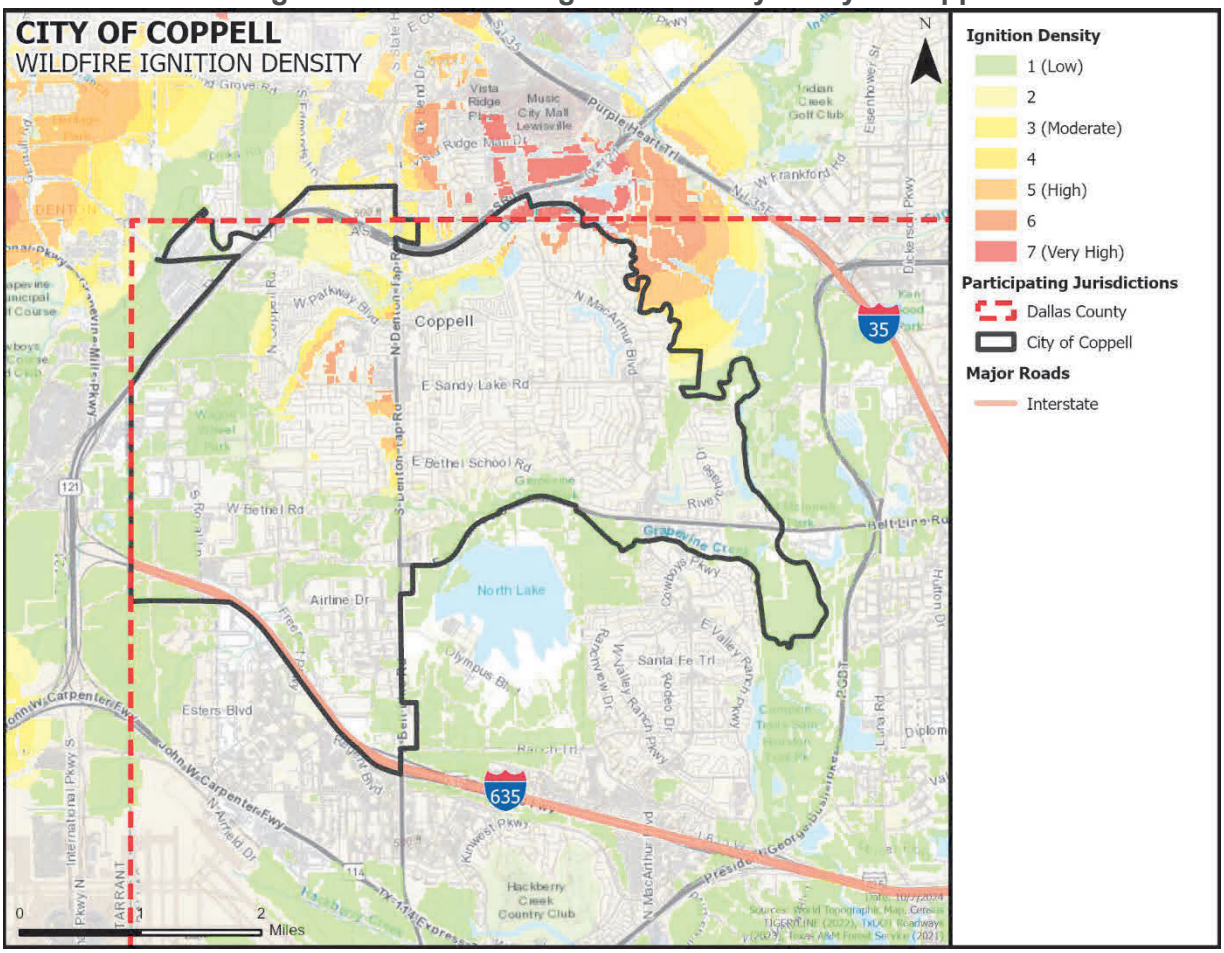


Figure 14-52. Wildfire Ignition Density – City of DeSoto

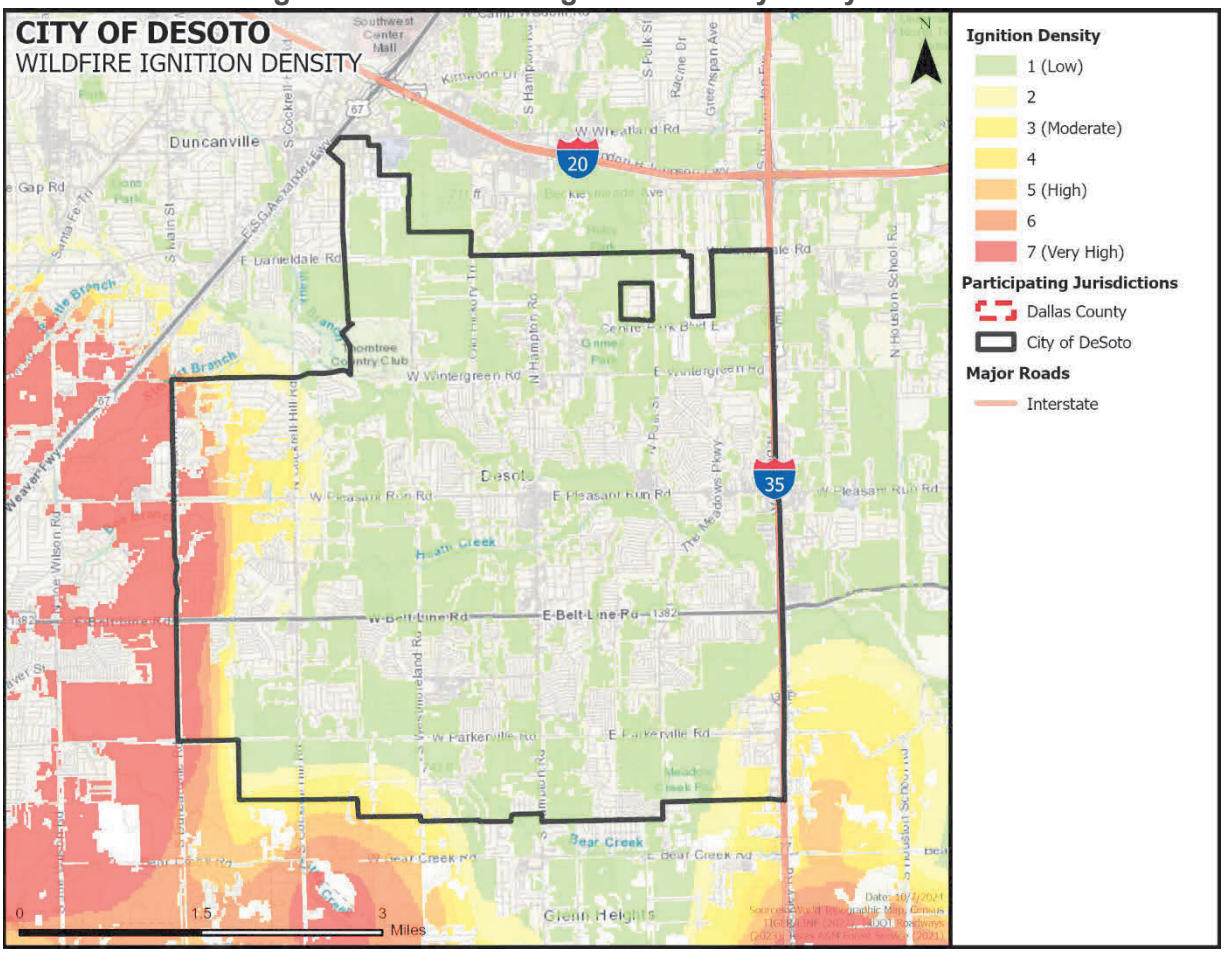


Figure 14-53. Wildfire Ignition Density – City of Duncanville

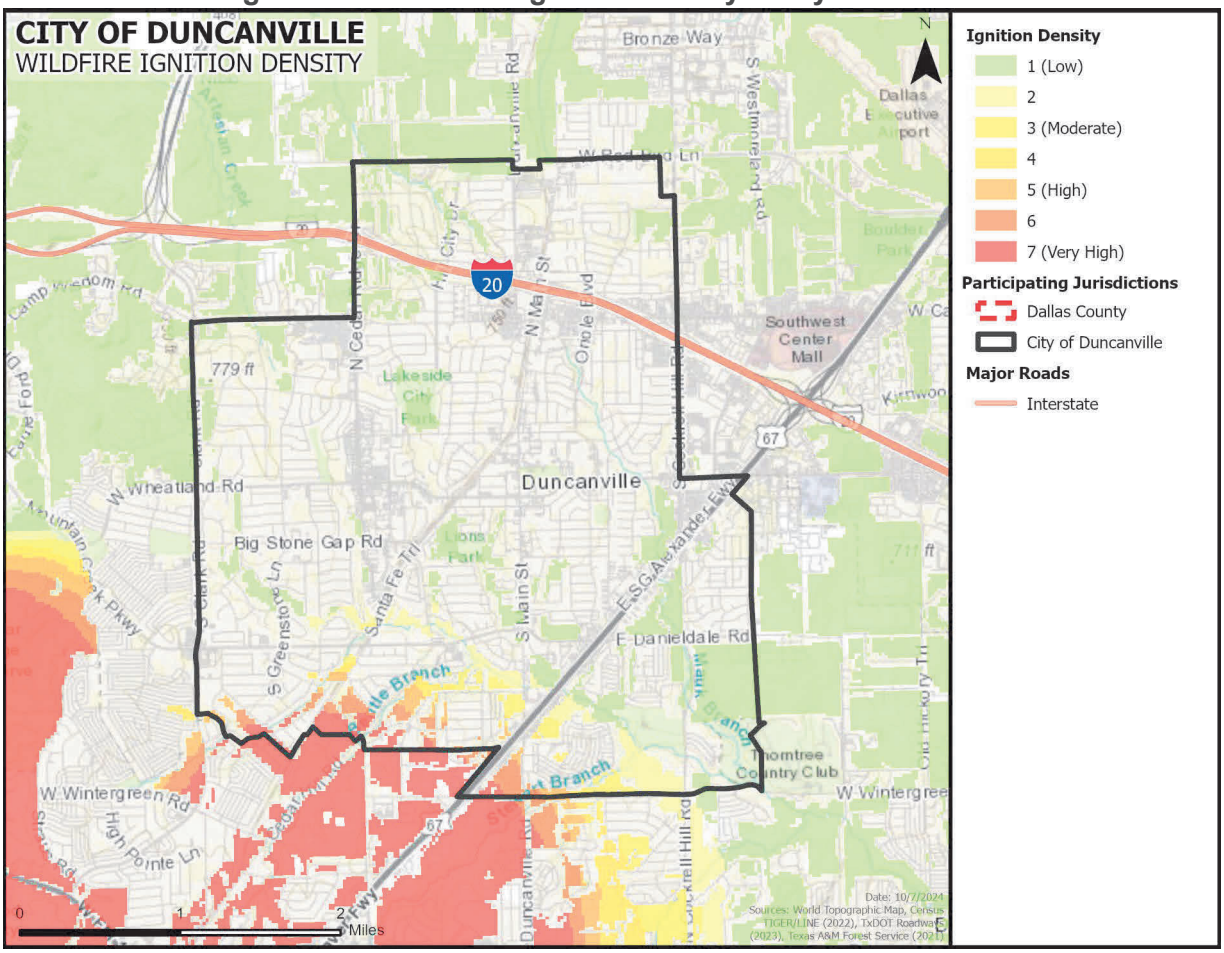


Figure 14-54. Wildfire Ignition Density – City of Farmers Branch

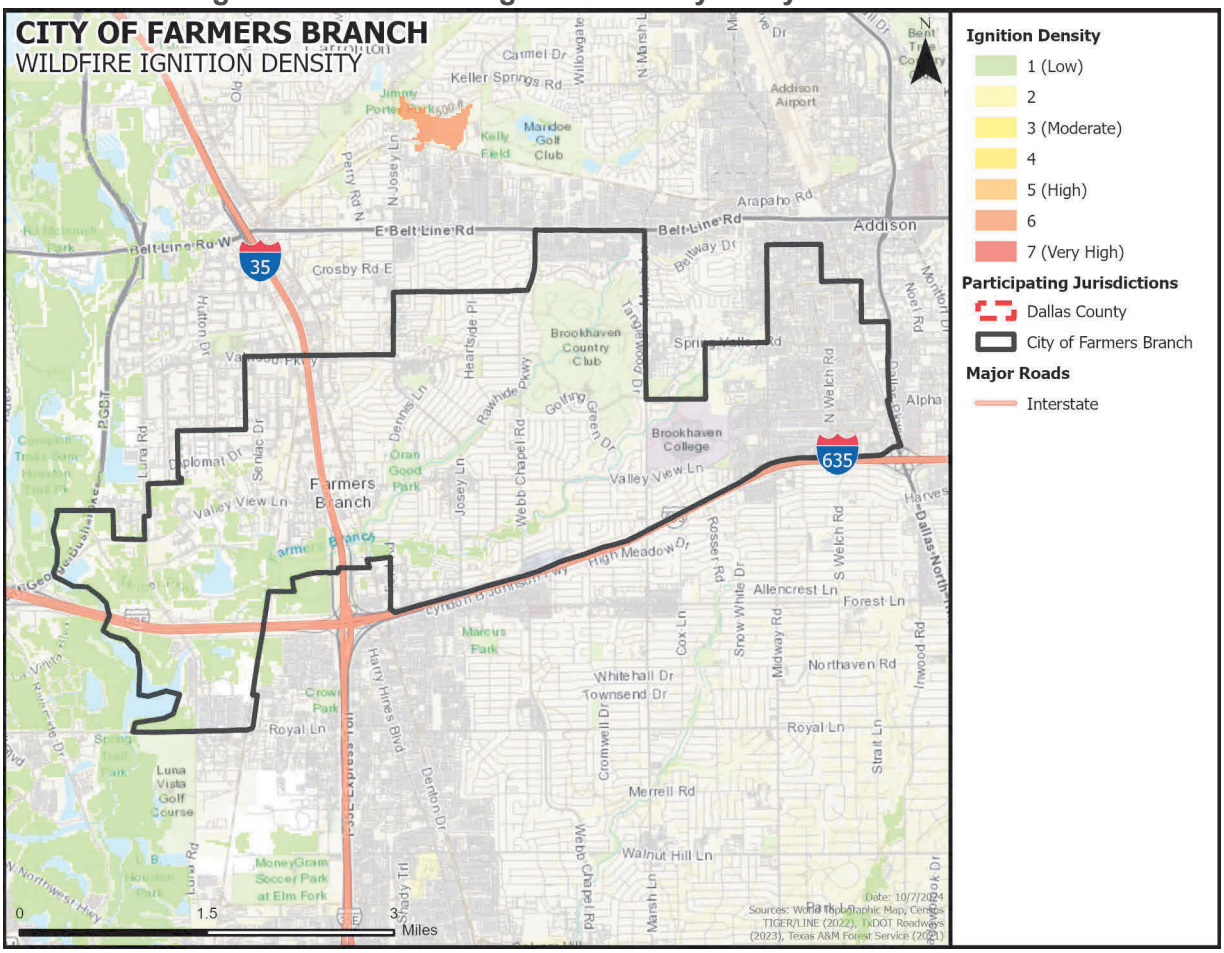


Figure 14-55. Wildfire Ignition Density – City of Glenn Heights

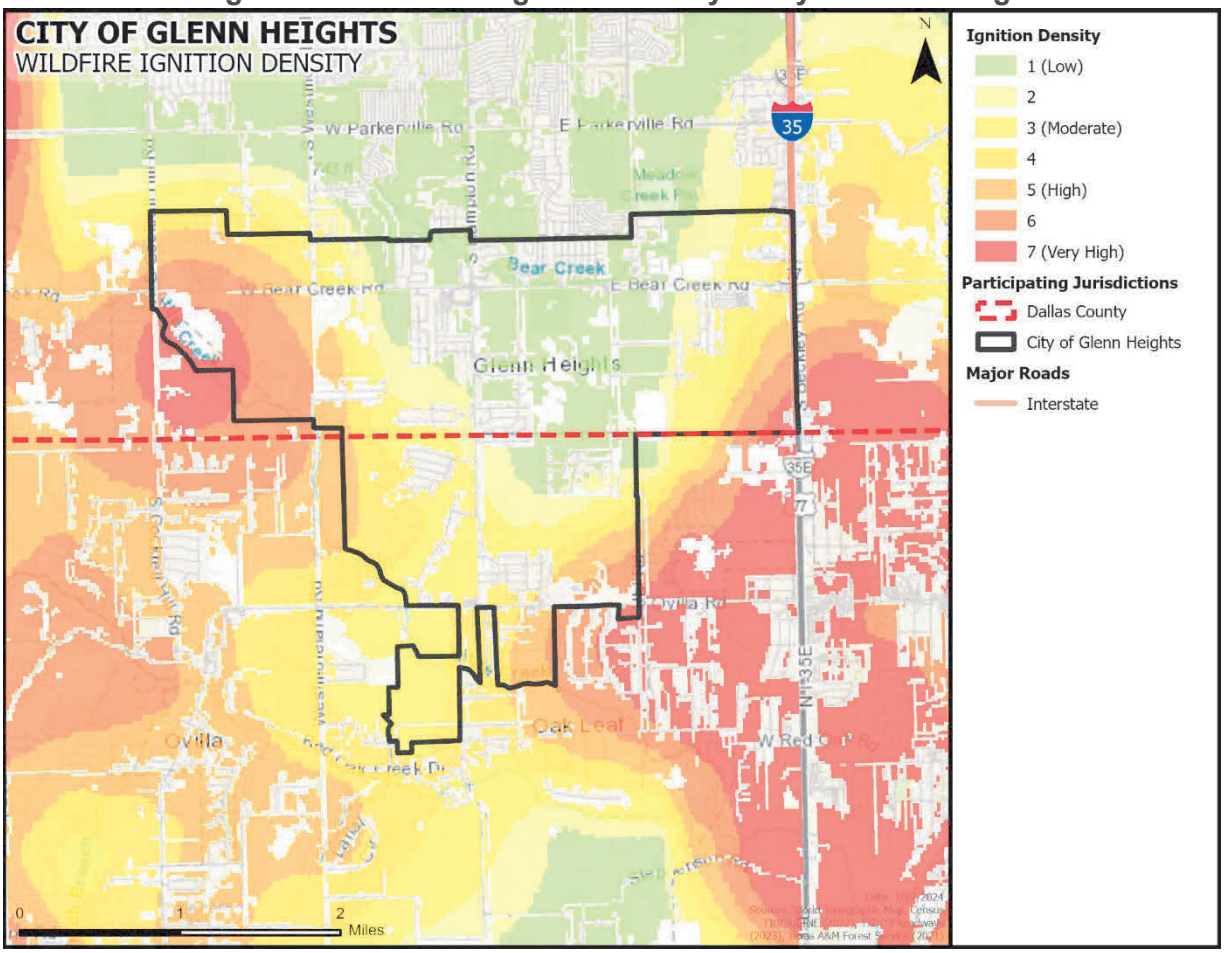


Figure 14-56. Wildfire Ignition Density – Town of Highland Park

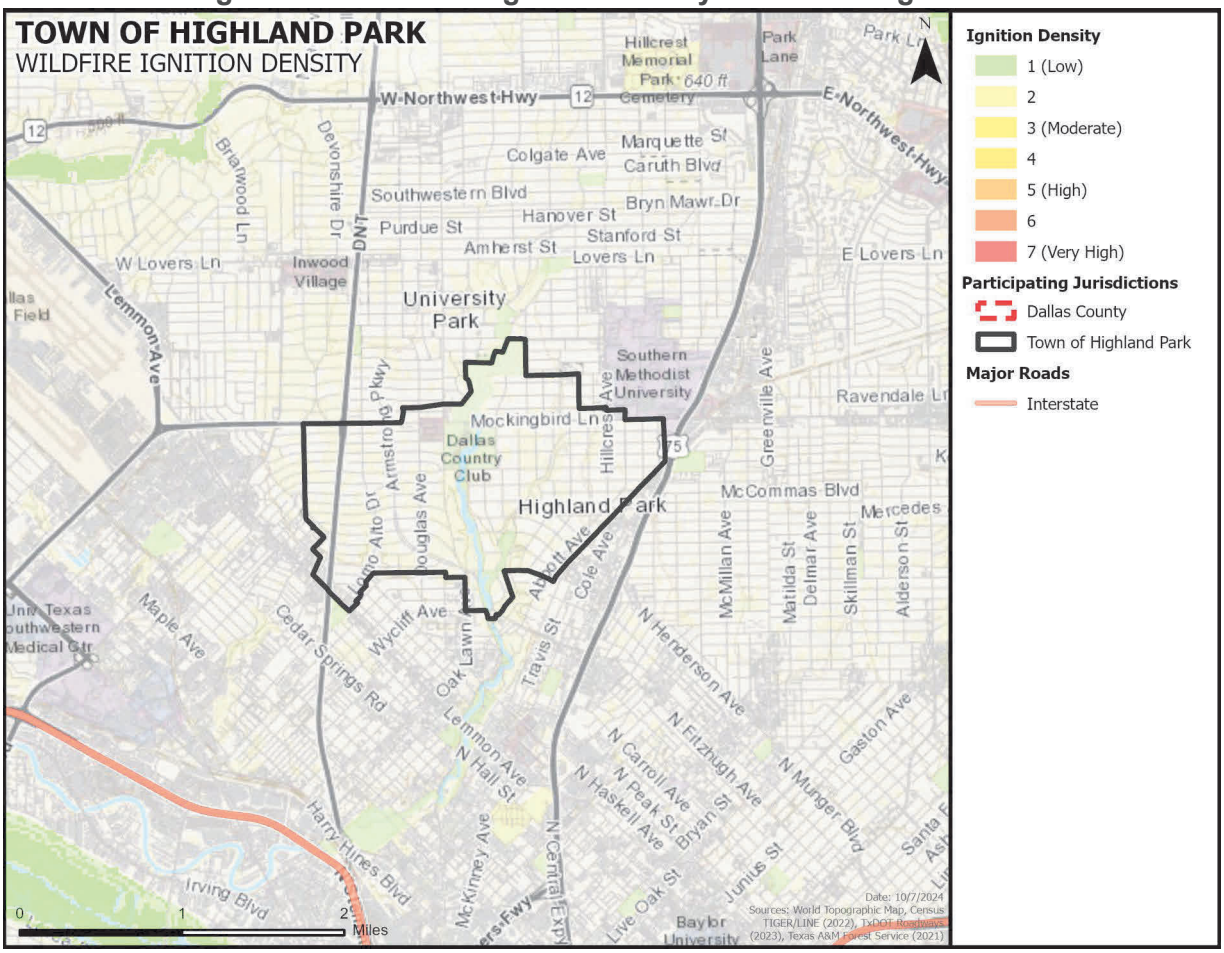


Figure 14-57. Wildfire Ignition Density – City of Hutchins

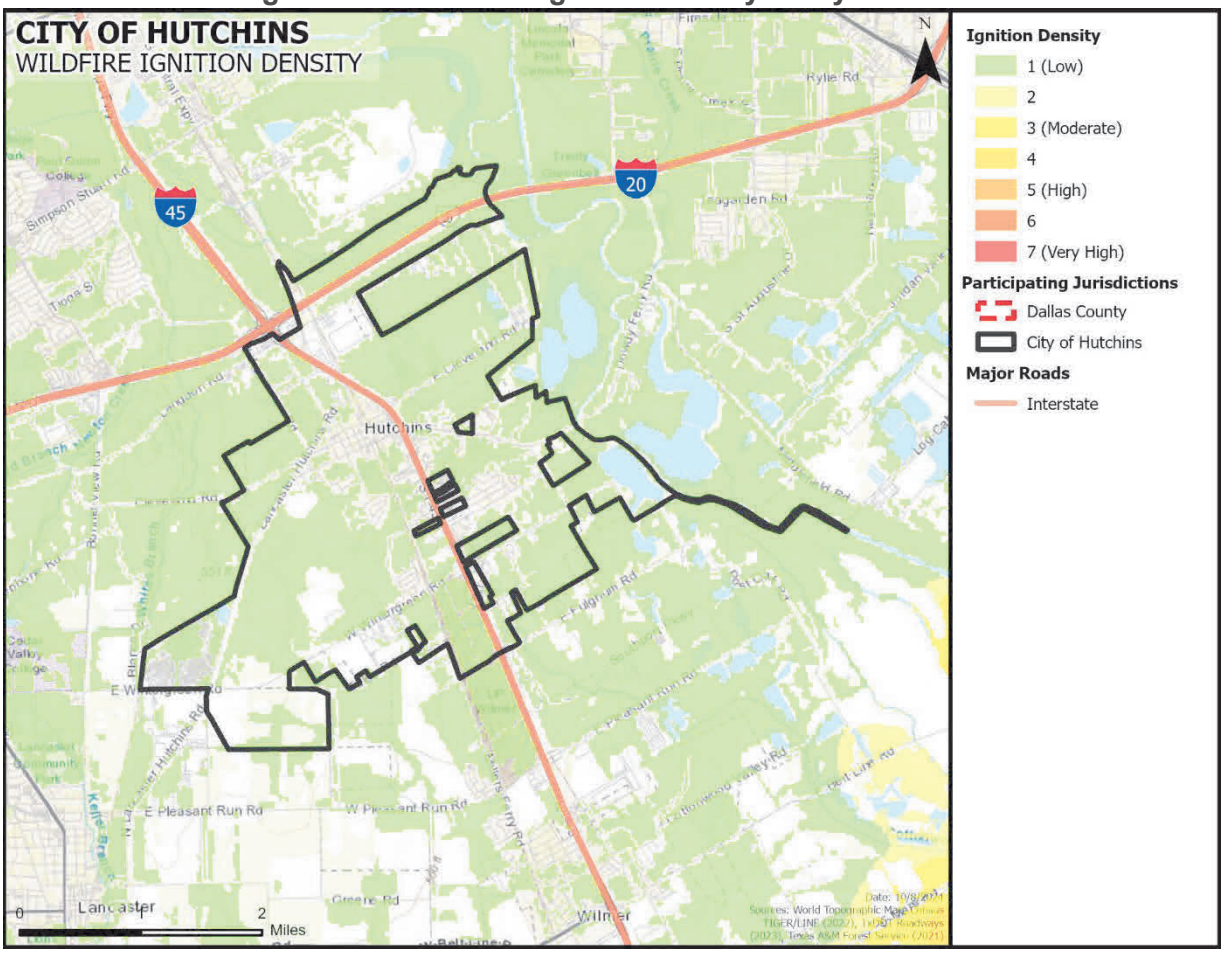


Figure 14-58. Wildfire Ignition Density – City of Lancaster

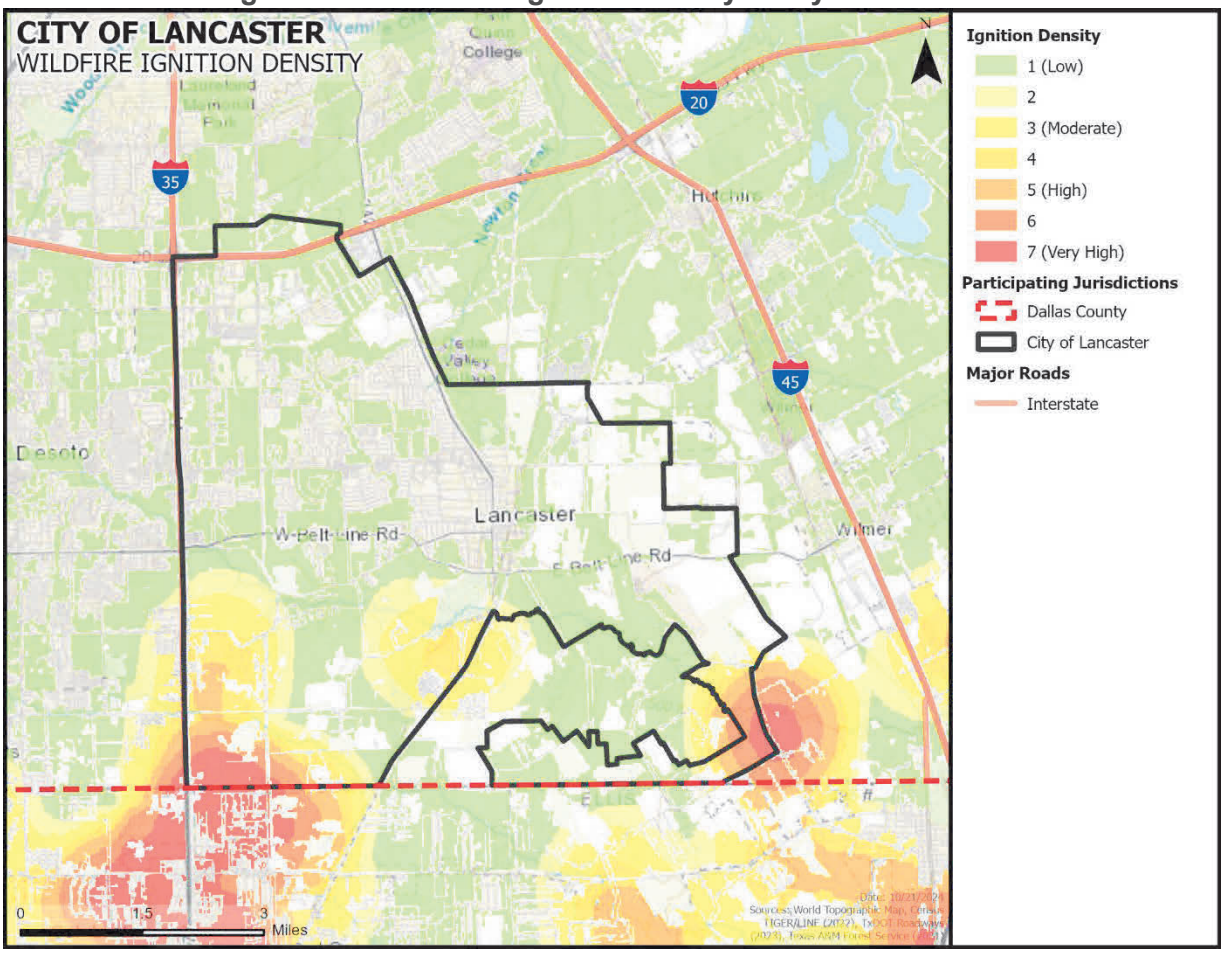


Figure 14-59. Wildfire Ignition Density – City of Richardson

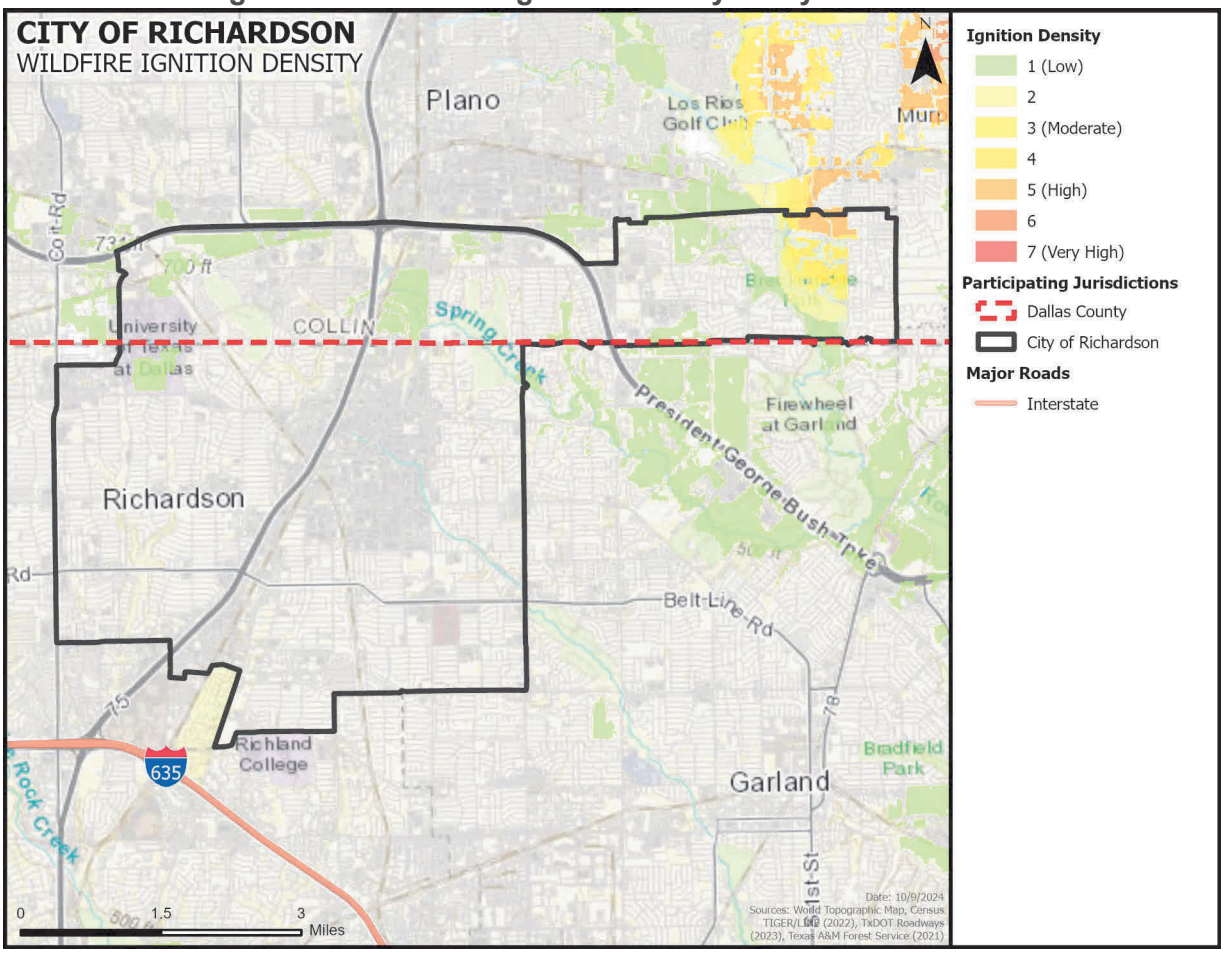


Figure 14-60. Wildfire Ignition Density – City of Rowlett

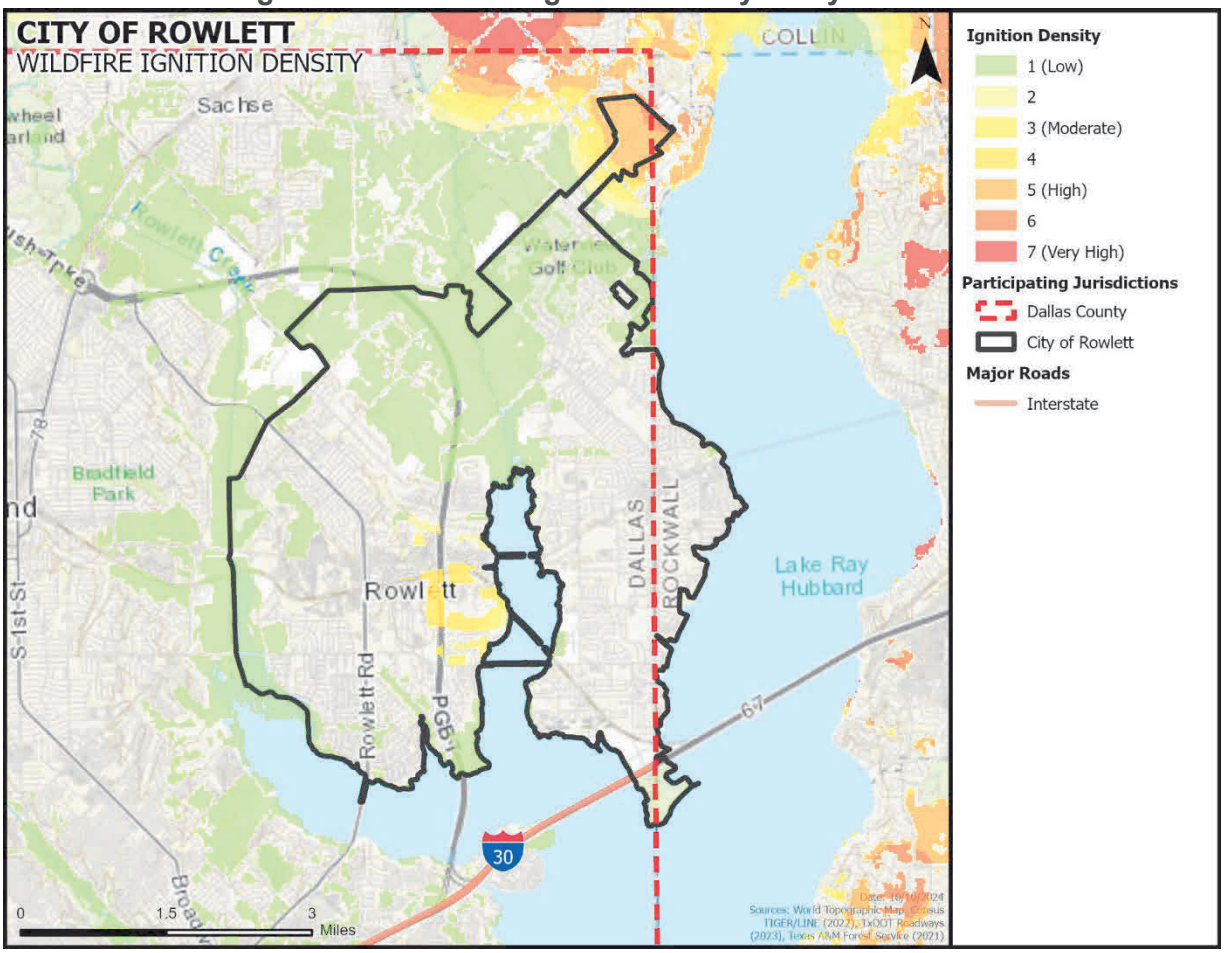


Figure 14-61. Wildfire Ignition Density – City of Sachse

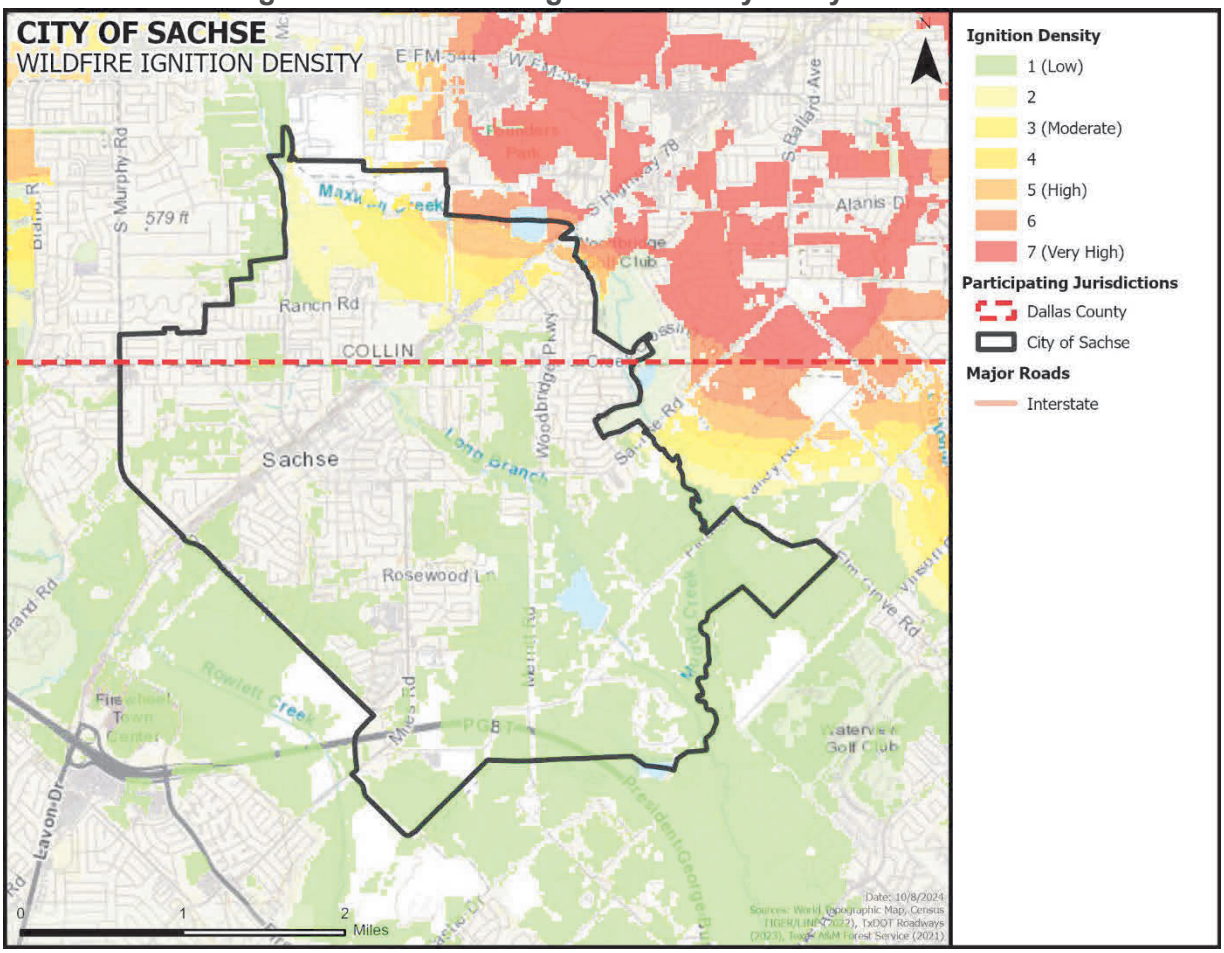


Figure 14-62. Wildfire Ignition Density – City of Seagoville

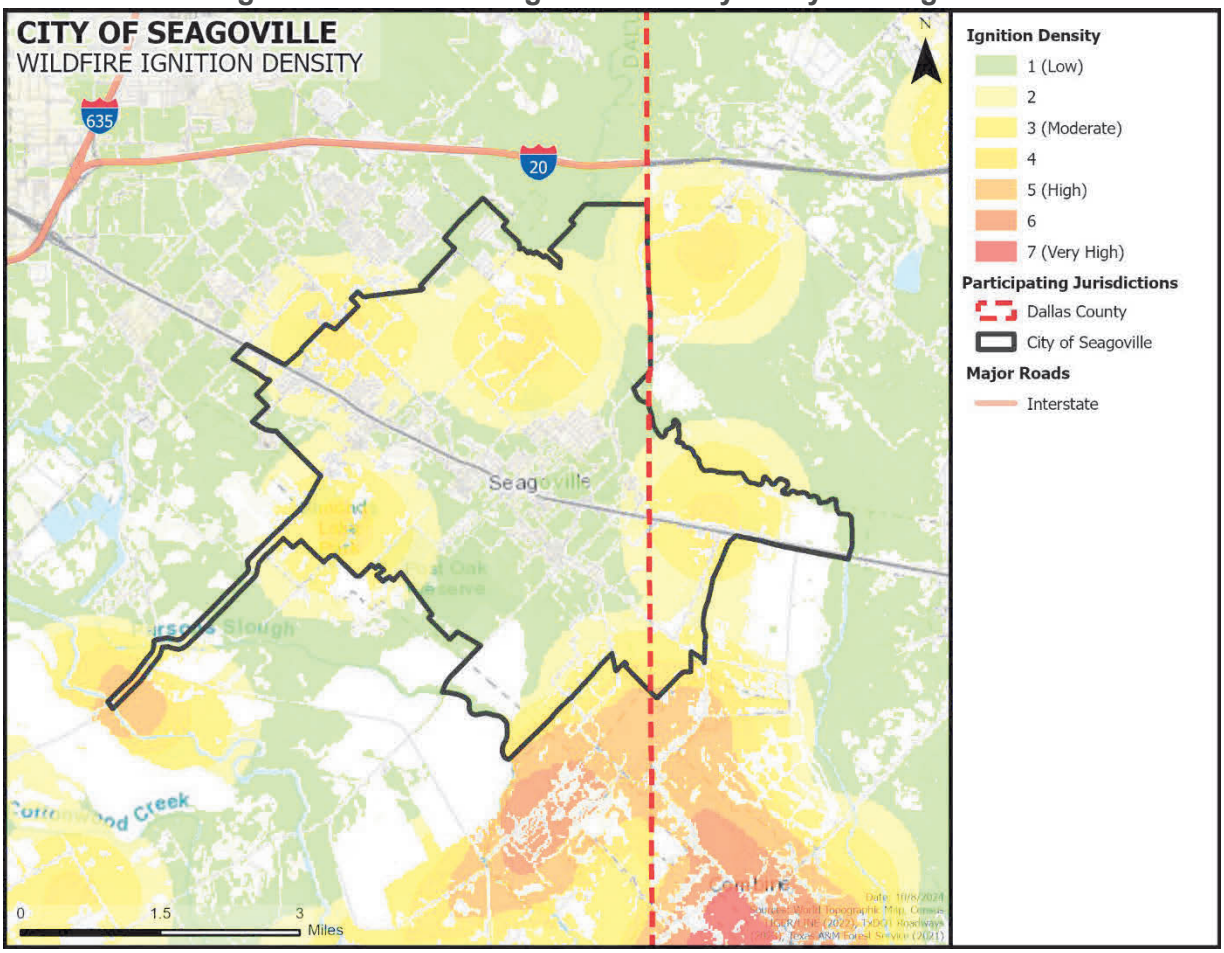


Figure 14-63. Wildfire Ignition Density – Town of Sunnyvale

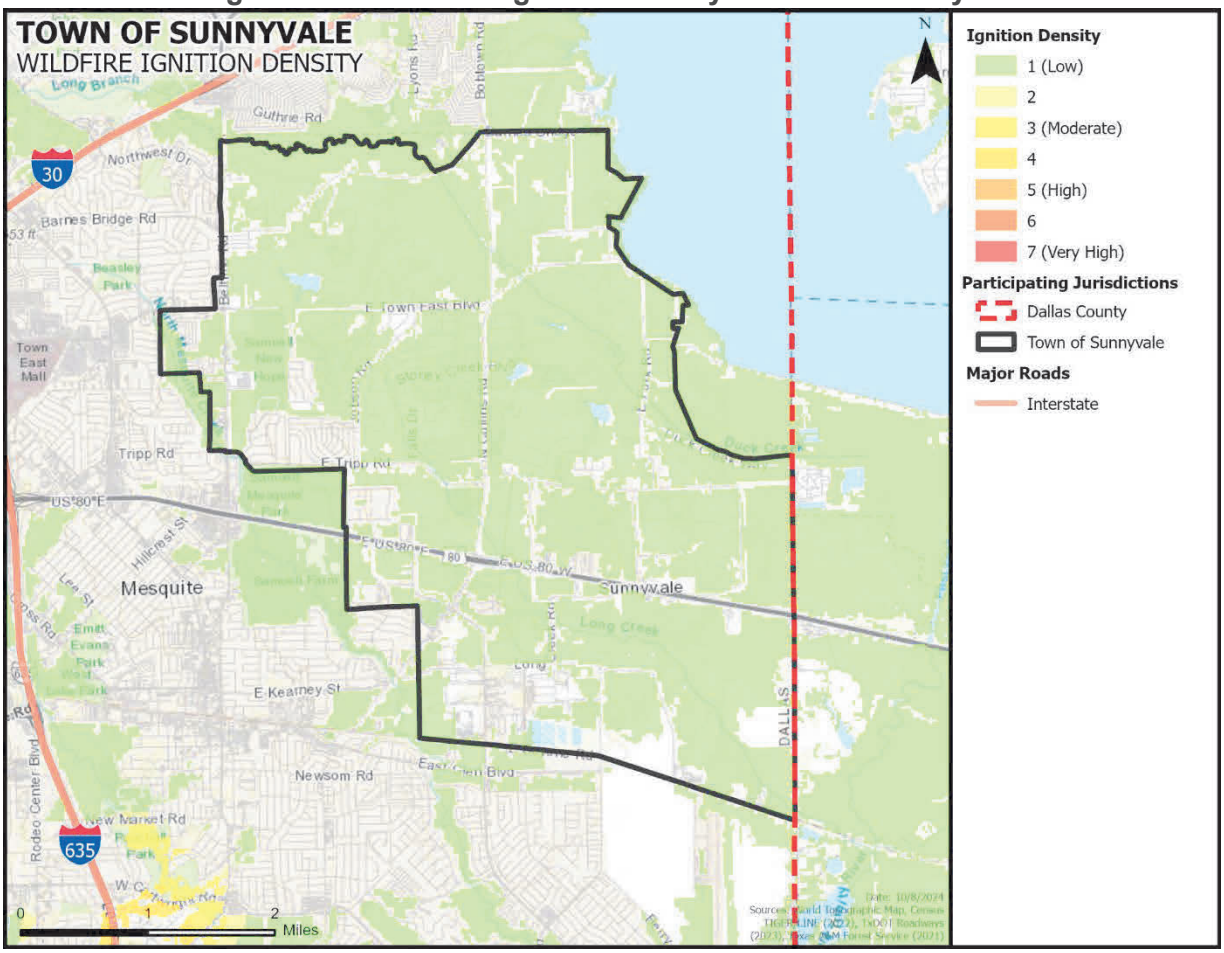


Figure 14-64. Wildfire Ignition Density – City of University Park

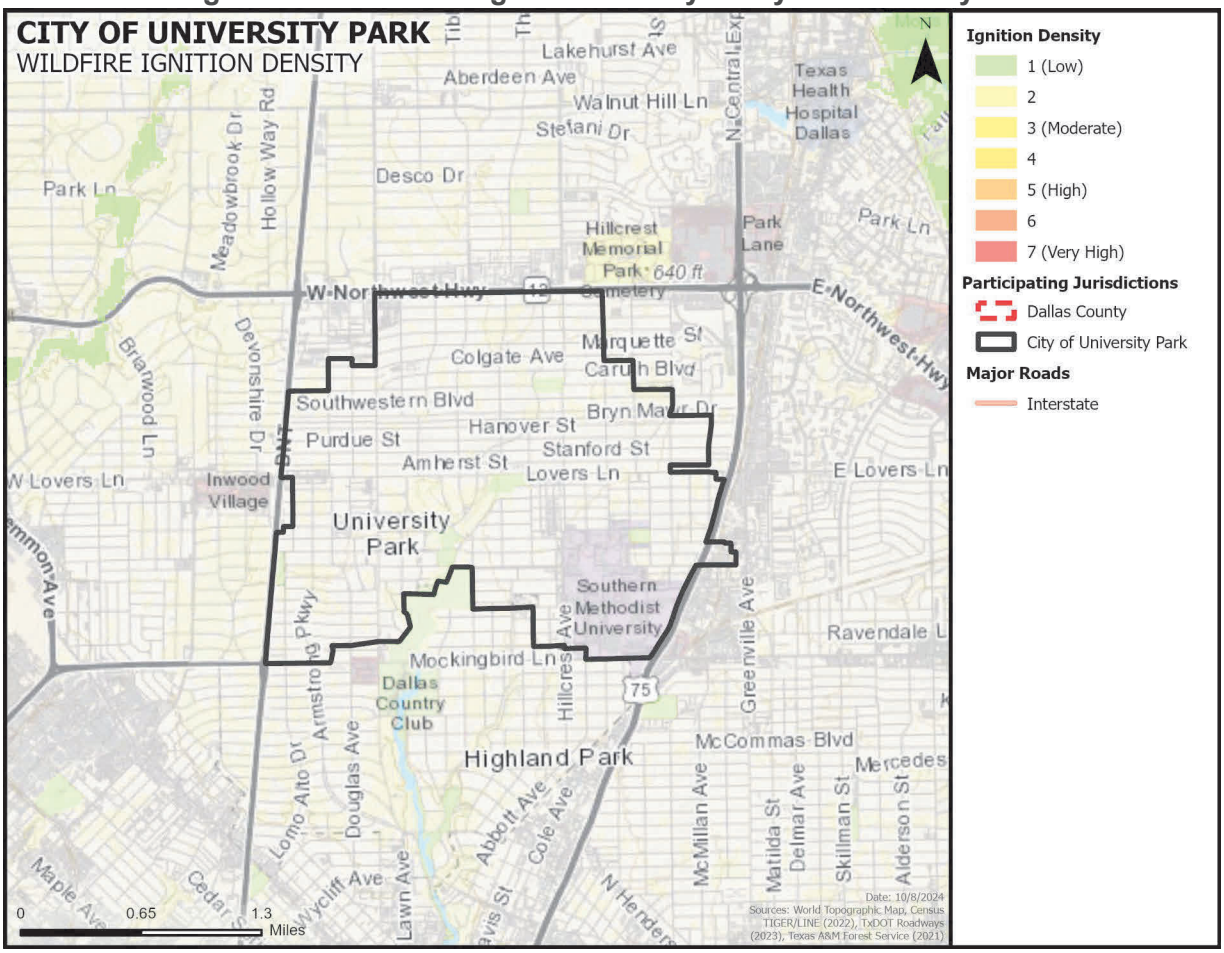
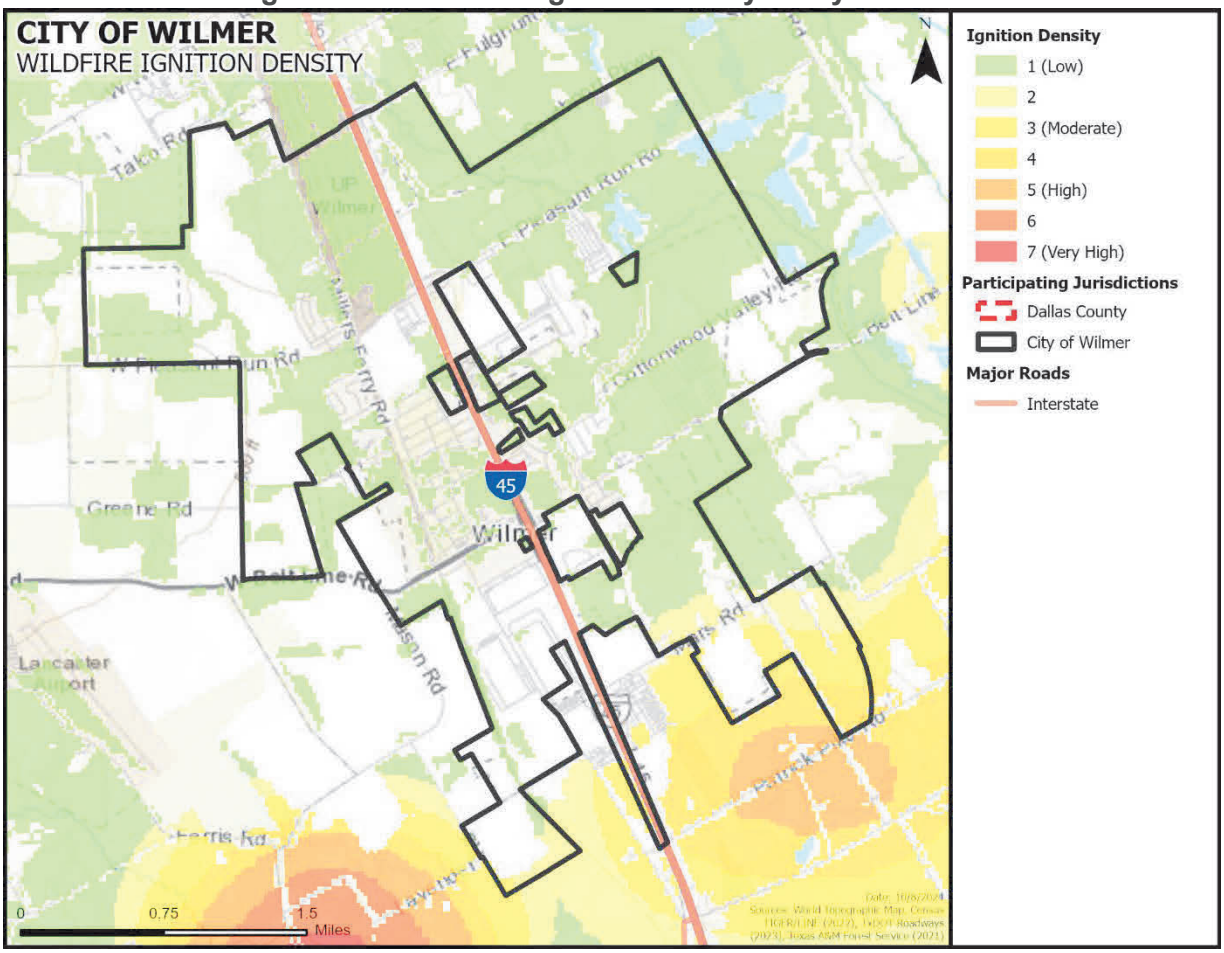


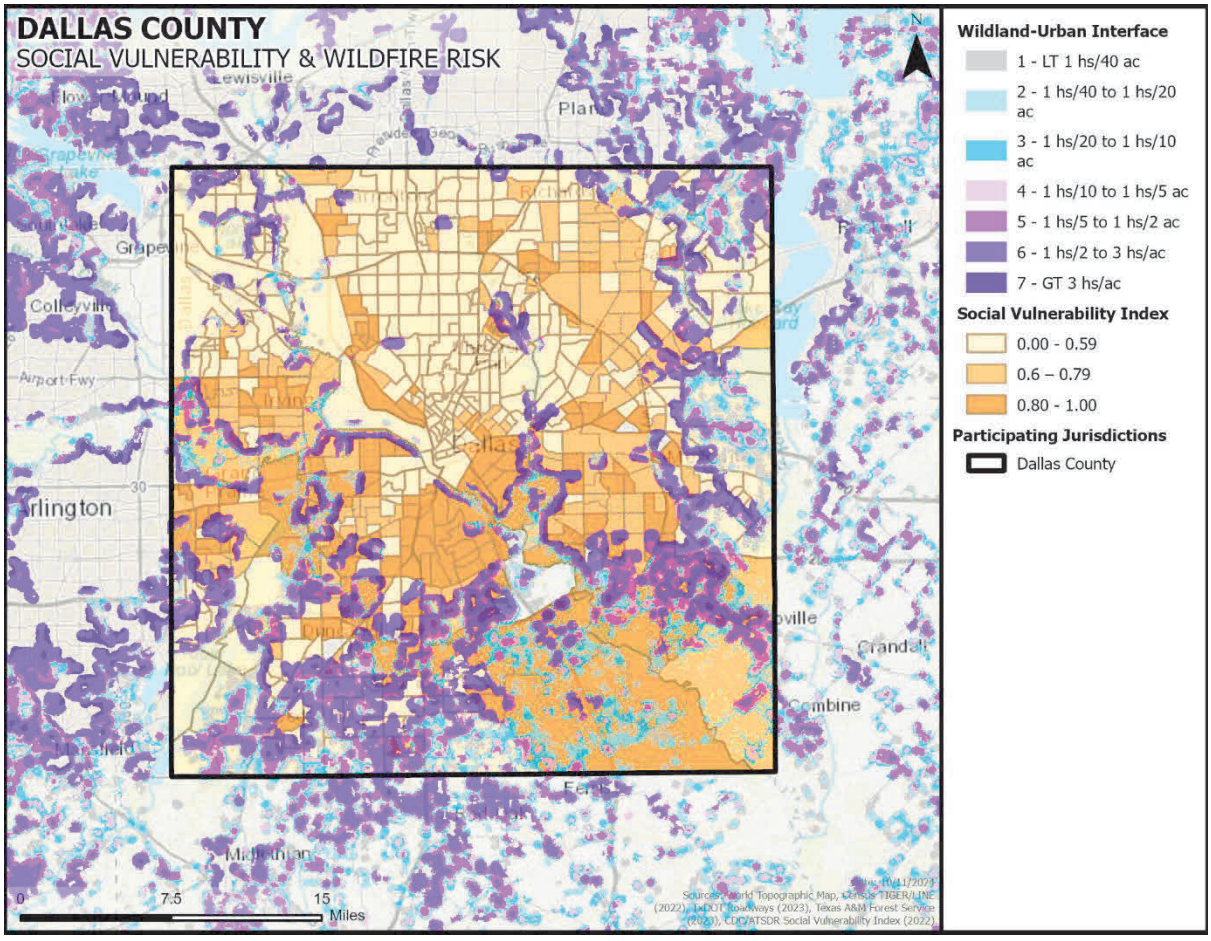
Figure 14-65. Wildfire Ignition Density – City of Wilmer



Diminished air quality is an environmental impact that can result from a wildfire event and pose a potential health risk. The smoke plumes from wildfires can contain potentially inhalable carcinogenic matter. Fine particles of invisible soot and ash that are too small for the respiratory system to filter can cause immediate and possibly long-term health effects. The elderly or those individuals with compromised respiratory systems may be more vulnerable to the effects of diminished air quality after a wildfire event.

The Center for Disease Control (CDC) created a Social Vulnerability Index (SVI) which includes a database and mapping application that identifies and quantifies communities experiencing social vulnerability. The current CDC SVI uses 16 U.S. census variables from the 5-year American Community Survey (ACS) to identify communities that may need support before, during, or after disasters. All 16 variables fall under four broad categories including socioeconomic status (population in poverty, unemployment, etc.), household characteristics (age, disability status, etc.), racial and ethnic minority status, and housing type and transportation (mobile homes, no vehicles, etc.). Populations experiencing social vulnerability may be adversely impacted by natural hazards, disasters, and other community-level stressors. Figure 14-66 identifies areas of social vulnerability using the CDC's SVI and where these areas overlap the Dallas County WUI areas, where wildfire risk is considered the highest.

Figure 14-66. Dallas County's Social Vulnerability and WUI



Climatic conditions such as severe freezes and drought can significantly increase the intensity of wildfires since these conditions kill vegetation, creating a prime fuel source for wildfires. The intensity and rate at which wildfires spread are directly related to wind speed, temperature, and relative humidity.

The severity of impact from major wildfire events can be substantial. Such events can cause multiple deaths, shut down facilities for 30 days or more, and cause more than 50 percent of affected properties to be destroyed or suffer major damage. Severity of impact is gauged by acreage burned, homes and structures lost, and the number of resulting injuries and fatalities.

For the Dallas County planning area, the impact from a wildfire event can be considered "Minor," meaning injuries and/or illnesses do not result in permanent disability, complete shutdown of facilities and services for more than one week and more than 10 percent of property is destroyed or with major damage. Severity of impact is gauged by acreage burned, homes and structures lost, injuries and fatalities.

Table 14-7. Impact for Dallas County

JURISDICTION	IMPACT	DESCRIPTION
Dallas County	Limited	Dallas County has an estimated 21.1% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per 2 acres. County residents may suffer injuries treatable with first aid. Critical facilities could be shut down for 24-hours or less, and less than 10 percent of total property could be damaged.
Town of Addison	Limited	The Town of Addison has zero people/percent of the total population that live within the Wildland Urban Interface (WUI). Critical facilities could be shut down for 24 hours or less, and less than 10 percent of property could be damaged.
City of Balch Springs	Limited	The City of Balch Springs has an estimated 36.7% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per 2 acres. Residents may suffer injuries treatable with first aid. Critical facilities could be shut down for 24 hours or less, and less than 10 percent of property could be damaged.
City of Carrollton	Limited	The City of Carrolton has an estimated 12.6% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 3 houses per 1 acre. Residents may suffer injuries treatable with first aid. Critical facilities could be shut down for 24 hours or less, and less than 10 percent of property could be damaged.
City of Cedar Hill	Minor	The City of Cedar Hill has an estimated 64.5% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per 2 acres. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.
City of Cockrell Hill	Limited	The City of Cockrell Hill has an estimated 25% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 3 houses per 1 acre. Residents may suffer injuries treatable with first aid. Critical facilities could be shut down for 24

JURISDICTION	IMPACT	DESCRIPTION
		hours or less, and less than 10 percent of property could be damaged.
City of Coppell	Limited	The City of Coppell has an estimated 35.1% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per 2 acres. Residents may suffer injuries treatable with first aid. Critical facilities could be shut down for 24 hours or less, and less than 10 percent of property could be damaged.
City of DeSoto	Minor	The City of DeSoto has an estimated 72.3% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per 2 acres. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.
City of Duncanville	Limited	The City of Duncanville has an estimated 26.6% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per 2 acres. Residents may suffer injuries treatable with first aid. Critical facilities could be shut down for 24 hours or less, and less than 10 percent of property could be damaged.
City of Farmers Branch	Limited	The City of Farmers Branch has an estimated 0.1% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per every 20 acres. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for 24 hours or less, and less than 10 percent of property could be damaged.
City of Glenn Heights	Minor	The City of Glenn Heights has an estimated 97.8% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per 2 acres. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.

JURISDICTION	IMPACT	DESCRIPTION
Town of Highland Park	Limited	The Town of Highland Park has zero people/percent of the total population that live within the Wildland Urban Interface (WUI). Critical facilities could be shut down for 24 hours or less, and less than 10 percent of property could be damaged.
City of Hutchins	Minor	The City of Hutchins has an estimated 95.1% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per 2 acres. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.
City of Lancaster	Minor	The City of Lancaster has an estimated 74.2% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per 2 acres. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.
City of Richardson	Limited	The City of Richardson has an estimated 12% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 3 houses per 1 acre. Residents may suffer injuries treatable with first aid. Critical facilities could be shut down for 24 hours or less, and less than 10 percent of property could be damaged.
City of Rowlett	Limited	The City of Rowlett has an estimated 24.9% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per 2 acres. Residents may suffer injuries treatable with first aid. Critical facilities could be shut down for 24 hours or less, and less than 10 percent of property could be damaged.
City of Sachse	Minor	The City of Sachse has an estimated 50.4% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per 2 acres. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be

JURISDICTION	IMPACT	DESCRIPTION
		shut down for more than one week, and more than 10 percent of total property could be damaged.
City of Seagoville	Minor	The City of Seagoville has an estimated 93.9% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per 2 acres. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.
Town of Sunnyvale	Minor	The Town of Sunnyvale has an estimated 99.5% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per 2 acres. Town residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.
City of University Park	Limited	The City of University Park has zero people/percent of the total population that live within the Wildland Urban Interface (WUI). Critical facilities could be shut down for 24 hours or less, and less than 10 percent of property could be damaged.
City of Wilmer	Minor	The City of Wilmer has an estimated 60.9% of the total population that live within the Wildland Urban Interface (WUI). The housing density is most commonly 1 house per 2 acres. City residents may suffer injuries that do not result in permanent disability. Critical facilities could be shut down for more than one week, and more than 10 percent of total property could be damaged.

ASSESSMENT OF IMPACTS

A Wildfire event poses a potentially significant risk to public health and safety, particularly if the wildfire is initially unnoticed and spreads quickly. The impacts associated with a wildfire are not limited to direct damage. Significant wildfire events can be frequently associated with a variety of impacts, including:

- The Dallas County planning area contains numerous open space areas. Wildfire may adversely affect or destroy endangered species habitat, reduce air quality, increase

erosion and risk of flash flooding, contribute to increased local temperatures, and disrupt other ecological functions.

- Recreation activities throughout county and city parks may be unavailable and tourism can be unappealing for years following a large wildfire event, devastating directly related local businesses and negatively impacting economic recovery.
- Persons, pets, and wildlife in the area at the time of the fire are at risk for injury or death from burns and/or smoke inhalation. First responders are at greater risk of physical injury when in close proximity to the hazard while extinguishing flames, protecting property, or evacuating residents in the area.
- First responders can experience heart disease, respiratory problems, and other long-term related illnesses from prolonged exposure to smoke, chemicals, and heat.
- Emergency services may be disrupted during a wildfire if facilities are impacted, roadways are inaccessible, or personnel are unable to report for duty.
- Critical county and city departments may not be able to function and provide necessary services depending on the location of the fire and the structures or personnel impacted.
- Non-critical businesses may be directly damaged, suffer loss of utility services, or be otherwise inaccessible, delaying normal operations and slowing the recovery process.
- Displaced residents may not be able to immediately return to work, slowing economic recovery.
- Roadways in or near the WUI could be damaged or closed due to smoke and limited visibility.
- Older homes are generally exempt from modern building code requirements, which may require fire suppression equipment in the structure. An estimated 47 percent (approximately 492,078 structures) of homes in the planning area were built before 1980. Similarly, historic buildings may lack fire mitigation materials or measures due to their historic status. There are 152 historical sites listed on the National Register of Historic Places for Dallas County.
- Some high-density neighborhoods feature small lots with structures close together, increasing the potential for fire to spread rapidly.
- Air pollution from smoke may exacerbate respiratory problems of vulnerable residents.
- Charred ground after a wildfire cannot easily absorb rainwater, increasing the risk of flooding and potential mudflows.
- Wildlife may be displaced or destroyed.
- Historical or cultural resources may be damaged or destroyed.
- Tourism can be significantly disrupted, further delaying economic recovery for the area.
- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Fire suppression costs can be substantial, exhausting the financial resources of the community.
- Residential structures lost in a wildfire may not be rebuilt for years, reducing the tax base for the community.
- Direct impacts to municipal water supply may occur through contamination of ash and debris during the fire, destruction of aboveground delivery lines, and soil erosion or debris deposits into waterways after the fire.

The economic and financial impacts of a wildfire event on local government will depend on the scale of the event, what is damaged, costs of repair or replacement, lost business days in

impacted areas, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the community, local businesses, and citizens will contribute to the overall economic and financial conditions in the aftermath of a wildfire event.

CLIMATE CHANGE CONSIDERATIONS

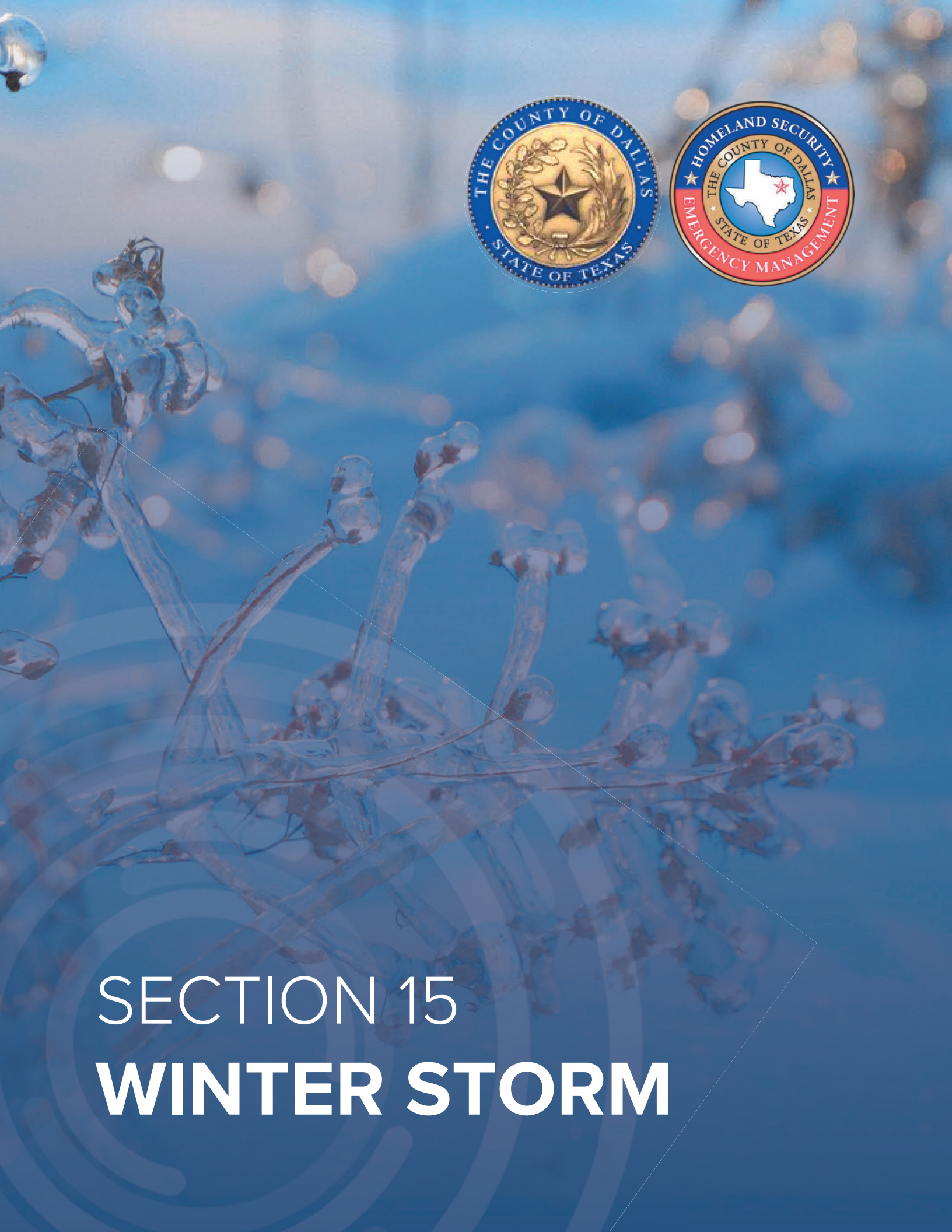
Wildfires require the alignment of a number of factors, including temperature, humidity, and the lack of moisture in fuels, such as trees, shrubs, grasses, and forest debris. All these factors have strong direct or indirect ties to climate variability and climate change. Research shows that changes in climate create warmer, drier conditions, leading to longer and more active fire seasons. Increases in temperatures and the thirst of the atmosphere due to human--caused climate change have increased aridity of forest fuels during the fire season.[10]

Vapor pressure deficit, an indicator of the ability of moisture to evaporate, is projected to increase as temperatures rise and carbon dioxide fertilization reduces transpiration, leading to both lower humidity and increased surface dryness. Overall, increased dryness should extend the wildfire season in places where the fire season is presently constrained by low levels of aridity, such as eastern Texas.[11]

Additionally, it is projected that future changes to Dallas County will include increased temperatures, which according to the U.S. Climate Explorer, the planning area may experience a 6°F increase in the average extreme heat temperatures. Historically, extreme temperatures averaged 101°F in Dallas County, but between 2035 and 2064 the average will be 107°F, increasing the severity and frequency of extreme heat events, contributing to favorable wildfire conditions. The projected increases can be even higher but are dependent on overall future emissions.

Extreme heat and extended periods of drought contribute to wildfire risk in the planning area. Extreme temperatures and periods of drought destroy vegetation in the area, contributing to available fuels that spread wildfires. Additional climate change impacts from drought and extreme heat are discussed in Sections 6 and 8 of this Plan. The projected increases in favorable wildfire conditions, including drought and extreme heat, indicate an increase in favorable wildfire conditions. Additional information and studies are needed to determine the degree and rate of any increased wildfire risk.

[10] NOAA Wildfire Climate Connection, August 2022: wildfire-climate-connection.
[11] Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, Texas A&M University Office of the Texas State Climatologist, 2021 update.



SECTION 15
WINTER STORM

SECTION 15: WINTER STORM

Hazard Description 1
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Extent 3
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Significant Events 7
Probability of Future Events 8
Vulnerability and Impact 8
Assessment of Impacts 12
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HAZARD DESCRIPTION

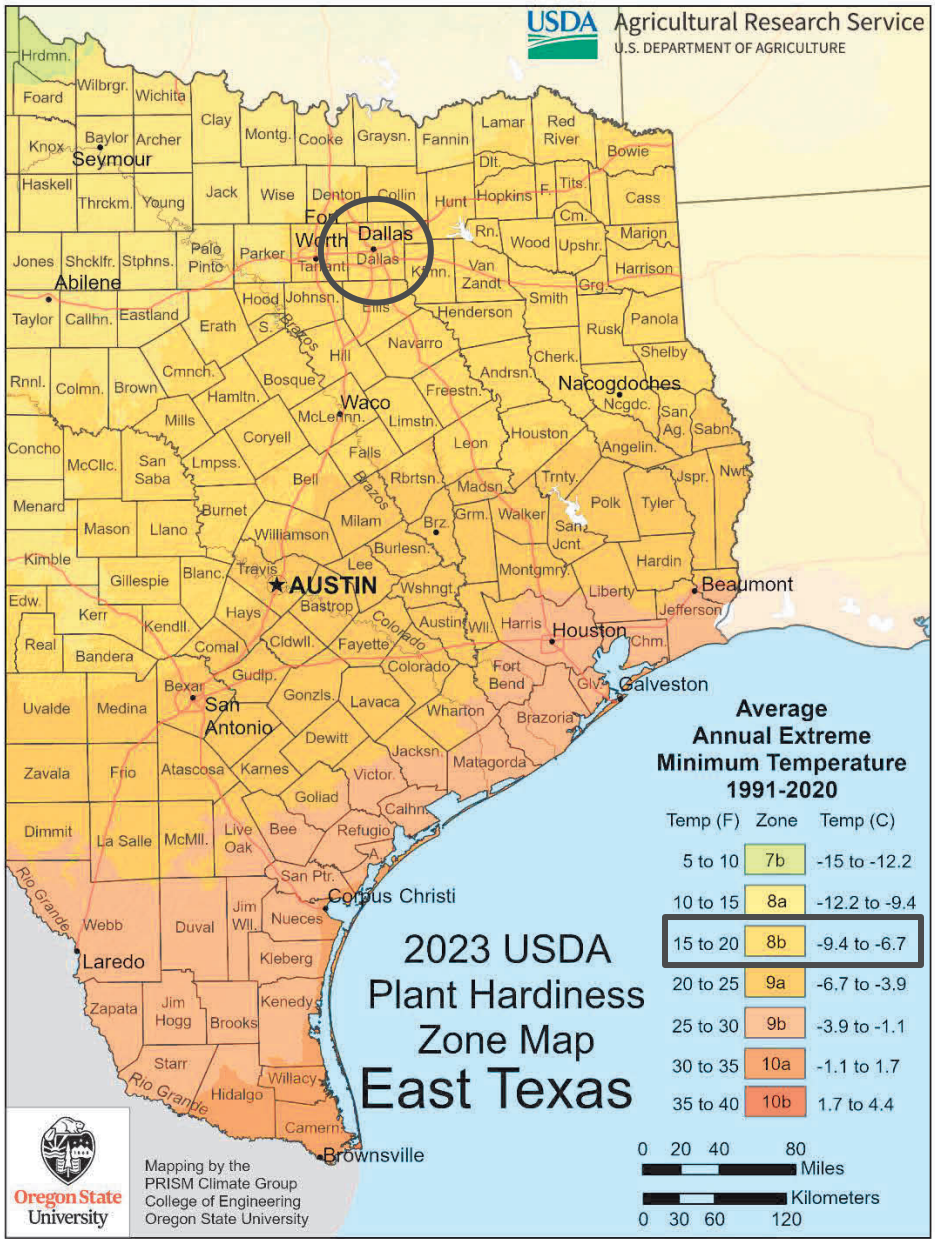


A severe winter storm event is identified as a storm with snow, ice, or freezing rain. This type of storm can cause significant problems for area residents. Winter storms are associated with freezing or frozen precipitation such as freezing rain, sleet, snow, and the combined effects of winter precipitation and strong winds. Wind chill is a function of temperature and wind. Low wind chill is a product of high winds and freezing temperatures.

Winter storms that threaten the Dallas County planning area usually begin as powerful cold fronts that push south from central Canada. Although the county is at risk of ice hazards, extremely cold temperatures, and snow, the effects and frequencies of winter storm events are generally mild and short-lived.

As indicated in Figure 15-1, the Dallas County planning area is located in USDA Hardiness Zone 8b, with annual minimum temperatures between 15°F and 20°F. During times of ice and snow accumulation, response times will increase until public works road crews are able to make major roads passable. Table 15-1 describes the types of winter weather possible to occur in the Dallas County planning area.

Figure 15-1. Annual Minimum Temperature[1]



[1] USDA

Table 15-1. Types of Winter Weather

TYPE OF WINTER WEATHER	DESCRIPTION
Freezing Rain or Freezing Drizzle	Rain or drizzle is likely to freeze upon impact, resulting in a coating of ice glaze on roads and all other exposed objects.
Sleet	Small particles of ice usually mixed with rain. If enough sleet accumulates on the ground, it makes travel hazardous.
Blizzard	Sustained wind speeds of at least 35 mph are accompanied by considerable falling or blowing snow. This alert is the most perilous winter storm with visibility dangerously restricted.
Frost/Freeze	Below freezing temperatures are expected and may cause significant damage to plants, crops, and fruit trees.
Wind Chill	A strong wind combined with a temperature slightly below freezing can have the same chilling effect as a temperature nearly 50 degrees lower in a calm atmosphere. The combined cooling power of the wind and temperature on exposed flesh is called the wind-chill factor.

LOCATION

Winter storm events are not confined to specific geographic boundaries. Therefore, all existing and future buildings, facilities, and populations in the Dallas County planning area, including participating jurisdictions, are vulnerable to a winter storm hazard and could potentially be impacted.

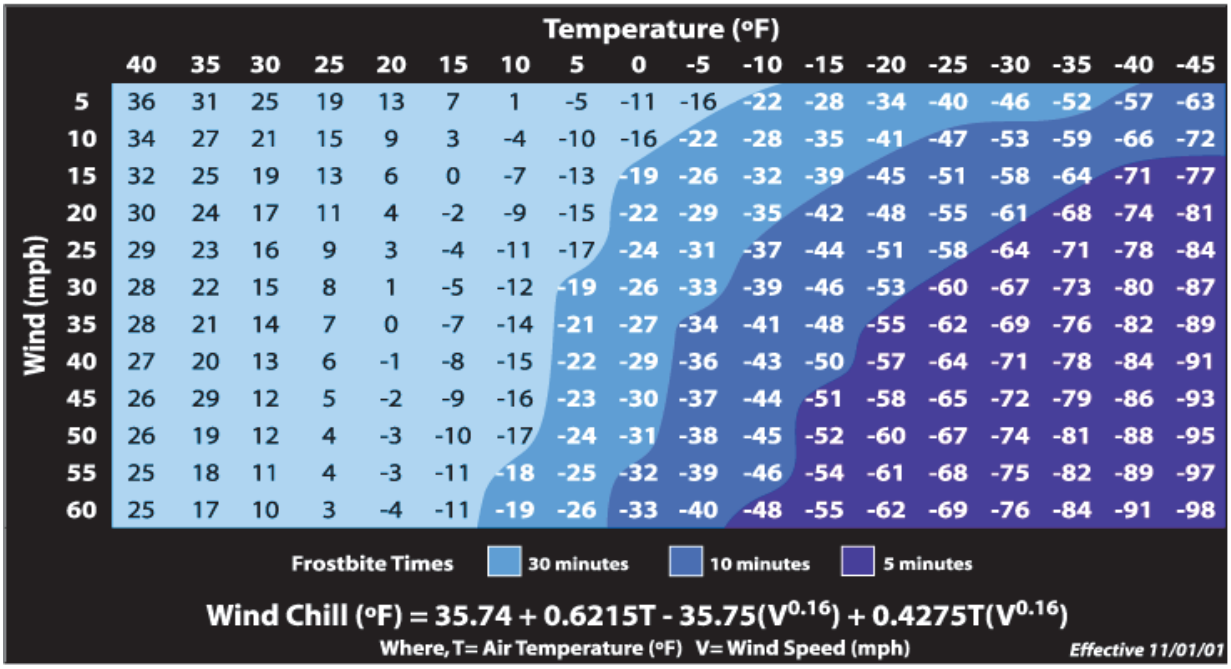
EXTENT

The extent or magnitude of a severe winter storm is measured in intensity based on the temperature and level of accumulations as shown in Table 15-2. Table 15-2 should be read in conjunction with the wind-chill factor described in Figure 15-2 to determine the intensity of a winter storm. The chart is not applicable when temperatures are over 50°F or winds are calm. This is an index developed by the National Weather Service.

Table 15-2. Magnitude of Severe Winter Storms

INTENSITY	TEMPERATURE RANGE (Fahrenheit)	EXTENT DESCRIPTION
Mild	40° – 50°	Winds less than 10 mph and freezing rain or light snow falling for short durations with little or no accumulations
Moderate	30° – 40°	Winds 10 – 15 mph and sleet and/or snow up to 4 inches
Significant	25° – 30°	Intense snow showers accompanied with strong gusty winds between 15 and 20 mph with significant accumulation
Extreme	20° – 25°	Wind driven snow that reduces visibility, heavy winds (between 20 to 30 mph), and sleet or ice up to 5 millimeters in diameter
Severe	Below 20°	Winds of 35 mph or more and snow and sleet greater than 4 inches

Figure 15-2. Wind Chill Chart



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*

Wind chill temperature is 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°F day would feel just as cold as a calm day with 0°F temperatures. The Dallas County planning area has 77 previous occurrences recorded from January 1996 through May 2024 in the National Centers for Environmental Information (NCEI) Storm Events Database. The planning area has never experienced a blizzard, but it has been subject to ice storm, sleet, and winter storms.

The average number of cold days is similar for the entire planning area. Therefore, the intensity or extent of a winter storm event to be mitigated for the area ranges from significant to severe according to the definitions at Table 15-2. The Dallas County planning area can expect anywhere between 0.1 to 4.0 inches of ice and snow during a winter storm event, and temperatures between 15°F and 20°F with winds ranging from 0 to over 35 mph.

The National Weather Service issues a winter storm watch, advisory or warning in advance of an event in order to give people enough time to prepare for an event. Dallas County could be under any of these warning types in advance of a winter storm event. Table 15-3 describes when each warning type would be issued.

Table 15-3. Winter Storm Watch, Advisory, Warning Descriptions

TYPE OF WINTER WEATHER	DESCRIPTION
Winter Weather Advisory	This alert may be issued for a variety of severe conditions. Weather advisories may be announced for snow, blowing or drifting snow, freezing drizzle, freezing rain, or a combination of weather events.
Winter Storm Watch	Severe winter weather conditions may affect your area (freezing rain, sleet, or heavy snow may occur separately or in combination).
Winter Storm Warning	Severe winter weather conditions are imminent.
Freezing Rain or Freezing Drizzle	Rain or drizzle is likely to freeze upon impact, resulting in a coating of ice glaze on roads and all other exposed objects.
Sleet	Small particles of ice usually mixed with rain. If enough sleet accumulates on the ground, it makes travel hazardous.
Blizzard	Sustained wind speeds of at least 35 mph are accompanied by considerable falling or blowing snow. This alert is the most perilous winter storm with visibility dangerously restricted.
Frost/Freeze	Below freezing temperatures are expected and may cause significant damage to plants, crops, and fruit trees.
Wind Chill	A strong wind combined with a temperature slightly below freezing can have the same chilling effect as a temperature nearly 50 degrees lower in a calm atmosphere. The combined cooling power of the wind and temperature on exposed flesh is called the wind-chill factor.

HISTORICAL OCCURRENCES

According to historical records and the best available data there have been 77 recorded winter storm events in the Dallas County planning area. Historical winter storm information, as provided by the NCEI, identifies winter storm activity across a multi-county forecast area for each event. The appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by the event, when appropriate. Historical winter storm data for the planning area is provided on a County-wide basis per the NCEI database. Historical events with reported damages, injuries, or fatalities are shown below in Table 15-4.

Table 15-4. Damaging Historical Winter Storm Events, January 1996 – May 2024[2]

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	1/25/2000	1	0	$0	$0
Dallas County	3/2/2002	2	0	$0	$0
Dallas County	11/30/2006	0	0	$30,900	$0
Dallas County	1/13/2007	0	0	$76,700	$0

[2] Only recorded events with fatalities, damages, or injuries are listed. Values are in 2024 dollars.

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Dallas County	1/17/2007	0	0	$30,700	$0
Dallas County	1/5/2009	0	0	$51,500	$0
Dallas County	1/27/2009	1	0	$441,000	$0
Dallas County	12/24/2009	0	0	$359,300	$0
Dallas County	1/4/2010	0	0	$57,300	$0
Dallas County	1/7/2010	0	0	$1,002,500	$0
Dallas County	2/11/2010	0	0	$22,908,600	$0
Dallas County	3/20/2010	0	0	$142,600	$0
Dallas County	2/1/2011	0	0	$701,200	$0
Dallas County	2/3/2011	0	0	$210,400	$0
Dallas County	12/5/2013	0	0	$2,663,200	$0
Dallas County	2/22/2015	0	0	$33,100	$0
Dallas County	12/31/2017	0	0	$12,600	$0
Dallas County	1/16/2018	2	0	$0	$0
Dallas County	2/28/2019	0	0	$12,300	$0
Dallas County	2/10/2021	0	1	$118,000	$0
Dallas County	2/11/2021	0	1	$11,800	$0
Dallas County	2/13/2021	1	0	$0	$0
Dallas County	2/14/2021	8	0	$7,540,300	$0
TOTALS		**15**	**2**	**$36,404,000**	

Table 15-5. Historical Winter Storm Events Summary, January 1996 – May 2024

JURISDICTION	NUMBER OF EVENTS	DEATHS	INJURIES	PROPERTY DAMAGES	CROP DAMAGES
Dallas County	77	15	2	$36,404,000	$0

Based on the list of historical winter storm events for the Dallas County planning area, nine of the events have occurred since the 2020 Plan.

SECTION 15: WINTER STORM

SIGNIFICANT EVENTS

January 27, 2009 - Dallas County

A shallow arctic airmass moved over North Texas as an upper-level storm system moved in from the west. This caused periods of rain, freezing rain, and sleet, resulting in thousands of traffic accidents and numerous power outages across the Dallas County planning area. Ice accumulations ranged from a tenth to a half of an inch. One man died after he slipped on ice, causing him to fall off a bridge into the Trinity River after exiting his car following a crash. Indirect impacts from this winter storm included dozens of injuries and over $1 million in damages from automobile accidents. Property damages attributed directly to the impacts of the winter storm were estimated at $441,000 (2024 dollars).

February 11, 2010 - Dallas County

Record snowfall across North Texas began in the early morning on February 11th and continued through the early morning of the next day. During this 24 hour period, an average of 9 to 12 inches of snow fell across Dallas County. Numerous power outages and automobile accidents were reported in the planning area, with 50 accidents categorized as major and nearly 200 more deemed minor. No serious injuries or deaths were reported. Roofs of several buildings, including a tire warehouse and the sanctuary of Central Pointe Church of Christ collapsed due to the accumulation of snow. Damages from this event were estimated at $22,908,600 (2024 dollars).

February 13-14, 2021 – Winter Storm Uri – Dallas County (DR-4586)

Winter Storm Uri was one of the most impactful winter events in the state's history. The winter storm event lasted a week and brought snow, sleet, and freezing rain to the Southeast region. The presence of the storm began on February 10, 2021, when a cold front brought a surge of cold air to the Area. On February 13th, the winter storm hit the region, including Dallas County, and many areas were placed under a Winter Storm Warning.

Fatalities across the state were attributed to hypothermia, vehicle accidents, carbon monoxide poisoning, and chronic medical conditions complicated by a lack of electricity over several days. Statewide, more than 69 percent of households lost power at some point during the event, with average disruptions lasting 42 hours, 21 of which were consecutive. Water service was also disrupted, with 49 percent of households losing running water with an average disruption of 52 hours.[3]

In Dallas County, overnight lows were near or below 20°F for almost a full week with the coldest temperatures occurring on February 15th and 16th. At least nine fatalities in Dallas County were attributed to hypothermia from this extreme cold, including two men who died from poisoning from the use of generator in trying to stay warm. Two other deaths resulted from a single vehicle accident due to the icy conditions; one other death was reported, however the specific details on the cause were unavailable. The built environment also suffered extreme damage, particularly to pipes, infrastructure, and power utilities. Multiple event reports for Winter Storm Uri were made for Dallas County; in total, these reports estimated $7,670,100 (2024 dollars) in property damages.

[3] Donald, Jess. "Winter Storm Uri. The Economic Impact of the Storm". October 2021. Fiscal Notes. Texas Comptroller of Public Accounts. https://comptroller.texas.gov/economy/fiscal-notes/2021/oct/winter-storm-impact.php

PROBABILITY OF FUTURE EVENTS

According to historical records, the Dallas County planning area is expected to experience approximately one to two winter storm events each year. The probability of a future winter storm event affecting the Dallas County planning area, including participating jurisdictions, is considered "Highly Likely", with a winter storm likely to occur within the next year. Climate change is expected to reduce the number of extreme cold events statewide but increase in the variability of events.

VULNERABILITY AND IMPACT

During periods of extreme cold and freezing temperatures, water pipes can freeze and crack, and ice can build up on power lines, causing them to break under the weight or causing tree limbs to fall on the lines. These events can disrupt electrical services for long periods.

An economic impact may occur due to increased consumption of heating fuel, which can lead to energy shortages and higher prices. House fires and resulting deaths tend to occur more frequently from increased and improper use of alternate heating sources. Fires during winter storms also present a greater danger because water supplies may freeze and impede firefighting efforts.

The Dallas County Planning Team identified the following critical facilities (Table 15-6) as assets that are considered the most important to the planning area and are susceptible to a range of impacts caused by winter storm events. For a comprehensive list by participating jurisdiction, please see Appendix C.

Table 15-6. Critical Facilities Vulnerable to Winter Storm Events

CRITICAL FACILITIES	POTENTIAL IMPACTS
Emergency Response Services (EOC, Fire, Police, EMS), Hospitals and Medical Centers	• Emergency operations, services and response times may be significantly impacted due to power outages, and/or loss of communications. • Exposure to extreme cold can cause illnesses in first responders if exposed for a period of time. • Roads may become impassable due to snow and/or ice impacting response times by emergency services. • Extended power outages due to increased usage may lead to possible looting, destruction of property, and theft, further burdening law enforcement resources.
Airport, Academic Institutions, Animal Shelter, Evacuation Centers & Shelters, Governmental Facilities, Residential/ Assisted Living Facilities	• Power outages due to increased usage could disrupt critical care. • Backup power sources could be damaged. • Increased number of patients due to exposure to cold temperatures could lead to a strain on staff. • Water pipes can freeze and burst leading to flooding within facilities. • Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Essential supplies like medicines, water, food, and equipment deliveries may be delayed.

CRITICAL FACILITIES	POTENTIAL IMPACTS
	• Economic disruption due to power outages negatively impact airport services as well as area businesses reliant on airport operations. • Exposure risks to outdoor workers.
Commercial Supplier (food, fuel, etc.)	• Facilities, infrastructure, or critical equipment including communications may be damaged, destroyed or otherwise inoperable. • Essential supplies like medicines, water, food, and equipment deliveries may be delayed.
Utility Services and Infrastructure (electric, water, wastewater, communications)	• Emergency operations, services and response times may be significantly impacted due to power outages, and/or loss of communications. • Roads may become impassable due to snow and/or ice impacting response times by emergency services. • Power outages due to increased usage could disrupt critical care. • Backup power sources could be damaged. • Water pipes can freeze and burst leading to flooding within facilities.

People and animals are subject to health risks from extended exposure to cold air (Table 15-7). Elderly people are at greater risk of death from hypothermia during these events, especially in neighborhoods with older housing stock. According to the U.S. Center for Disease Control, every year hypothermia kills about 600 Americans, half of whom are 65 years of age or older.

Due to factors like limited mobility, communication difficulties, medical needs, sensitivity to cold temperatures, reliance on support services, transportation challenges, housing accessibility issues, and possible shortages in emergency shelter accommodations, people with disabilities are particularly vulnerable to winter storms. Inclusive measures are crucial to address these vulnerabilities and ensure their safety during severe weather events.

Populations living below the poverty level may not be able to afford to run heat on a regular basis or extend period of time. In addition, people who speak a language other than English may face increased vulnerability due to language barriers that limit their access to important information such as weather-related warnings and instructions regarding safety measures.

The population over 65 in the Dallas County planning area is estimated at 11 percent of the total population and children under the age of 5 are estimated at 7 percent. The population with a disability is estimated at 10 percent of the total population. In addition, an estimated 14 percent of the planning area population live below the poverty level and 17 percent of the populations speaks a language other than English.[4]

Older homes tend to be more vulnerable to the impacts of winter storm events. Approximately 47 percent (an estimated 492,078 structures) of the housing units in the planning area were built before 1980 (Table 15-8).

[4] US Census Bureau, American Community Survey Five-Year Estimates

Table 15-7. Populations at Greater Risk of Winter Storm Events

JURISDICTION	POPULATION				
	65 AND OLDER	UNDER 5	WITH A DISABILITY	BELOW POVERTY LEVEL	NON-ENGLISH SPEAKING
Dallas County	290,461	182,349	264,190	364,567	440,684
Town of Addison	1,711	736	1,000	1,445	1,891
City of Balch Springs	2,659	2,008	3,721	3,116	5,512
City of Carrollton	17,122	6,820	10,950	8,995	19,892
City of Cedar Hill	5,384	2,867	5,750	4,776	3,866
City of Cockrell Hill	550	247	372	315	1,222
City of Coppell	4,206	2,656	2,367	1,105	2,899
City of DeSoto	8,490	3,030	7,477	4,582	2,805
City of Duncansville	6,485	2,387	4,802	4,069	4,951
City of Farmers Branch	4,336	2,094	2,573	3,167	6,473
City of Glenn Heights	1,206	902	2,383	1,677	854
Town of Highland Park	1,668	538	356	513	135
City of Hutchins	292	576	460	1,436	1,236
City of Lancaster	3,648	4,058	4,236	6,021	2,867
City of Richardson	14,931	7,510	9,972	12,751	11,935
City of Rowlett	7,416	3,890	6,004	4,684	4,152
City of Sachse	3,515	1,321	2,823	557	2,615
City of Seagoville	2,252	1,617	2,116	2,631	3,730
Town of Sunnyvale	1,146	275	732	567	243
City of University Park	2,228	1,451	844	1,209	286
City of Wilmer	673	581	712	961	976

Table 15-8. Structures at Greater Risk of Winter Storm Events

JURISDICTION	BUILT PRIOR TO 1980
Dallas County	492,078
Town of Addison	1,549
City of Balch Springs	3,734
City of Carrollton	14,956
City of Cedar Hill	2,149
City of Cockrell Hill	1,146
City of Coppell	1,119
City of DeSoto	4,124
City of Duncanville	8,681
City of Farmers Branch	7,337
City of Glenn Heights	549
Town of Highland Park	2,006
City of Hutchins	463
City of Lancaster	4,723
City of Richardson	21,448
City of Rowlett	2,539
City of Sachse	393
City of Seagoville	1,716
City of Sunnyvale	228
City of University Park	3,088
City of Wilmer	490

Winter Storms have been known to cause injury to humans and occasionally have been fatal. In Dallas County, winter storms have resulted in 15 reported fatalities and 2 reported injuries, in addition to dozens of indirect injuries resulting from automobile accidents in icy conditions. Overall, the total loss estimate of property and crops in the planning area is $36,404,000 (2024 dollars) with an average annualized loss of $1,277,300. In terms of structures and infrastructure, the impact of winter storms on the Dallas County planning area is considered Limited with critical facilities shut down for 24-hours or less and less than ten percent of property destroyed or with major damage. However, with 15 fatalities and 2 injuries, the impact of winter storm damages on

the Dallas County planning area, including participating jurisdictions, can be considered "Substantial" with multiple deaths possible depending on the extent and duration of the event.

Table 15-9. Winter Storm Event Damage Total, January 1996 - May 2024

JURISDICTION	PROPERTY & CROP LOSS	AVERAGE ANNUAL LOSS ESTIMATES
Dallas County	$36,404,000	$1,277,300

ASSESSMENT OF IMPACTS

The greatest risk from a winter storm hazard is to public health and safety. The impact of climate change could produce longer, more intense winter storm events, exacerbating the current winter storm impacts. Worsening winter storm conditions can be frequently associated with a variety of impacts, including:

- Vulnerable populations, particularly the elderly (11 percent of total population), children under 5 (7 percent of total population), and those with a disability (10 percent of total population), can face serious or life-threatening health problems from exposure to extreme cold including hypothermia and frostbite.
- Loss of electric power or other heat source can result in increased potential for fire injuries or hazardous gas inhalation because residents burn candles for light or use fires or generators to stay warm.
- Response personnel, including utility workers, public works personnel, debris removal staff, tow truck operators, and other first responders, are subject to injury or illness resulting from exposure to extreme cold temperatures.
- Response personnel would be required to travel in potentially hazardous conditions, elevating the life safety risk due to accidents and potential contact with downed power lines.
- Operations or service delivery may experience impacts from electricity blackouts due to winter storms.
- Power outages are possible throughout the planning area due to downed trees and power lines and/or rolling blackouts.
- Critical facilities without emergency backup power may not be operational during power outages.
- Emergency response and service operations may be impacted by limitations on access and mobility if roadways are closed, unsafe, or obstructed.
- Hazardous road conditions will likely lead to increases in automobile accidents, further straining emergency response capabilities.
- Depending on the severity and scale of damage caused by ice and snow events, damage to power transmission and distribution infrastructure can require days or weeks to repair.
- Winter storms can reduce the efficacy of shaded fuel breaks for wildfire mitigation as treated areas were more likely to have downed trees and limbs than untreated areas.
- Winter storms can result in damage to endangered species habitat and increased fuel loads within forested habitats.
- Older structures built to less stringent building codes may suffer greater damage as they are typically more vulnerable to impacts of winter storm events. Approximately 47 percent

of homes in the County were built before 1980. Similarly, historic buildings and sites are placed at a higher risk of impact due to materials used and the inability to change properties due to their historic status. There are 152 historical sites listed on the National Register of Historic Places for Dallas County.

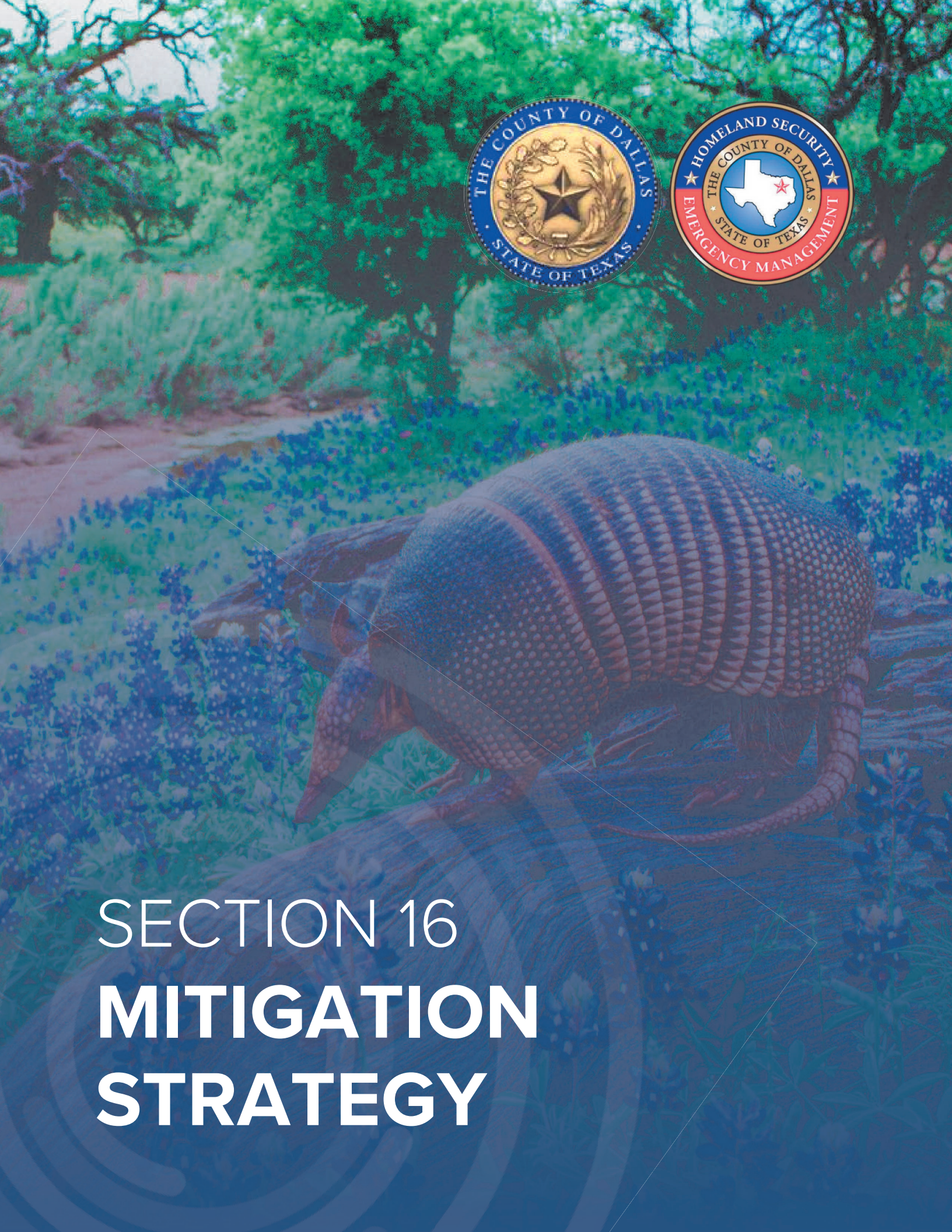
- Schools may be forced to shut early due to treacherous driving conditions.
- Exposed water pipes may be damaged by severe or late season winter storms at both residential and commercial structures, causing significant damages.

The economic and financial impacts of winter weather on the community will depend on the scale of the event, what is damaged, and how quickly repairs to critical components of the economy can be implemented. The level of preparedness and pre-event planning done by the community, local businesses and citizens will also contribute to the overall economic and financial conditions in the aftermath of a winter storm event.

CLIMATE CHANGE CONSIDERATIONS

Climate change is expected to reduce the number of extreme cold events statewide but increase in the variability of events.[5] Extreme cold events will continue to be possible but overall winters are becoming milder, and the frequency of extreme winter weather events are decreasing due to the warming of the Arctic and less extreme cold air coming from that region.[6] A trend that is expected to continue with winter extremes estimated to be milder by 2036 compared to extremes in the historic record.[7]

[5] Fourth National Climate Assessment. Chapter 23 Southern Great Plans. U.S. Global Change Program. 2018.
[6] Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, Texas A&M University Office of the Texas State Climatologist, 2021 update.
[7] Assessment of Historic and Future Trends of Extreme Weather in Texas, 1900-2036, Texas A&M University Office of the Texas State Climatologist, 2021 update.



SECTION 16
MITIGATION STRATEGY

SECTION 16: MITIGATION STRATEGY

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MITIGATION GOALS

Based on the results of the risk and capability assessments, the Planning Team developed and prioritized the mitigation strategy. This involved utilizing the results of both assessments and reviewing the goals and objectives that were included in the previous 2020 Plan. At the Mitigation Workshop in July 2024, Planning Team members reviewed the mitigation strategy from the previous Plan. The consensus among all members present was that the strategy developed for the 2020 Plan required some changes including expanding on existing goals and the addition of a goal around equity and vulnerable populations.

GOAL 1

Protect public health and safety.

OBJECTIVE 1.1

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

OBJECTIVE 1.2

Maximize utilization of the latest technology to provide adequate warning, communication, and mitigation of hazard events.

OBJECTIVE 1.3

Reduce the danger to, and enhance protection of, high risk areas during hazard events.

OBJECTIVE 1.4

Protect critical facilities and services.

OBJECTIVE 1.5

GOAL 2

Build and support local capacity and commitment to continuously become less vulnerable to hazards. Reduce the risks to and from High Hazard Potential Dams across the planning area.

OBJECTIVE 2.1

Build and support local partnerships to continuously become less vulnerable to hazards.

OBJECTIVE 2.2

Build a cadre of committed volunteers to safeguard the community before, during, and after a disaster.

OBJECTIVE 2.3
Build hazard mitigation concerns into county, city, and town planning and budgeting processes.

GOAL 3
Increase public understanding, support, and demand for hazard mitigation.

OBJECTIVE 3.1
Heighten public awareness regarding the full range of natural and man-made hazards the public may face.

OBJECTIVE 3.2
Educate the public on actions they can take to prevent or reduce the loss of life or property from all hazards and increase individual efforts to respond to potential hazards.

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

GOAL 4
Protect new and existing properties.

OBJECTIVE 4.1
Reduce repetitive losses to the National Flood Insurance Program (NFIP).

OBJECTIVE 4.2
Use the most cost-effective approach to protect existing buildings and public infrastructure from hazards.

OBJECTIVE 4.3
Enact and enforce regulatory measures to ensure that future development will not put people in harm's way or increase threats to existing properties.

GOAL 5
Maximize the resources for investment in hazard mitigation.

OBJECTIVE 5.1
Maximize the use of outside sources of funding.

OBJECTIVE 5.2
Maximize participation of property owners in protecting their properties.

OBJECTIVE 5.3
Maximize insurance coverage to provide financial protection against hazard events.

OBJECTIVE 5.4
Prioritize mitigation projects, based on cost-effectiveness and sites facing the greatest threat to life, health, and property.

GOAL 6
Promote sustainable growth through nature-based solutions.

OBJECTIVE 6.1
Incorporate hazard mitigation activities into long-range planning and development activities.

OBJECTIVE 6.2
Promote beneficial uses of hazardous areas while expanding open space and recreational opportunities.

OBJECTIVE 6.3
Utilize regulatory approaches to prevent creation of future hazards to life and property.

GOAL 7
Promote equity and protect vulnerable populations and underserved communities through hazard mitigation activities.

OBJECTIVE 7.1
Allocate resources and funding to implement hazard mitigation activities that directly benefit vulnerable and underserved communities.

OBJECTIVE 7.2
Build and support local partnerships to leverage resources and expertise in addressing hazard related equity concerns.

OBJECTIVE 7.3
Establish internal decision-making processes that integrate equity into project selection.

OBJECTIVE 7.4
Monitor and evaluate the effectiveness of mitigation activities to ensure equitable outcomes and protection of vulnerable populations.



SECTION 17
PREVIOUS ACTIONS

SECTION 17: PREVIOUS ACTIONS

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SUMMARY

This section includes analysis from the 2020 Dallas County Hazard Mitigation Action Plan. Planning Team members were given copies of the previous mitigation actions submitted in the 2020 Dallas County Plan at the mitigation workshop. Each participating jurisdiction reviewed the previous actions and provided an analysis as to whether the action had been completed, should be deferred as an ongoing activity, or be deleted from the Plan Update. The actions from the 2020 Plans are included in this section as they were written in 2020, except for the “2025 Analysis” section. The following participating jurisdiction did not previously participate in a plan; therefore, they have no previous actions: City of Hutchins.

DALLAS COUNTY-WIDE

	Dallas County-Wide – Previous Action #1
Proposed Action:	Implement education and awareness programs utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.
BACKGROUND INFORMATION	
Site and Location:	County-wide, including all participating jurisdictions
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Promote hazard awareness and protect citizens from potential injuries and damage.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure (applicable jurisdictions), Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storms
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	County and Local Emergency Managers
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update. The action was placed in the Dallas County Actions table.

	Dallas County-Wide – Previous Action #2
Proposed Action:	Acquire and install generators with hard wired quick connections at all critical facilities.
BACKGROUND INFORMATION	
Site and Location:	County-wide, including all participating jurisdictions critical facilities.
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure (applicable jurisdictions), Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	County Public Works/City Engineer/City Administrator
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update. The action was placed in the Dallas County Actions table.

	Dallas County-Wide – Previous Action #3
Proposed Action:	Upgrade critical facilities to include drought mitigation measures protection such as drought tolerant landscaping, installation of a sprinkler system with Regular water schedule.
BACKGROUND INFORMATION	
Site and Location:	County-wide including all participating jurisdictions critical facilities.
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages at critical facilities.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	County Public Works / City Engineer /City /Town Administrator
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan (applicable jurisdictions)

2025 ANALYSIS:
Delete action. The County and participating jurisdictions no longer deem this action a priority.

	Dallas County-Wide – Previous Action #4
Proposed Action:	Harden / retrofit critical facilities to hazard-resistant levels.
BACKGROUND INFORMATION	
Site and Location:	County-wide, including all participating jurisdictions critical facilities.
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee (applicable jurisdictions), Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	County Public Works / City Engineer / City / Town Administrator
Implementation Schedule:	Within 12-24 months so plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, Capital Improvement Plan (applicable jurisdictions)

2025 ANALYSIS:
Defer to plan update. The action was placed in the Dallas County Actions table.

DALLAS COUNTY

	Dallas County – Previous Action #1
Proposed Action:	Dallas County Earthquake Study: Conduct a study to identify the vulnerability and potential for earthquakes in Dallas County. Identify cost-effective actions items.
BACKGROUND INFORMATION	
Site and Location:	County-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; Reduce risk of damages or injuries through building code improvements; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Dallas County Department of Planning and Development in conjunction with HSEM
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Building Ordinances / Building Codes

2025 ANALYSIS:
Defer to plan update.

	Dallas County – Previous Action #2
Proposed Action:	Develop and implement Dallas County Weatherization Assistance Program (WAP). Weatherization Assistance Program (WAP) provides assistance to income eligible households by weatherizing their homes, conserving energy and reducing high utility costs in the process. Eligible applications will be considered for assessments. Each dwelling will be assessed and audited before any work begins. As part of the WAP program, DCHHS equips homes with weather stripping, caulking, insulation, repaired or new doors and windows, solar screens, repaired or retrofitted heating and cooling units and duct work.
BACKGROUND INFORMATION	
Site and Location:	County-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages to structures; Reduce risk to vulnerable populations.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winder Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$400,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Dallas County Health and Human Services
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	Dallas County – Previous Action #3
Proposed Action:	Develop and implement a safe room rebate program for individual safe rooms in single-family residences. The majority of funds will be used as direct rebates to residents and builders up to $3,000 possible rebates, following the procedures in the Metro Safe Room Rebate Program lead by the North Central Texas Council of Governments.
BACKGROUND INFORMATION	
Site and Location:	County-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme with events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Winds, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$6,000 per safe room (50% rebate of $3,000 per safe room)
Potential Funding Sources:	Mitigation Programs, County budget, City Budget, HMGP, PDM, Homeowner, Work-in-kind
Lead Agency/Department Responsible:	Dallas County Emergency Management and Office of the Fire Marshall
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	Dallas County – Previous Action #4
Proposed Action:	Install water-saving equipment and implement strategies that support water-saving practices such as low flow fixtures. These will include installing equipment that will conserve water with Dallas County Facilities.
BACKGROUND INFORMATION	
Site and Location:	County-wide public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce water usage at public facilities
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Dallas County Facilities Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Delete action. The County no longer deems this action a priority.

	Dallas County – Previous Action #5
Proposed Action:	Manage the Floodplain beyond the minimum requirements. This action will include developing an incentive program for building above the required freeboard minimum.
BACKGROUND INFORMATION	
Site and Location:	County-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce flood damages through improved development techniques and improved construction practices in flood-prone areas.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Dallas County Public Works, Planning and Development, Environmental Services and Fire Marshal's Office
Implementation Schedule:	Within 24 months of public adoption
Incorporation into Existing Plans:	Flood Damage Preventions Ordinance

2025 ANALYSIS:
Completed. This action was addressed in 2019 per the DC Floodplain Manager.

	Dallas County – Previous Action #6
Proposed Action:	Conduct a risk and vulnerability assessment to determine the number of people, property and infrastructure exposed to flooding and wildfire hazards and identify appropriate action items Implement feasible alternatives for risk reduction.
BACKGROUND INFORMATION	
Site and Location:	County-wide flood and wildfire hazard areas
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Dallas County Department of Planning and Development in conjunction with HSEM, Public Works and the Office of the Fire Marshall
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan, CWPP

2025 ANALYSIS:
Defer to plan update.

	Dallas County – Previous Action #7
Proposed Action:	Adopt and implement Dallas County Open Space System Program and Dallas Trails Program. Such a program will include techniques such as developing open space reuse, and preservation planning targeting hazard areas. These programs will seek to protect and restore natural flood mitigation features and provide for recreational activities.
BACKGROUND INFORMATION	
Site and Location:	County-wide flood risk areas
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Eliminate risk of flood damages to high risk structures and prevent future losses in high risk flood hazard areas; Reduce downstream impacts associated with development in the floodplain; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection (vacant land)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam or Levee Failure
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Dallas County Planning and Development
Lead Agency/Department Responsible:	Dallas County Planning and Development
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan, Community Development Plan

2025 ANALYSIS:
Completed.

TOWN OF ADDISON

	Town of Addison – Previous Action #1
Proposed Action:	Adopt and implement a routine tree trimming program that clears tree limbs near power lines and/or hanging in right-of-way; Remove dead trees from right-of-way and drainage systems on a scheduled basis.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages to infrastructure; Ensure continuity of services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Hail, Lightning, Tornado, Winter Storm, Wildfire
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$160,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Addison Parks Department
Implementation Schedule:	Within 14 months of plan adoption
Incorporation into Existing Plans:	Maintenance Plan, CWPP, Drainage Plan

2025 ANALYSIS:
Defer to plan update. In progress.

	Town of Addison – Previous Action #2
Proposed Action:	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; Reduce risk of damages or injuries through building code improvements; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Addison Public Works
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Building Ordinance / Building Codes

2025 ANALYSIS:
Defer to Plan Update.

	Town of Addison – Previous Action #3
Proposed Action:	Implement water-wise program for the Town of Addison. This program will include purchasing water saving equipment and fixtures in all Town facilities such as low flow fixtures, greywater reuse systems, and drought tolerant landscaping.
BACKGROUND INFORMATION	
Site and Location:	Community-wide public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce water usage at public facilities. Water is an increasingly expensive resource especially during drought. Reducing water consumption is one of the easiest and most inexpensive ways of achieving cost savings.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Addison Permits and Inspections
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	Town of Addison – Previous Action #4
Proposed Action:	Acquire and install Lightning protection / alarms. These systems protect citizens and employees who utilize outdoor recreation and sports facilities during weather events that produce cloud to ground lightning.
BACKGROUND INFORMATION	
Site and Location:	Recreation Center and Events Site
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of injuries or fatalities to citizens.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$15,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Addison Parks and Recreation
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Completed with local funds.

	Town of Addison – Previous Action #5
Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Promote hazard awareness and protect citizens from potential injuries and damages.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Earthquake, Extreme Heat, Expansive Soils, Flood, Hail, Hurricane, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Addison Fire Department
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan; Public Education Curriculum

2025 ANALYSIS:
Defer to plan update. Ongoing.

	Town of Addison – Previous Action #6
Proposed Action:	Harden/retrofit public buildings and critical facilities to hazard-resistant levels.
BACKGROUND INFORMATION	
Site and Location:	Community public buildings and critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Private contributions, State and Federal Grants
Lead Agency/Department Responsible:	Town of Addison General Services/Facilities
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	Town of Addison – Previous Action #7
Proposed Action:	Conduct creek and stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.
BACKGROUND INFORMATION	
Site and Location:	Community-wide creeks and streams
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce losses related to flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	Town of Addison Public Works, Building and Codes
Implementation Schedule:	Within 18-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Delete action. The Town no longer deems this action a priority.

	Town of Addison – Previous Action #8
Proposed Action:	Acquire and install generators with hard wired quick connections at all critical facilities.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Addison General Services, Facilities
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan

2025 ANALYSIS:
Completed in 2024 with local funds.

CITY OF BALCH SPRINGS

	City of Balch Springs – Previous Action #1
Proposed Action:	Acquisition / demolition of flood-prone and repetitive loss properties.
BACKGROUND INFORMATION	
Site and Location:	Community-wide high flood risk properties and repetitive loss properties
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages or injuries through flood mitigation at high risk structures; Reduce the need for emergency response in high risk areas; Reduce repetitive flood losses / claims; Reduce community recovery efforts and costs.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,300,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Balch Springs Building Inspectors and Engineering Department
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Balch Springs – Previous Action #2
Proposed Action:	Build community safe room central to the jurisdiction so that residents can reach shelter in a timely manner.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing shelter during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Balch Springs Emergency Management and Building Inspection Departments
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Balch Springs – Previous Action #3
Proposed Action:	Install lightning rods to the city facilities with radio and communication sites.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages at critical facilities; Ensure continuity of critical services during and after event.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Funds (General Budget)
Lead Agency/Department Responsible:	City of Balch Springs Public Works & Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Completed.

	City of Balch Springs – Previous Action #4
Proposed Action:	Implement water-wise program for the City of Balch Springs. This program will include purchasing water saving equipment and fixtures, such as low flow fixtures, in all city facilities.
BACKGROUND INFORMATION	
Site and Location:	Community facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce water usage at city facilities
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$8,000
Potential Funding Sources:	Local Funds (General Budget)
Lead Agency/Department Responsible:	City of Balch Springs Permits and Inspection Department and Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

SECTION 17: PREVIOUS ACTIONS

	City of Balch Springs – Previous Action #5
Proposed Action:	Develop and implement a Weatherization Assistance Program (WAP) which provides assistance to income eligible households by weatherizing their homes, conserving energy and reducing high utility cost in the process.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to vulnerable populations during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Funds (General Budget), Private contributions, State and Federal Grants
Lead Agency/Department Responsible:	City of Balch Springs Code Enforcement and Neighborhood Services
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Balch Springs – Previous Action #6
Proposed Action:	Purchase and distribute hail and wind resistant window coverings to homeowners.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to structures; Reduce risk of injuries or fatalities.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds (General Budget), In-kind, State and Federal Grants
Lead Agency/Department Responsible:	City of Balch Springs Emergency Management
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

CITY OF CARROLLTON

	City of Carrollton – Previous Action #1
Proposed Action:	Work with area jurisdictions, response and recovery partners, and Dallas County to put in place a regional sheltering plan to accommodate evacuees of a potential large-scale dam failure.
BACKGROUND INFORMATION	
Site and Location:	Dallas County, the City of Carrollton, and neighboring communities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Currently there is a lack of regional planning for large scale sheltering in the event of a dam failure.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Regional Funds, Staff Time
Lead Agency/Department Responsible:	City of Carrollton Emergency Management
Implementation Schedule:	Within 12 months of Plan Adoption
Incorporation into Existing Plans:	Emergency Response Plan

2025 ANALYSIS:
Defer to plan update. In progress.

	City of Carrollton – Previous Action #2
Proposed Action:	Implement water-wise program for the City of Carrollton. This program will include purchasing water saving equipment and fixtures, such as low flow fixtures and upgrades including drought mitigation measures such as greywater reuse systems, drought tolerant landscaping at public facilities throughout the city.
BACKGROUND INFORMATION	
Site and Location:	Community-wide public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages and water usage at public facilities.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #3
Proposed Action:	Upgrade drainage and targeted regrading of streets and properties that tend to retain water after large rain events resulting in having to pump out standing water.
BACKGROUND INFORMATION	
Site and Location:	Areas identified based on recent events and hazard analyses
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	This will reduce the impact the city has seen from recent flash flooding events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$400,000
Potential Funding Sources:	Local Funds, HMA Grants
Lead Agency/Department Responsible:	City of Carrollton Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #4
Proposed Action:	Conduct Stream Bank Erosion Studies: Conduct a study to identify the vulnerability to stream bank erosion due to flood events. Identify and implement cost-effective action items.
BACKGROUND INFORMATION	
Site and Location:	Areas along streams and other flood prone locations
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	The city currently has a large amount of information on vulnerability to this threat. Identifying high risk areas and identifying / implementing effective mitigation actions will reduce impacts to structures and infrastructure in the impacted area.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Environmental Services
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #5
Proposed Action:	Implement flood mitigation infrastructure improvements in downtown Carrollton to alleviate systemic standing water during heavy rain events. This would include drainage improvements and other actions deemed necessary.
BACKGROUND INFORMATION	
Site and Location:	Downtown Carrollton area
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	This would reduce losses to area businesses, reduce damage to structures and infrastructure, reduce recovery time after a flood event and ensure continuity of services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update. In progress.

	City of Carrollton – Previous Action #6
Proposed Action:	Procure and install flood warning barrier system to prevent motorists from driving into flooded areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide, as necessary
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	The city currently has no system to automatically lower barrier arms at flood prone areas. Officers must control the area after flooding conditions are reported. This action will reduce the risk to citizens and reduce the need for emergency services during high water events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Public Works, Emergency Management, Engineering
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #7
Proposed Action:	Add additional drains and supporting infrastructure in older neighborhoods to increase offloading of flash flood waters.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	This would reduce the severity of localized flash flooding the city saw during the very wet spring of 2019. The action would reduce the damage to structures and infrastructure, reduce the risk to residents, and reduce the need for emergency services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan, Drainage Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #8
Proposed Action:	Construct covered parking structures to protect City vehicles and critical equipment from damage during severe hailstorms.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	The city currently does not have enough covered protection for city vehicles to prevent damage during severe hailstorms. This action will prevent damage to critical vehicles and equipment while ensuring continuity of emergency services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Lightning, Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Police Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Capital Improvements Plan

2025 ANALYSIS:
Defer to plan update. In progress.

	City of Carrollton – Previous Action #9
Proposed Action:	Install additional lightning detection systems at City parks and outdoor facilities.
BACKGROUND INFORMATION	
Site and Location:	Community parks and outdoor recreational facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	The city does have these systems at all outdoor facilities currently. Greater coverage is needed to ensure all city facilities can provide warning of approaching lightning to residents who are enjoying outdoor activities. This action will protect the lives of our citizens and visitors.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Parks Services, Emergency Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Completed. Funded by local funds.

	City of Carrollton – Previous Action #10
Proposed Action:	Create and execute plan for providing temporary shelters (post-emergency shelter) for citizens affected by natural disasters that result in the loss of or inability to return to their homes. Standby contracts for assistance are one option that will be considered.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	The city currently has plans for emergency shelters in place. However, plans for temporary housing are not as extensive.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations Response and Recovery

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #11
Proposed Action:	Create and execute plan for providing mobile and modular WIFI connectivity after a disaster. This capability can support both emergency City operations as well as be deployed in shelters to assist evacuees with registering for disaster assistance on their own devices as well as provide entertainment for kids.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	This would be a new capability that addresses challenges seen in recent events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulation Response and Recovery

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Emergency Management, IT
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #12
Proposed Action:	Procure charging stations to be deployed in shelters after a disaster to supply evacuees with power for their devices. This will allow for evacuees to access important information via their devices, call family and friends for emergency contacts, and provide entertainment to children during a stressful time.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	We currently do not have this capability.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #13
Proposed Action:	Procure equipment or contracts to provide for emergency sandbagging of critical facilities and infrastructure during a high-water event.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities and infrastructure
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	The city currently does not have this capability. This action will reduce the damages at critical facilities.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Response and Recovery

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Public Works, Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #14
Proposed Action:	Plan for and establish City-owned stand-by contracts for targeted flood remediation of private homes if authorized by City Administration. Actions to include mitigation measures such as elevation, acquisition / demolition, and relocation, among other feasible alternatives.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	The city currently does not do this, but it is an idea that was discussed after the 2019 spring's severe flash flooding. It would at least give City leaders the option to assist in targeted areas should the need be deemed great enough during an event. This action will reduce damages to structures and enhance recovery for private citizens.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000 per structure (estimate)
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Manager's Office, Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #15
Proposed Action:	Reinstitute a solicitation permitting program to combat fraudulent businesses practices. This will allow for the control of who can solicit door to door for repair work after a disaster resulting in widespread residential and commercial damage.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	The city used to have this in place. It is currently being reviewed.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations Response and Recovery

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Drought, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Police Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Local Ordinances

2025 ANALYSIS:
Defer to plan update. In Progress.

	City of Carrollton – Previous Action #16
Proposed Action:	Acquire several portable traffic lights or other traffic control devices for intersection management after a disaster that disrupts power for an extended length of time.
BACKGROUND INFORMATION	
Site and Location:	Community-wide intersections
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	We currently do not have this capability, but regional events have shown the need for it.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Response and Recovery

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Hail, Lightning, Thunderstorm Wind, Tornado, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

SECTION 17: PREVIOUS ACTIONS

	City of Carrollton – Previous Action #17
Proposed Action:	Expand City drone program to allow for damage assessment and recovery support after an incident causing widespread residential and commercial damage.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	This will allow for far more efficient and timely damage assessment and operational awareness of where an event took place and how significant it is. How fast this is learned will determine the ultimate spend of recovery.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Response and Recovery

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Earthquake, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Police Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

2025 ANALYSIS:
Defer to plan update. In progress. Partially completed through police drone program and through local funding.

	City of Carrollton – Previous Action #18
Proposed Action:	Acquire and install generators with hard wired quick connections at all critical facilities. This will include but is not limited to the Police Department, Fire Administration, Animal Services Center, and the City Resolution Center.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Emergency Management, Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update. In progress.

	City of Carrollton – Previous Action #19
Proposed Action:	Adopt and implement a routine tree trimming program that clears tree limbs near power lines and / or hanging in right-of-way; Remove dead trees from right-of-way and drainage systems on a scheduled basis.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages to infrastructure; Ensure continuity of services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Hail, Lightning, Tornado, Winter Storm, Wildfire
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Environmental Services
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Maintenance Plan, CWPP, Drainage Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #20
Proposed Action:	Create and execute plan for a back-up facility for the City Resolution Center (Call Center) so it can continue to operate during a disaster if the facility itself is lost.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Currently the city has no back-up facility for this function. Ensure critical services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Administrative Services
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update. In progress.

	City of Carrollton – Previous Action #21
Proposed Action:	Plan for providing additional medical supplies and equipment for Animal Shelter to support operations during a disaster.
BACKGROUND INFORMATION	
Site and Location:	Community Animal Shelter
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	The city's animal shelter is currently limited to the number of animals they can care for during a disaster. This effort will increase that capability.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations Response and Recovery

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Animal Services
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #22
Proposed Action:	Create plan for Utility Customer Services to manage and secure money on hand during a disaster that disrupts power to the facility or damages / destroys the facility itself.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Currently this is a gap that has been identified and needs to be met.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations Response and Recovery

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Administrative Services, Utility Customer Services
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #23
Proposed Action:	Upgrade current or construct a new Emergency Operations Center facility that will have the latest software and technology to effectively respond to all hazards.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	This would significantly upgrade the city's current capabilities to monitor and support large event responses; Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bond Election
Lead Agency/Department Responsible:	City of Carrollton Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #24
Proposed Action:	Create mobile city-wide communication system capability utilizing mesh-network technology. This would include equipping fire and police units with modular mesh network nodes that could be used in conjunction with others in the same area to provide increased network capacity as needed during an emergency situation.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	This would be a new capability to address modern communications and disaster response needs.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Outreach

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Earthquake, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton IT, Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #25
Proposed Action:	Upgrade / install cameras throughout the City to provide damage assessment and situational awareness capability during disaster events.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	The city currently has only limited visibility with cameras. This would significantly upgrade the city's damage assessment and situational awareness capabilities.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness Response and Recovery

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Earthquake, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton IT, Engineering, Emergency Management, Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #26
Proposed Action:	Build or provide provision for mobile or back-up emergency operation center location in the event the primary site is rendered un-usable by a disaster event.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	This is capability that has been identified in a recent needs assessment. Provide continuity of critical services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #27
Proposed Action:	Upgrade pump station facilities including the pump controls to better function during disaster situations that stress the system and make precise control very important.
BACKGROUND INFORMATION	
Site and Location:	Community Pump Stations
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Recent events have identified this as a significant capabilities upgrade need. Reduce risk to structures and infrastructure.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Capital Funds
Lead Agency/Department Responsible:	City of Carrollton Public Works, Engineering
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update. In progress through capital funds.

	City of Carrollton – Previous Action #28
Proposed Action:	Equip City traffic signals with emergency generators with quick connect wiring system to restore power in the event of disruption due to thunderstorm wind damage.
BACKGROUND INFORMATION	
Site and Location:	Community-wide intersections
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Priority intersections first and then others as allowed by time and resources. Protect citizens from injury and ensure continuity of traffic flow.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado, Hail Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #29
Proposed Action:	Develop and implement a Texas Safe Room Rebate Program to provide safe rooms for the City of Carrolton residents.
BACKGROUND INFORMATION	
Site and Location:	Community-wide public residences
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	The city has additional residents who would like to take advantage of this program. Each additional safe room is a net gain for the City as we have no public safe rooms. Protect the lives of citizens in the community.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$4,000 per safe room
Potential Funding Sources:	State and Federal Grants, Local Contributions (including resident contributions)
Lead Agency/Department Responsible:	City of Carrollton Emergency Management, Building Inspections
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #30
Proposed Action:	Retrofit City facilities to include storm safe rooms.
BACKGROUND INFORMATION	
Site and Location:	Community-wide public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Currently few City facilities have dedicated safe rooms. Protect lives of area residents and first responders.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000 per structure
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Facilities, Engineering, Building Inspection
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #31
Proposed Action:	Winterize City buildings and critical infrastructure to better withstand the effects of winter storms. This would include but is not limited to protecting water pipes / system, retrofitting roofs to break-up / withstand ice and snow loads, and other similar efforts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide public buildings and critical infrastructure
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Very few facilities currently have this protection. Reduce damages to critical facilities; Ensure continuity of critical services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State or Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Facilities, Public Works, Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #32
Proposed Action:	Purchase and install temperature gauges / detectors for Public Works infrastructure, roadways, and vehicles (mobile detectors to sample roadway temperatures) to determine when additional intervention is need during cold weather.
BACKGROUND INFORMATION	
Site and Location:	Critical roadways, infrastructure, and on mobile vehicles for random temperature testing of roadways
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	The city currently has no capability for detecting and reporting street temperatures during winter weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Response and Recovery

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storms
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

2025 ANALYSIS:
Defer to plan update. In progress.

	City of Carrollton – Previous Action #33
Proposed Action:	Purchase and distribute hail and wind resistant window coverings to homeowners.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to structures; Reduce risk of injuries or fatalities.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, In-kind, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Emergency Management
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #34
Proposed Action:	Conduct studies to develop dam inundation maps and models for all dams that affect the City of Carrollton.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; reduce risk of damages or injuries through improved building standards; reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam or Levee Failure
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, Continuity of Operations Plan

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #35
Proposed Action:	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; Reduce risk of damages or injuries through building code improvements; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Carrollton Public Works
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Building Ordinance / Building Codes

2025 ANALYSIS:
Defer to plan update.

	City of Carrollton – Previous Action #36
Proposed Action:	Promote land use program, identify land within the floodplain, and assess uses for conservation or recreation.
BACKGROUND INFORMATION	
Site and Location:	Community-wide floodplain
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages to structures through restrictions in development; Reduce recovery efforts for the community after an event; Reduce risk of injury or fatality to citizens; Restore functions of the natural floodplain.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000 (staff time)
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), State Grants
Lead Agency/Department Responsible:	City of Carrollton Community Development
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Zoning Ordinance (CZO)

2025 ANALYSIS:
Defer to plan update.

CITY OF CEDAR HILL

	City of Cedar Hill – Previous Action #1
Proposed Action:	Promote land use program, identify undeveloped land within the floodplain, and assess uses for conservation or recreation. Implement storm water retention basin upstream of Bentle Branch, to allow for a more natural environment conduction of Bentle Branch and Ten Mile Creek.
BACKGROUND INFORMATION	
Site and Location:	Community floodplain, including the areas upstream of Bentle Branch
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Avoid losses. Program will include developing an open space re-use, and preservation plan targeting as well as developing a land banking program for the preservation of the natural and beneficial functions of flood hazard areas.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$300,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), State Grants
Lead Agency/Department Responsible:	City of Cedar Hill Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. Preserving natural areas and vegetation benefits natural resources while also mitigating potential flood losses.

	City of Cedar Hill – Previous Action #2
Proposed Action:	Conduct inundation extent study of Joe Pool Lake to determine the extent of flooding. This study will be done in coordination with the owners and operators of the dams.
BACKGROUND INFORMATION	
Site and Location:	Joe Pool Lake
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	A data deficiency was identified for Joe Pool. Such a study can include procedures for tracking high water marks, developing a thorough watershed analysis of the dams and reservoirs and developing and maintaining a database to track community exposure to flood risk.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Local Plans and Regulations (for unmapped areas)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam or Levee Failure
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation Grant (PDM)
Lead Agency/Department Responsible:	City of Cedar Hill Public Works and Transportation
Implementation Schedule:	Within 12-24 months from plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, USACE, GIS Mapping of flooded areas around Joe Pool Lake

2025 ANALYSIS:
Defer to plan update.

	City of Cedar Hill – Previous Action #3
Proposed Action:	Acquire floodplain and protect environmentally sensitive areas to include Red Oak Creek and Bentle Branch Creek and the Balcones Escarpment and convert them into open space land.
BACKGROUND INFORMATION	
Site and Location:	Red Oak Creek and Bentle Branch Creek areas and the Balcones Escarpment
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	The benefits of this program exceed the cost associated with flooding of this affected areas. The removal of structures from flood prone areas will minimize future flood losses. This will be done by acquiring and demolishing of structures from voluntary property owners and preserving land subject to repetitive flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection (vacant land)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam or Levee Failure
Effect on New/Existing Buildings:	Reduce the effects of flooding
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), Capital Improvement Plan
Lead Agency/Department Responsible:	City of Cedar Hill Public Works Department, Parks and Recreation
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

	City of Cedar Hill – Previous Action #4
Proposed Action:	Develop a weatherization assistance program similar to that of Dallas County.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life during extreme heat or winter weather.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), State and Federal Grants, Private Funds
Lead Agency/Department Responsible:	Dallas County Department of Health and Human Serves, Utility Billing Office, Environmental, Neighborhood Services
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. The Weatherization Assistance Program (WAP) would provide assistance to income eligible households by weatherizing their homes, conserving energy and reducing high utility costs in the process. Eligible applications will be considered for assessments. Each dwelling will be assessed and audited before any work begins. The program could also equip homes with weather stripping, caulking, insulation, repaired or new doors and windows, solar screens, repaired or retrofitted heating and cooling units and duct work.

	City of Cedar Hill – Previous Action #5
Proposed Action:	Incorporate drought tolerant, fire resistant and xeriscaping practices for existing and new city facilities. This program will also be expanded to include residential areas through regulatory and incentive measures to mitigate the risk. The program can also include installing water saving equipment in city facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Conserve water and provide mitigation against wildland fire and drought.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Wildfire
Effect on New/Existing Buildings:	Reduce risk to new and existing facilities
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Cedar Hill Public Works Department, Utility Billing
Implementation Schedule:	Within 24 months from plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. Upgrade critical facilities to include drought mitigation such as drought tolerant landscaping, xeriscaping, installation of a sprinkler system with regular watering schedule and installation of French drains. The use of landscape and design measures will help promote water conservation and reduce dependence on irrigation and mitigate against drought and wildfire.

	City of Cedar Hill – Previous Action #6
Proposed Action:	Construction of storm shelters and safe rooms in existing and new construction recreational, institutional, commercial and governmental buildings/facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Prevent loss of life. Construction of storm shelters and safe rooms in existing and new construction recreational, institutional and commercial buildings
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Cedar Hill Building Inspections Department, Engineering
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, local ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Cedar Hill – Previous Action #7
Proposed Action:	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Cedar Hill Public Works, Dallas County
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Threats, Hazards Identification and Risk Assessment (regional)

2025 ANALYSIS:
Defer to plan update. There is a deficiency in earthquake data for Dallas County as earthquakes have only been experienced (recorded) since 2008. The magnitudes of these earthquake events are considered minor. While not injuries no injuries, fatalities or major damage recorded to date, there is still a need to conduct studies and collect data so as to obtain the information and data needed to make the most appropriate decision.

	City of Cedar Hill – Previous Action #8
Proposed Action:	Reduce Urban Heat Island Effect by distributing cool roofing products to homeowners that reflect sunlight and heat away from buildings.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce heat. The use of this technique will not only conserve energy but will also mitigate the effects of extreme heat.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000,000
Potential Funding Sources:	Homeowners and Business Owners
Lead Agency/Department Responsible:	City of Cedar Hill Public Works Department, Building Inspections Department
Implementation Schedule:	Within 24-36 months of plan adoption.
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, local ordinances.

2025 ANALYSIS:
Defer to plan update. Reduce Urban Heat Island Effect by distributing cool roofing products to home owners that reflect sunlight and heat away from buildings.

	City of Cedar Hill – Previous Action #9
Proposed Action:	Install lightning prediction systems at Cedar Hill Parks (Crawford Park, Community Center Park, Dot Thomas Park, Virginia Weaver Park, and Valley Ridge Park) to provide advanced warning to park patrons in the event of lightning strikes.
BACKGROUND INFORMATION	
Site and Location:	Community facilities and parks facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMPG)
Lead Agency/Department Responsible:	City of Cedar Hill Parks and Recreation
Implementation Schedule:	Within 24 months from plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation, Parks and Recreation Plans

2025 ANALYSIS:
Defer to plan update.

	City of Cedar Hill – Previous Action #10
Proposed Action:	Improve and enhance storm water draining capabilities to prevent flooding in flood prone areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce the effects of flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flooding
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), Capital Improvement Program (CIP
Lead Agency/Department Responsible:	City of Cedar Hill Public Works Department
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation, and Capital Improvement Plans

2025 ANALYSIS:

Defer to plan update. Amend action to add. Stormwater management projects will include:

- Installing, re-routing, or increasing the capacity of a storm drainage system.
- Increasing capacity of stormwater detention and retention basins.
- Increasing dimensions of drainage culverts in flood-prone areas.

	City of Cedar Hill – Previous Action #11
Proposed Action:	Buy-out structures that are in the floodplain.
BACKGROUND INFORMATION	
Site and Location:	Community-wide repetitive flood loss structures
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce the effects of flooding; Reduce flood hazard risks to citizens; Reduce repetitive flood losses and emergency response; Protect lives; Reduce flood recovery measures.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection (green space)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), State and Federal Grants
Lead Agency/Department Responsible:	City of Cedar Hill Administration, Engineering and Parks and Recreation
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. Remove structures from flood-prone areas to minimize future flood losses by acquiring and demolishing or relocating structures from voluntary property owners.

	City of Cedar Hill – Previous Action #12
Proposed Action:	Purchase hail and wind resistant window coverings for city facilities (existing and new).
BACKGROUND INFORMATION	
Site and Location:	Community public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Prevent future property losses and ensure continuity of city services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Cedar Hill Emergency Management, Facilities
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

	City of Cedar Hill – Previous Action #13
Proposed Action:	Provide emergency generators and automatic transfer switches for Tri-City Animal Shelter to provide emergency power to allow staff and animals to shelter-in-place during all hazard's emergencies and disasters.
BACKGROUND INFORMATION	
Site and Location:	Tri-Cities Animal Shelter
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life; Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Earthquake, Extreme Heat, Flood, Hail, Hurricane, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$400,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), Friends of the Animal Shelter donations
Lead Agency/Department Responsible:	Tri-Cities Animal Shelter, City of Cedar Hill Facilities Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Animal Sheltering Plans

2025 ANALYSIS:
Defer to plan update. The Tri-Cities Animal Shelter cares for up to 170 animals daily for the Cities of Cedar Hill, DeSoto, and Duncanville and requires electrical power to provide shelter, feeding, care, surgical services, and other services and requires substantial transportation resources to transport animals in the event of a loss of power from an all-hazards incident.

	City of Cedar Hill – Previous Action #14
Proposed Action:	Provide emergency generators and automatic transfer switches for Cedar Hill Government Center / Cedar Hill ISD Administration, Police Department and other City of Cedar Hill facilities to provide emergency power to allow staff to provide critical services to the community.
BACKGROUND INFORMATION	
Site and Location:	Cedar Hill Government Center, Cedar Hill Police Department, and other City of Cedar Hill Facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property; Provide power for critical facilities during power outages; Ensure continuity of critical services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Earthquake, Extreme Heat, Flood, Hail, Hurricane, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Cedar Hill Police Department, Facilities Department, City Manager's Office
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Animal Sheltering Plans

2025 ANALYSIS:
Defer to plan update. The Cedar Hill Government Center is the facility that provides critical city services to the community and houses City Council meetings, School Board meetings, provides water, law enforcement, finance, purchasing, parks and recreation, municipal court, city administration, public information, neighborhood services, building inspections, public works and other critical services to the community each day.

	City of Cedar Hill – Previous Action #15
Proposed Action:	Enhancement of Outdoor Warning Siren System to include communications, security, to provide alert, warning and notification to residents and visitors during all hazards emergencies/disasters
BACKGROUND INFORMATION	
Site and Location:	Current Outdoor warning Siren locations: 1. Kingswood Water Tower 2. Bray Elementary 3. CHISD DAEP Campus 4. Waterford Oaks Elementary 5. High Pointe Elementary 6. Mobley Road and Cartwright 7. Cedar Hill Senior Center 8. Independence Way 9. Lake Ridge Parkway 10. Texas Plume Road 11. Vedral Place 12. Harvell Drive and Collins Boulevard 13. Fire Station 212 14. Duncanville Road and Bear Creek Road 15. Prairie View Park
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Prevents loss of life
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornados, Thunderstorm Winds, Hail
Effect on New/Existing Buildings:	None
Priority (High, Moderate, Low):	High
Estimated Cost:	$400,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), Capital Improvement Plan
Lead Agency/Department Responsible:	City of Cedar Hill Fire Department, Emergency Management
Implementation Schedule:	Within 12-18 months of grant award
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation, Annex A: Warning

2025 ANALYSIS:
Defer to plan update. The City of Cedar Hill currently operates an Outdoor Warning Siren System that consists of 15 sirens located at sites located above. The goal of this mitigation strategy is to provide 100% coverage with less sirens and with further radius coverage.

	City of Cedar Hill – Previous Action #16
Proposed Action:	Conduct creek and stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.
BACKGROUND INFORMATION	
Site and Location:	Community-wide creeks and streams
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce losses related to flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Cedar Hill Public Works, Building and Codes
Implementation Schedule:	Within 18-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

CITY OF COCKRELL HILL

	City of Cockrell Hill – Previous Action #1
Proposed Action:	Acquire and distribute NOAA weather radios.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens through improved communications and early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Cockrell Hill Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #2
Proposed Action:	Obtain certification in the National Weather Service StormReady Program.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Thunderstorm Wind, Tornado, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Cockrell Hill Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #3
Proposed Action:	Require new public buildings to be sited on low-risk parcels.
BACKGROUND INFORMATION	
Site and Location:	Community (future) public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages to public structures by locating buildings outside of known hazard areas; Ensure continuity of public services following a significant event.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Cockrell Hill Manager
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #4
Proposed Action:	Restrict future development in high risk areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages to new structures and infrastructure through building restrictions in high risk areas.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Cockrell Hill Manager
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #5
Proposed Action:	Incorporate higher standards for hazard resistance in local application of the building code.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages to structures through improved construction techniques; Reduce recovery efforts for the community after an event.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Cockrell Hill Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #6
Proposed Action:	Require "safe rooms" to be added when constructing new schools, daycares, rest homes and critical care facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing shelter in new critical facilities during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Cockrell Hill Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #7
Proposed Action:	Adopt and implement a program for clearing debris from bridges, drains and culverts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages caused by flooding by maintaining or restoring drainage capacity.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 (annually)
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Cockrell Hill Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #8
Proposed Action:	Upgrade undersized stormwater drains and culverts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide drainage system
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Cockrell Hill Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan, Drainage Plan

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #9
Proposed Action:	Undertake a comprehensive study of flood risk and reduction alternatives, with the assistance of the US Army Corps of Engineers. Adopt or revise flood damage prevention ordinance to include flood risk areas identified in the study. This study will cover all incorporated and unincorporated areas of the county that currently have limited studies with no determined base flood elevations as well as unmapped areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide flood hazard areas
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; Reduce risk of damages or injuries through improved building standards; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations (for unmapped or limited study areas)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Cockrell Hill Manager
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan, Flood Damage Prevention Ordinance

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #10
Proposed Action:	Build safe room shelters throughout the jurisdiction so that residents can reach shelter in less than five minutes.
BACKGROUND INFORMATION	
Site and Location:	Community-wide, including manufactured home parks
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing shelter in high risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Cockrell Hill Public Works
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #11
Proposed Action:	Develop and implement a safe room rebate program for individual safe rooms in single-family residences.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000 per safe room
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Cockrell Hill Emergency Manager
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #12
Proposed Action:	Develop and implement a Weatherization Assistance Program (WAP) which provides assistance to income eligible households by weatherizing their homes, conserving energy and reducing high utility cost in the process.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to vulnerable populations during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Funds (General Budget), Private contributions, State and Federal Grants
Lead Agency/Department Responsible:	City of Cockrell Hill Code Enforcement and Neighborhood Services
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #13
Proposed Action:	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Cockrell Hill Administrators Office, Dallas County
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinance

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #14
Proposed Action:	Implement a Fuels Management Program – A fuel management program will reduce hazardous vegetative fuels on public lands, near infrastructure or on private lands by working with landowners.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce fuels that could burn in order to reduce the risk of wildfires.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, HMGP, other funding sources
Lead Agency/Department Responsible:	City of Cockrell Hill Fire and Public Works
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #15
Proposed Action:	Implement water-wise program for the City of Cockrell Hill. This program will include purchasing water saving equipment and fixtures in all City facilities such as low flow fixtures, greywater reuse systems, and drought tolerant landscaping.
BACKGROUND INFORMATION	
Site and Location:	Community-wide public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce water usage at public facilities. Water is an increasingly expensive resource especially during drought. Reducing water consumption is one of the easiest and most inexpensive ways of achieving cost savings.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Cockrell Hill Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #16
Proposed Action:	Install lightning protection equipment in critical facilities and infrastructure to prevent lightning damage.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property; Ensure continuity of services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	None
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Cockrell Hill Public Works
Implementation Schedule:	Within 12-18 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Cockrell Hill – Previous Action #17
Proposed Action:	Purchase and distribute hail and wind resistant window coverings to homeowners.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to structures; Reduce risk of injuries or fatalities.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds (General Budget), In-kind, State and Federal Grants
Lead Agency/Department Responsible:	City of Cockrell Hill Emergency Management
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

CITY OF COPPELL

	City of Coppell – Previous Action #1
Proposed Action:	Obtain re-certification in the National Weather Service StormReady Program.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Winter Storm, Tornado, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Emergency Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, SOGs, COOP

2025 ANALYSIS:
Defer to plan update.

	City of Coppell – Previous Action #2
Proposed Action:	Install bridge deck / road surface temperature monitoring equipment.
BACKGROUND INFORMATION	
Site and Location:	North Denton Tap @ Denton Creek; North MacArthur @ Denton Creek; South Denton Tap @ Grapevine Creek; Freeport Parkway @ Cottonwood Branch
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of injuries on roadways and bridges during winter storm events; Reduce demand on emergency response during winter storms.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm, Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$20,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Public Works
Implementation Schedule:	Within 36 months of plan adoption, contingent upon funding
Incorporation into Existing Plans:	Emergency Management Plan - Annex W

2025 ANALYSIS:
Defer to plan update.

	City of Coppell – Previous Action #3
Proposed Action:	Promote National Flood Insurance Program education and purchase of flood insurance.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Increase flood risk awareness and flood insurance coverage; Reduce damage impact on residents after a flood event; Reduce the burden on state and federal resources.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam or Levee Failure
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds (staff time), HMA Grants
Lead Agency/Department Responsible:	City of Coppell Floodplain Administrator, Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Coppell – Previous Action #4
Proposed Action:	Expand education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Promote hazard awareness and protect citizens from potential injuries and damages.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Emergency Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Completed. Ongoing. Defer to plan update.

	City of Coppell – Previous Action #5
Proposed Action:	Continue standards that require the burial of electrical, telephone, cable lines and other utilities in new developments.
BACKGROUND INFORMATION	
Site and Location:	Community-wide new developments
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations - Ongoing

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado, Dam or Levee Failure, Flood, Hail, Lightning, Winter Storm, Wildfire
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	N/A – Already in-place
Potential Funding Sources:	N/A
Lead Agency/Department Responsible:	City of Coppell Community Development
Implementation Schedule:	N/A – Already in-place
Incorporation into Existing Plans:	Subdivision Ordinance

2025 ANALYSIS:
Completed.

	City of Coppell – Previous Action #6
Proposed Action:	Bury existing overhead utilities to reduce impact to critical infrastructure and vulnerable residents.
BACKGROUND INFORMATION	
Site and Location:	S. Beltline Rd – E. Beltline to 635; S. Coppell Rd – Sandy Lake to Southwestern; S. Denton Tap – Sandy Lake to Beltline
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado, Dam or Levee Failure, Flood, Hail, Lightning, Winter Storm, Wildfire
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,760,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, contingent upon available funding
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Coppell – Previous Action #7
Proposed Action:	Enhance mass-notification system and capabilities through community outreach subscription and education.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens through improved communications and early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$6,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan - Annex A, B, E

2025 ANALYSIS:
Completed. Ongoing. Defer to plan update.

	City of Coppell – Previous Action #8
Proposed Action:	Install awnings to protect the police vehicle fleet.
BACKGROUND INFORMATION	
Site and Location:	Coppell Police Department
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Protect emergency vehicles and equipment; Ensure continuity of critical services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Hail, Lightning, Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$78,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Police Department
Implementation Schedule:	Within 24 months of plan adoption, contingent upon available funding
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Completed.

	City of Coppell – Previous Action #9
Proposed Action:	Purchase and install additional lightning prediction devices (Thor-guard).
BACKGROUND INFORMATION	
Site and Location:	Life Safety Park / Service Center; Bio-Diversity Education Center; Allen Rd Park
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of death or injury to citizens.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$28,500
Potential Funding Sources:	Local Funds, HMGP, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Parks Department
Implementation Schedule:	Within 24 months of plan adoption, contingent upon available funds
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Completed in the summer of 2023.

	City of Coppell – Previous Action #10
Proposed Action:	Procure and install additional weather station for use by Parks, Public Works and Emergency Management in warning and mitigation decisions.
BACKGROUND INFORMATION	
Site and Location:	Sandy Lake @ Royal; Royal @ W. Bethel; Rolling Oaks @ 400 Freeport Pkwy; Freeport and Wrangler; Denton Tap @ Bethel School; Beltline @ Moore; Sandy Lake @ Moore; Fire Station 2 @ 366 S. MacArthur Blvd.
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of death or injury to citizens.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Thunderstorm Wind, Tornado, Dam or Levee Failure
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$38,400 ($4,800 per location)
Potential Funding Sources:	Local Funds, HMGP, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Public Works
Implementation Schedule:	Within 12-24 months of plan adoption, contingent upon available funding
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Coppell – Previous Action #11
Proposed Action:	Acquire a Public Education Kiosk for disaster education and safety, water conservation, etc.
BACKGROUND INFORMATION	
Site and Location:	Farmers Market
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Promote hazard awareness and protect citizens from potential injuries and damages.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Community Development
Implementation Schedule:	Within 12 months of plan adoption, contingent upon available funding
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Delete action. This project is no longer a priority for the City.

	City of Coppell – Previous Action #12
Proposed Action:	Sustain and enhance water restrictions for lawn and landscape irrigation.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce water consumption city-wide.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds
Lead Agency/Department Responsible:	City of Coppell Community Development
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Municipal Code 3-1-12

2025 ANALYSIS:
Completed.

	City of Coppell – Previous Action #13
Proposed Action:	Enhance and sustain enforcement of requirement for roof tie-downs on new construction.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of wind damages during extreme events; Reduce residents from injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Coppell Community Development
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes

2025 ANALYSIS:
Completed.

	City of Coppell – Previous Action #14
Proposed Action:	Sustain requirement for engineered wind bracing on new commercial and residential construction.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages to structures through improved construction techniques; Reduce recovery efforts for the community after an event.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$0 – Staff Time
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Coppell Community Development
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Local Building Codes

2025 ANALYSIS:
Completed.

	City of Coppell – Previous Action #15
Proposed Action:	Expand the capabilities of the Outdoor Warning System to include automated voice announcements.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens through improved communications and early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$32,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Emergency Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan - Annex A, B, E

2025 ANALYSIS:
Completed.

	City of Coppell – Previous Action #16
Proposed Action:	Add additional outdoor warning siren.
BACKGROUND INFORMATION	
Site and Location:	Fallkirk Neighborhood
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens through improved communications and early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$40,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Emergency Management
Implementation Schedule:	Within 12 months of plan adoption, contingent upon available funding
Incorporation into Existing Plans:	Emergency Management Plan - Annex A, B, E

2025 ANALYSIS:
Completed.

	City of Coppell – Previous Action #17
Proposed Action:	Assess existing structures for retrofit / hardening.
BACKGROUND INFORMATION	
Site and Location:	Various community public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Enhance risk assessment.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Hail, Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$300,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, contingent upon available funding
Incorporation into Existing Plans:	Coppell Continuity of Operations Plan

2025 ANALYSIS:
Defer to plan update.

	City of Coppell – Previous Action #18
Proposed Action:	Retrofit public buildings and critical infrastructure to improve wind mitigation measures and construction elements. This could include structural bracing, straps and clips, anchor bolts, laminated or impact-resistant glass, impact-resistant doors and impact-resistant shutters, and similar.
BACKGROUND INFORMATION	
Site and Location:	Administration Building @ 265 Parkway Blvd.; Service Center Building @ 816 S. Coppell Rd.; Town Center facility @ 255 Parkway Blvd.; Senior Center; CORE facility @ 234 E. Parkway Blvd.; Fire Station 1; Fire Station 2; Fire Station 3
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Hail, Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, contingent upon available funding
Incorporation into Existing Plans:	Coppell Continuity of Operations Plan

2025 ANALYSIS:
Defer to plan update.

	City of Coppell – Previous Action #19
Proposed Action:	Restrict development of areas within the floodplain.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce flood damages and risk of injuries or fatalities through regulated development; Reduce the risk of downstream flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam or Levee Failure
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000 (staff time)
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Coppell Community Development
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Flood Damage Prevention Ordinance, Municipal Code

2025 ANALYSIS:
Completed.

	City of Coppell – Previous Action #20
Proposed Action:	Conduct studies to develop dam inundation maps and models for all dams that affect the City of Coppell.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; reduce risk of damages or injuries through improved building standards; reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam or Levee Failure
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Public Works
Implementation Schedule:	Within 12-24 months of plan adoption, contingent upon available funding
Incorporation into Existing Plans:	Emergency Management Plan, Continuity of Operations Plan

2025 ANALYSIS:
Delete action. The City no longer owns a dam.

	City of Coppell – Previous Action #21
Proposed Action:	Incorporate drought tolerant, fire resistant and xeriscaping practices for existing and new city facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages at public facilities.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Wildfire
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Public Works
Implementation Schedule:	Ongoing, implementation for new structures
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Coppell – Previous Action #22
Proposed Action:	Develop and implement a safe room rebate program for individual safe rooms in single-family residences.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 per safe room
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption, contingent upon available funding
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Completed.

	City of Coppell – Previous Action #23
Proposed Action:	Add rated safe rooms to city owned public and critical facilities
BACKGROUND INFORMATION	
Site and Location:	Administration Building @ 265 Parkway Blvd.; Town Center @ 255 Parkway Blvd.; CORE facility @ 234 E. Parkway Blvd.; Senior Center @ 234 W. Bethel Rd.; Service Center @ 816 S. Coppell Rd.; Animal Shelter @ 821 S. Coppell Rd.; Bio-Diversity Center @ 367 Freeport Pkwy.; Wagonwheel Tennis Center @ 950 Creekview Dr.; Fire Station 1 @ 520 Southwestern Blvd.; Fire Station 2 @ 366 S. MacArthur Blvd.; Fire Station 3 @ 133 E. Parkway Blvd.; Arts Center @ 505 Travis St.
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to staff and customers by providing shelter during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,400,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, contingent upon available funding
Incorporation into Existing Plans:	Emergency Management Plan, Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Coppell – Previous Action #24
Proposed Action:	Develop a post-disaster / recovery public education campaign to educate the public on processes and cautions following disasters.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Promote hazard awareness and protect citizens from potential injuries and damages; Enhance recovery.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness Response and Recovery

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Community Development
Implementation Schedule:	Within 24 months of plan adoption, contingent upon available funding
Incorporation into Existing Plans:	Emergency Response Plan

2025 ANALYSIS:
Defer to plan update.

	City of Coppell – Previous Action #25
Proposed Action:	Promote the use of NOAA All-Hazard Weather Radios by Citizens. Purchase and provide radios at a reduced cost to citizens.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens through improved communications and early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Emergency Management
Implementation Schedule:	Within 24 months of plan adoption, contingent upon available funding
Incorporation into Existing Plans:	Emergency Management Plan - Annex A, E

2025 ANALYSIS:
Defer to plan update.

	City of Coppell – Previous Action #26
Proposed Action:	Maintain Hunterwood Stream Stabilization Project. Installation and maintenance of gabian walls to mitigate stream bank erosion during extreme flood events.
BACKGROUND INFORMATION	
Site and Location:	Grapevine Creek / Hunterwood Park
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of flood damages; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

2025 ANALYSIS:
Defer to plan update.

	City of Coppell – Previous Action #27
Proposed Action:	Implement Streambank Stabilization.
BACKGROUND INFORMATION	
Site and Location:	Community-wide streams
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of flood damages; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Public Works
Implementation Schedule:	Within 12--24 months of plan adoption, contingent upon available funding
Incorporation into Existing Plans:	Drainage Plan

2025 ANALYSIS:
Defer to plan update.

	City of Coppell – Previous Action #28
Proposed Action:	Identify flood-prone and repetitive loss properties and implement actions to reduce or eliminate flooding at identified properties.
BACKGROUND INFORMATION	
Site and Location:	Community-wide high flood risk properties and repetitive loss properties
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages or injuries through flood mitigation at high risk structures; Reduce the need for emergency response in high risk areas; Reduce repetitive flood losses/claims; Reduce community recovery efforts and costs.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam or Levee Failure
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Coppell Public Works
Implementation Schedule:	Within 24-36 months of plan adoption, contingent upon available funding
Incorporation into Existing Plans:	Floodplain Management Plan

2025 ANALYSIS:
Completed.

CITY OF DESOTO

	City of DeSoto – Previous Action #1
Proposed Action:	Install lightning prediction systems in Mosely Park, Grimes Park, Meadowcreek Park and other DeSoto Parks to provide early warning of the possibility of lightning in the immediate area and increase public safety during outdoor activities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide Parks and other outdoor locations
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Avoid losses to life; Reduce potential injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	None
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of DeSoto Parks and Recreation
Implementation Schedule:	Within 12-18 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan; Annex A: Warning, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. The purchase of this equipment could save lives by providing the early warning of the possibility of lightning in the immediate area and increase public safety during outdoor activities.

	City of DeSoto – Previous Action #2
Proposed Action:	Install a combined technology of structural protection devices (lightning rods), arrestors, and grounding to minimize lightning damage to critical facilities and emergency communications infrastructure.
BACKGROUND INFORMATION	
Site and Location:	Community-wide facilities, including Southwest Regional Communications Center (SWRCC) 9-1-1 Dispatch Center
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property; Ensure continuity of services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	None
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of DeSoto Facilities / Building Maintenance, Southwest Regional Communications Center (9-1-1 Dispatch)
Implementation Schedule:	Within 12-18 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. The purchase of this equipment could provide protection of critical infrastructure to prevent damage to city facilities, radio communications infrastructure such as radio repeaters, water towers, and other infrastructure for the possibility of lightning in the immediate area.

	City of DeSoto – Previous Action #3
Proposed Action:	Improve and increase the capacity of storm water system by expanding the Ten Mile Creek downstream channel.
BACKGROUND INFORMATION	
Site and Location:	Ten Mile Creek area
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce losses of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Natural Systems Protection Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), Capital Improvement Program
Lead Agency/Department Responsible:	City of DeSoto Development Service, Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. Improving the storm-water capacity along the Ten Mile Creek areas will minimize future flooding and increase the capacity of storm drainage system that involves Ten Mile Creek.

	City of DeSoto – Previous Action #4
Proposed Action:	Construction of storm shelters and safe rooms in existing and new construction recreational, institutional, commercial and governmental buildings/facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Prevent loss of life. Construction of storm shelters and safe rooms in existing and new construction recreational, institutional and commercial buildings.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce loss of life at new or existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of DeSoto Development Services, Engineering
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances

2025 ANALYSIS:
Defer to plan update. Amended action to “Adopt and enforce new building codes for construction…”

	City of DeSoto – Previous Action #5
Proposed Action:	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of DeSoto Development Services and Emergency Management, Dallas County
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Threats, Hazards Identification and Risk Assessment (regional)

2025 ANALYSIS:
Defer to plan update. The magnitudes of these earthquake events are considered minor. While not injuries no injuries, fatalities or major damage recorded to date, there is still a need to conduct studies and collect data so as to obtain the information and data needed to make the most appropriate decision.

	City of DeSoto – Previous Action #6
Proposed Action:	Incorporate drought tolerant, fire resistant and xeriscaping practices for existing and new city facilities. This program will also be expanded to include residential areas through regulatory and incentive measure mitigate the risk. The program can also include installing water saving equipment in city facilities
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Conserve water and provide mitigation against wildland fire and drought.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Wildfire
Effect on New/Existing Buildings:	None
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of DeSoto Development Services Department / Utility Billing
Implementation Schedule:	Within 12-18 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

	City of DeSoto – Previous Action #7
Proposed Action:	Create and implement a weatherization assistance program to assist the vulnerable population and protect them from Extreme Temperatures / Heat / Extreme Cold.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life during extreme heat or winter weather.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), State and Federal Grants, Private Funds
Lead Agency/Department Responsible:	Dallas County Department of Health and Human Serves, Utility Billing Office, City Health Inspector
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:

Defer to plan update. The Weatherization Assistance Program (WAP) would provide assistance to income eligible households by weatherizing their homes, conserving energy and reducing high utility costs in the process. Eligible applications will be considered for assessments. Each dwelling will be assessed and audited before any work begins. The program could also equip homes with weather stripping, caulking, insulation, repaired or new doors and windows, solar screens, repaired or retrofitted heating and cooling units and duct work.

	City of DeSoto – Previous Action #9
Proposed Action:	Install backup generators and automatic transfer switches (UPS systems) in all city facilities that house critical infrastructure, personnel and equipment to include Desoto Police Department.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities, including DeSoto Police Department
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of DeSoto Police Department, Facilities Department, City Manager's Office; Emergency Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Animal Sheltering Plans

2025 ANALYSIS:
Defer to plan update. The DeSoto Police Department is the facility that provides critical city services to the community and houses the DeSoto Police Department, Regional Jail Facility (Cedar Hill, DeSoto, Duncanville, and Lancaster) provides law enforcement, criminal investigations, support services, code enforcement, SWAT and other critical services to the community each day which requires electrical power at all times.

	City of DeSoto – Previous Action #10
Proposed Action:	Purchase hail and wind resistant window coverings for city facilities (existing and new).
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Prevent future property losses.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to new and existing facilities
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of DeSoto Building Services / Facilities, Emergency Management, Facilities
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. The City will purchase window coverings to protect city facilities' windows from damage from hail and wind damage.

	City of DeSoto – Previous Action #11
Proposed Action:	Improve and Enhance Storm Water Draining capabilities to prevent flooding in flood prone areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide flood prone areas
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce the effects of flooding; Reduce damages to structures and infrastructure; Reduce risk to citizens.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing facilities and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), Capital Improvement Program (CIP)
Lead Agency/Department Responsible:	City of DeSoto Development Services, Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation, and Capital Improvement Plans

2025 ANALYSIS:

Defer to plan update. Stormwater management projects will include:

- Installing, re-routing, or increasing the capacity of a storm drainage system.
- Increasing capacity of stormwater detention and retention basins.
- Increasing dimensions of drainage culverts in flood-prone areas.

	City of DeSoto – Previous Action #12
Proposed Action:	Enhancement of Outdoor Warning Siren System to include communications, security, to provide alert, warning and notification to residents and visitors during all hazards emergencies/disasters.
BACKGROUND INFORMATION	
Site and Location:	Current Outdoor Warning Siren locations: 2319 Bolton Boone; 2035 Kestrel Avenue; 1501 Wintergreen Court; 1136 Harvest Hill Circle (in alley); 829 East Parkerville Road; 416 West Parkerville Road at DeSoto Drive; 433 South Cockrell Hill Road (at Cockrell Hill Elementary School); 515 North Cockrell Hill Road; 1409 North Cockrell Hill Road; 719 North Hampton Road
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Prevents loss of life
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind, Hail, Earthquake, Flood, Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), Capital Improvement Plan
Lead Agency/Department Responsible:	City of DeSoto Fire Department, Emergency Management
Implementation Schedule:	Within 12-18 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation, Annex A: Warning

2025 ANALYSIS:
Defer to plan update. The City of DeSoto currently operates an Outdoor Warning Siren System that consists of 10 sirens located at sites located above. The goal of this mitigation strategy is to provide 100% coverage with less sirens with further radius coverage within the City of with less sirens (current sirens have 1.5 miles coverage and newer sirens have 3 miles coverage) that provide adequate coverage to provide alert, warning and notification to residents, businesses and visitors.

	City of DeSoto – Previous Action #13
Proposed Action:	Reduce Urban Heat Island Effect by distributing cool roof products to home owners that reflect sunlight and heat away from buildings.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce heat. The use of this techniques will not only conserve energy but will also mitigate the effects of extreme heat.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	Homeowners and Business Owners
Lead Agency/Department Responsible:	City of DeSoto Development Services, Building Inspections Department
Implementation Schedule:	Within 24 months of plan adoption.
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances

2025 ANALYSIS:
Defer to plan update. Reduce Urban Heat Island Effect by distributing cool roofing products to homeowners that reflect sunlight and heat away from buildings.

	City of DeSoto – Previous Action #14
Proposed Action:	Buyout structures that are in the floodplain. Land Acquisition for repetitive loss structures.
BACKGROUND INFORMATION	
Site and Location:	Community-wide floodplain, including repetitive loss residences
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce the effects of flooding; Reduce risk to residents.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection (green space)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), State and Federal Grants
Lead Agency/Department Responsible:	City of DeSoto City Administration, Development Services Engineering and Parks and Recreation
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. Remove structures from flood-prone areas to minimize future flood losses by acquiring and demolishing or relocating structures from voluntary property owners.

	City of DeSoto – Previous Action #15
Proposed Action:	Conduct creek and stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.
BACKGROUND INFORMATION	
Site and Location:	Community-wide creeks and streams
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce losses related to flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures an infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of DeSoto Public Works, Engineering
Implementation Schedule:	Within 18-24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

CITY OF DUNCANVILLE

	City of Duncanville – Previous Action #1
Proposed Action:	Install lightning prediction systems in Armstrong park, Harrington Park, Waterview Park, War Memorial Park, Lions Park, Red Bird Park, Penn Springs park, Chris Paris Park, Willow Run Park, Duncanville Recreation Center, and Duncanville Field House to provide early warning of the possibility of lightning in the immediate area and increase public safety during outdoor activities
BACKGROUND INFORMATION	
Site and Location:	Community-wide Parks and other outdoor locations
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Avoid losses to life.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Duncanville Parks and Recreation
Implementation Schedule:	Within 12-18 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan; Annex A: Warning, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. Amend action to say, “Install lightning prediction systems in Waterview Park, War Memorial Park, Penn Springs park, Chris Paris Park, Willow Run Park, Duncanville Recreation Center, and Duncanville Field House to provide early warning of the possibility of lightning in the immediate area and increase public safety during outdoor activities.” The purchase of this equipment could save lives by providing the early warning of the possibility of lightning in the immediate area and increase public safety during outdoor activities.

	City of Duncanville – Previous Action #2
Proposed Action:	Install a combined technology of structural protection devices (lightning rods), arrestors, and grounding to minimize lightning damage to critical facilities and emergency communications infrastructure.
BACKGROUND INFORMATION	
Site and Location:	Community public facilities, including communications infrastructure
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Duncanville Facilities / Building Maintenance, Fire Department, Police Department, Public Works
Implementation Schedule:	Within 12-18 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. Amend action to include city-wide water infrastructure in the Site and Location. The purchase of this equipment could provide protection of critical infrastructure to prevent damage to city facilities, radio communications infrastructure such as radio repeaters, water towers, and other infrastructure for the possibility of lightning in the immediate area.

	City of Duncanville – Previous Action #3
Proposed Action:	Improve and increase the capacity of storm water system by expending the Ten Mile Creek downstream channel to prevent flooding in flood prone areas to include structural stormwater management projects.
BACKGROUND INFORMATION	
Site and Location:	Ten Mile Creek area
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce losses of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Natural Systems Protection Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), Capital Improvement Program
Lead Agency/Department Responsible:	City of Duncanville Public Works, Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. Improving the storm-water capacity along the Ten Mile Creek areas will minimize future flooding and increase the capacity of storm drainage system that involves Ten Mile Creek.

	City of Duncanville – Previous Action #4
Proposed Action:	Construction of storm shelters and safe rooms in existing and new construction recreational, institutional, commercial and governmental buildings/facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Prevent loss of life. Construction of storm shelters and safe rooms in existing and new construction recreational, institutional and commercial buildings.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Duncanville Building Inspections Department, Engineering, Public Works Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Duncanville – Previous Action #5
Proposed Action:	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Duncanville Public Works and Emergency Management, Dallas County
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Threats, Hazards Identification and Risk Assessment (regional)

2025 ANALYSIS:
Defer to plan update. There is a deficiency in earthquake data for Dallas County as earthquakes have only been experienced (recorded) since 2008. The magnitudes of these earthquake events are considered minor. While not injuries no injuries, fatalities or major damage recorded to date, there is still a need to conduct studies and collect data to obtain the information and data needed to make the most appropriate decision.

	City of Duncanville – Previous Action #6
Proposed Action:	Incorporate drought tolerant, fire resistant and xeriscaping practices for existing and new city facilities. This program will also be expanded to include residential areas through regulatory and incentive measure mitigate the risk. The program can also include installing water saving equipment in city facilities
BACKGROUND INFORMATION	
Site and Location:	Community-wide public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Conserve water and provide mitigation against wildland fire and drought.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Wildfire
Effect on New/Existing Buildings:	Reduce risk to new and existing facilities
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Duncanville Public Works, Water Utilities, Utility Billing, Parks and Recreation
Implementation Schedule:	Within 12-18 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

	City of Duncanville – Previous Action #7
Proposed Action:	Create and implement a weatherization assistance program to assist the vulnerable population and protect them from Extreme Temperatures / Heat / Extreme Cold.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life during extreme heat or winter weather.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winter Storm
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), State and Federal Grants, Private Funds
Lead Agency/Department Responsible:	Dallas County Department of Health and Human Serves, Public Works, Utility Billing Office, City Health Inspector, Code Enforcement
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. The Weatherization Assistance Program (WAP) would provide assistance to income eligible households by weatherizing their homes, conserving energy and reducing high utility costs in the process. Eligible applications will be considered for assessments. Each dwelling will be assessed and audited before any work begins. The program could also equip homes with weather stripping, caulking, insulation, repaired or new doors and windows, solar screens, repaired or retrofitted heating and cooling units and duct work.

	City of Duncanville – Previous Action #8
Proposed Action:	Install backup generators and automatic transfer switches (UPS systems) in all city facilities that house critical infrastructure, personnel and equipment to include existing and new City of Duncanville facilities.
BACKGROUND INFORMATION	
Site and Location:	Duncanville Fire Station #1 & Emergency Operations Center; Duncanville Field House, 1700 S Main St (shelter); Summit Water Pumping Station, 1839 Straus Rd, Cedar Hill, Texas 75104 (owned by the City of Duncanville) to provide critical drinking water to the community
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Duncanville Fire Department, Police Department, Facilities Department, Public Works, City Manager's Office, Emergency Management, Parks and Recreation
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation; Animal Sheltering Plans

2025 ANALYSIS:
Defer to plan update. In progress. Grant work is ongoing for the Summit Pump Station (awarded via HMGP DR-4332). Amend action to include the Duncanville Fire Station #1, Emergency Operations Center, and Duncanville Field House in the Site and Location. The City of Duncanville City Departments provide critical services to the community each day which requires electrical power at all times to provide city governance, firefighting, EMS, law enforcement, drinking water and others.

	City of Duncanville – Previous Action #9
Proposed Action:	Purchase and install hail and wind resistant window coverings for city facilities (existing and new).
BACKGROUND INFORMATION	
Site and Location:	Community-wide public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Prevent future property losses.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Duncanville Building Services, Emergency Management, Facilities, Parks and Recreation
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. The City will purchase window coverings to protect city facilities' windows from damage from hail and wind damage.

	City of Duncanville – Previous Action #10
Proposed Action:	Improve and Enhance Storm Water Draining capabilities to prevent flooding in flood prone areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide flood prone areas
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce the effects of flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), Capital Improvement Program (CIP)
Lead Agency/Department Responsible:	City of Duncanville Public Works, Engineering
Implementation Schedule:	Within 12-24 months of plan adoption.
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation and Capital Improvement Plans

2025 ANALYSIS:

Defer to plan update. Stormwater management projects will include:

- Installing, re-routing, or increasing the capacity of a storm drainage system.
- Increasing capacity of stormwater detention and retention basins.
- Increasing dimensions of drainage culverts in flood-prone areas.

	City of Duncanville – Previous Action #11
Proposed Action:	Improve creek and stream bank stabilization measures with the use of hard / soft engineering techniques that combine low profile rock with vegetative plating to allow for a more natural condition of Bentle Branch and Ten Mile Creek.
BACKGROUND INFORMATION	
Site and Location:	Community-wide creeks and streams
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce losses related to flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Duncanville Public Works, Engineering
Implementation Schedule:	Within 18-24 months of plan adoption.
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. Amend action to include Maulk and Horne Creeks. Improve creek and stream bank stabilization measures with the use of hard / soft engineering techniques that combine low profile rock with vegetative plating to allow for a more natural condition of Bentle Branch and Ten Mile Creek.

	City of Duncanville – Previous Action #12
Proposed Action:	Enhancement of Outdoor Warning Siren System to include communications, security, to provide alert, warning and notification to residents and visitors during all hazards emergencies/disasters to include newer technologies to include NWS polygon activation, wind sensor for high wind activations.
BACKGROUND INFORMATION	
Site and Location:	Current Outdoor Warning Siren locations: Siren #1 - Baseball Field - South end of Highgate Drive; Siren #2 - Cedar Hill Rd, across from Villa Creek Drive; Siren #3 - South side of Danieldale Rd, west of Greenstone LN; Siren #4 - Intersection of E. Center St. & E. Freeman St; Siren #5 - W. Side of Tanglewood Drive, North of E. Center Street; Siren #6 - W. Side of Greenstone LN, North of Middale Rd; Siren #7 - West end of Wind River Drive; Siren #8 - W. Red Bird LN, between Bow Creek Dr. & Jungle Dr.
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Prevents loss of life.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind, Hail, Earthquake, Flood, Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), Capital Improvement Plan
Lead Agency/Department Responsible:	City of Duncanville Fire Department, Emergency Management
Implementation Schedule:	Within 12-18 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation, Annex A: Warning

2025 ANALYSIS:
Defer to plan update.

	City of Duncanville – Previous Action #13
Proposed Action:	Reduce Urban Heat Island Effect by distributing cool roof products to home owners that reflect sunlight and heat away from buildings.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce heat. The use of this techniques will not only conserve energy but will also mitigate the effects of extreme heat.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	Homeowners and Business Owners
Lead Agency/Department Responsible:	City of Duncanville Public Works, Building Inspections Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, local ordinances.

2025 ANALYSIS:
Defer to plan update. Reduce Urban Heat Island Effect by distributing cool roofing products to home owners that reflect sunlight and heat away from buildings.

	City of Duncanville – Previous Action #14
Proposed Action:	Buyout structures that are in the floodplain. Land Acquisition for repetitive loss structures
BACKGROUND INFORMATION	
Site and Location:	Community-wide floodplain, including repetitive loss structures
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce the effects of flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection (green space)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000,000
Potential Funding Sources:	Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Duncanville City Administration, Public Works/ Engineering and Parks and Recreation
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update. Remove structures from flood-prone areas to minimize future flood losses by acquiring and demolishing or relocating structures from voluntary property owners.

	City of Duncanville – Previous Action #15
Proposed Action:	Conduct creek and stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.
BACKGROUND INFORMATION	
Site and Location:	Community-wide creeks and streams
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce losses related to flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Duncanville Public Works, Engineering
Implementation Schedule:	Within 18-24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

CITY OF FARMERS BRANCH

	City of Farmers Branch – Previous Action #1
Proposed Action:	Implement education program to increase awareness of the City's emergency notification system Branch Alert. By increasing awareness, more citizens will sign up and will be notified of Dam issues or Dam failures.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Enhance early notice to increase the number of resident's evacuation from the flood prone area. The structures in the area will still be vulnerable to flooding and damage, but individuals will have more time to prepare.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds
Lead Agency/Department Responsible:	City of Farmers Branch Fire Department, Emergency Management
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Farmers Branch – Previous Action #2
Proposed Action:	Implement education program to discuss ways for homeowners and businesses to institute drought mitigation measures.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Increase awareness to public, increase acreage with drought mitigation measures.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds
Lead Agency/Department Responsible:	City of Farmers Branch Fire Department, Emergency Management
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Farmers Branch – Previous Action #3
Proposed Action:	Increasing awareness by educating citizens regarding the dangers of extreme heat and the steps they can take to protect themselves when extreme temperatures occur.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Increase public awareness, reduce extreme heat injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$30,000
Potential Funding Sources:	Local Funds
Lead Agency/Department Responsible:	City of Farmers Branch Fire Department, Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Farmers Branch – Previous Action #4
Proposed Action:	Acquire and install generators with hard wired quick connection at all critical facilities or replace existing generators with larger generator capacity to meet emergency sheltering and operation needs.
BACKGROUND INFORMATION	
Site and Location:	Farmers Branch Manske Library Branch Connection
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of power to critical facilities, maintain facility functionality.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Earthquake, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000 per facility
Potential Funding Sources:	Local Funds, HMGP, other funding sources
Lead Agency/Department Responsible:	City of Farmers Branch Facilities Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update. In progress. Installation completed at the Branch Connection but is still needed for the library.

	City of Farmers Branch – Previous Action #5
Proposed Action:	Adopt on-site retention basin program to address excessive storm water / firefighting water source. Phase one will be to conduct an engineering study to identify properties that would provide the most benefit to manage runoff.
BACKGROUND INFORMATION	
Site and Location:	Areas of Farmers Branch as identified by the floodplain manger to reduce runoff into the three creeks that manage storm water in the community; namely Farmers Branch, Rawhide, and Cooks creeks.
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce flood risk.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, HMGP, other funding sources
Lead Agency/Department Responsible:	City of Farmers Branch Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Farmers Branch – Previous Action #6
Proposed Action:	Identify flood prone and repetitive loss properties. Identify and implement actions to reduce or eliminate flooding at identified properties
BACKGROUND INFORMATION	
Site and Location:	Community-wide flood prone and repetitive loss properties along Farmers Branch Creek, Rawhide Creek, and Cooks Creek
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce flood damage to properties that have suffered repetitive flood damage and to improve the city's flood management program.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$6,000,000
Potential Funding Sources:	Local Funds, HMGP, other funding sources
Lead Agency/Department Responsible:	City of Farmers Branch Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update. Amended action to include" Complete and update floodplain studies to identify"

	City of Farmers Branch – Previous Action #7
Proposed Action:	Acquire and distribute NOAA weather radios to residents and businesses within the City. Promote the purchase and use of the radios to all citizens.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Increase public awareness, reduce bodily injury to citizens and damage to their property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Flood, Earthquake, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$30,000
Potential Funding Sources:	Local Funds, HMGP, other funding sources
Lead Agency/Department Responsible:	City of Farmers Branch Fire Department, Emergency Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Farmers Branch – Previous Action #8
Proposed Action:	Conduct a comprehensive study of the outdoor warning siren coverage area provided by our eight current sirens and formulate / implement options to improve coverage to the increasingly built out City.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Increase notification to citizens by ensuring efficient siren coverage.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$150,000
Potential Funding Sources:	Local Funds, HMGP, other funding sources
Lead Agency/Department Responsible:	City of Farmers Branch Fire Department, Emergency Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Farmers Branch – Previous Action #9
Proposed Action:	Identify public outdoor areas lacking lightning detection / protection systems. Install systems in those areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce injury to citizens, increase awareness to citizens in the area of lightning so they can take appropriate action.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, HMGP, other funding sources
Lead Agency/Department Responsible:	City of Farmers Branch Parks
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Farmers Branch – Previous Action #10
Proposed Action:	Construct a regional Emergency Operations Center (EOC) for the quad cities of Addison, Carrollton, Coppell, and Farmers Branch at the North Central Texas Communication Center. This is a joint dispatch center for the cities which could house a back-up EOC for the quad cities.
BACKGROUND INFORMATION	
Site and Location:	Dispatch Center current address: 1649 W Frankford #150, Carrollton, 75007, TX
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Increase response capability if primary EOC were impacted and not functional.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Earthquake, Flood, Hail, Tornado, Wildfire, Winter Storm, Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,500,000
Potential Funding Sources:	Local Funds, HMGP, other funding sources
Lead Agency/Department Responsible:	City of Farmers Branch Fire Department, Emergency Management
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan

2025 ANALYSIS:
Delete action. This action is no longer a priority for the City.

	City of Farmers Branch – Previous Action #11
Proposed Action:	Relocate electrical, telephone, cable lines, and other utilities underground throughout the City.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damage to utility lines and reduce impact of extended power outages to both our commercial and residential populations.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Winter Storm, Tornado, Hail, Wildfire
Effect on New/Existing Buildings:	Reduced risk to existing infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Funds, HMGP, other funding sources
Lead Agency/Department Responsible:	City of Farmers Branch Building Inspection
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Farmers Branch – Previous Action #12
Proposed Action:	Build community safe rooms in frequented city facilities to provide individuals quick access to a shelter.
BACKGROUND INFORMATION	
Site and Location:	Farmers Branch Manske Library Recreation Center Aquatics Center/Natatorium Branch Connection City Hall
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Increase access to shelter which reduces the risk of injury to citizens during a tornado.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000 per facility
Potential Funding Sources:	Local Funds, HMGP, other funding sources
Lead Agency/Department Responsible:	City of Farmers Branch Facilities Department
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Farmers Branch – Previous Action #13
Proposed Action:	Work with local and state agencies to determine locations to reduce fuel on public and private lands. Implement fuels reduction program.
BACKGROUND INFORMATION	
Site and Location:	Elm Fork River Bottom/Burke Nature Preserve
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce fuels that could burn in order to reduce the risk of wildfires.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$300,000
Potential Funding Sources:	Local Funds, HMGP, other funding sources
Lead Agency/Department Responsible:	City of Farmers Branch Parks
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Farmers Branch – Previous Action #14
Proposed Action:	Dredge the retention ponds along the creeks within the City to remove silt buildup and increase the pond's storage capacity.
BACKGROUND INFORMATION	
Site and Location:	Farmers Branch Creek, Rawhide Creek, and Cooks Creek within Farmers Branch
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Increase storage capacity of ponds and reduce flood risk to properties located along and adjacent to the creeks.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000 per pond
Potential Funding Sources:	Local Funds, HMGP, other funding sources
Lead Agency/Department Responsible:	City of Farmers Branch Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

2025 ANALYSIS:
Defer to plan update.

	City of Farmers Branch – Previous Action #15
Proposed Action:	Improve the drainage infrastructure along Cooks Creek between Bee Street and Spring Valley. This may involve increasing the capacity of storm water drainage as well as increasing dimensions of drainage culverts.
BACKGROUND INFORMATION	
Site and Location:	Cooks Creek between Bee Street and Spring Valley
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce flood risk to properties located along and adjacent to the creeks.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, HMGP, other funding sources
Lead Agency/Department Responsible:	City of Farmers Branch Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

2025 ANALYSIS:
Completed.

CITY OF GLENN HEIGHTS

	City of Glenn Heights – Previous Action #1
Proposed Action:	Add thick vegetation on public lands along river banks.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of erosion or scour due to flooding; Reduce damages to infrastructure including roadways, sidewalks, bridges, and culverts; Reduce demands on emergency response during high water events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$20,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Glenn Heights Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan

2025 ANALYSIS:
Delete action. The City no longer deems this action a priority.

	City of Glenn Heights – Previous Action #2
Proposed Action:	Educate community on the dangers of low water crossings through the installation of warning signs and promotion of "Turn Around, Don't Drown" Program.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of injuries, fatalities and damages through education and awareness.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Glenn Heights Emergency Manager
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Glenn Heights – Previous Action #3
Proposed Action:	Build safe room shelters throughout the jurisdiction so that residents can reach shelter in less than five minutes.
BACKGROUND INFORMATION	
Site and Location:	Community-wide, including manufactured home parks
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Glenn Heights Public Works
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Glenn Heights – Previous Action #4
Proposed Action:	Adopt ordinance requiring tie-downs for mobile homes; Require manufactured housing be securely anchored to permanent foundations.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages to structures and infrastructure; Reduce risk of injuries or fatalities.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Glenn Heights Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Glenn Heights – Previous Action #5
Proposed Action:	Upgrade undersized stormwater drains and culverts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide drainage system
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Glenn Heights Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan, Drainage Plan

2025 ANALYSIS:
Defer to plan update.

	City of Glenn Heights – Previous Action #6
Proposed Action:	Acquire and distribute NOAA weather radios.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens through improved communications and early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Glenn Heights Emergency Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Glenn Heights – Previous Action #7
Proposed Action:	Obtain certification in the National Weather Service StormReady Program.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Winter Storm, Tornado, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Glenn Heights Emergency Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Glenn Heights – Previous Action #8
Proposed Action:	Require "safe rooms" to be added when constructing new schools, daycares, rest homes and critical care facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing shelter in new critical facilities during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Glenn Heights Administrator
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes

2025 ANALYSIS:
Defer to plan update.

	City of Glenn Heights – Previous Action #9
Proposed Action:	Adopt and implement a program for clearing debris from bridges, drains and culverts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages caused by flooding by maintaining or restoring drainage capacity.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 (annually)
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Glenn Heights Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Glenn Heights – Previous Action #10
Proposed Action:	Develop and implement a safe room rebate program for individual safe rooms in single-family residences.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000 per safe room
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Glenn Heights Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Glenn Heights – Previous Action #11
Proposed Action:	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; Reduce risk of damages or injuries through building code improvements; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Glenn Heights Public Works
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Building Ordinance / Building Codes

2025 ANALYSIS:
Defer to plan update.

	City of Glenn Heights – Previous Action #12
Proposed Action:	Conduct creek and stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.
BACKGROUND INFORMATION	
Site and Location:	Community-wide creeks and streams
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce losses related to flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Glenn Heights Public Works, Building and Codes
Implementation Schedule:	Within 18-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Glenn Heights – Previous Action #13
Proposed Action:	Develop and Implement Community Wildfire Protection Program.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire, Drought, Extreme Heat, Lightning
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Glenn Heights Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Glenn Heights – Previous Action #14
Proposed Action:	Develop and implement a Weatherization Assistance Program (WAP) which provides assistance to income eligible households by weatherizing their homes, conserving energy and reducing high utility cost in the process.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to vulnerable populations during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Funds, Private contributions, State and Federal Grants
Lead Agency/Department Responsible:	City of Glenn Heights Code Enforcement, Health Services
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Delete action. The City no longer deems this action a priority.

TOWN OF HIGHLAND PARK

	Town of Highland Park – Previous Action #1
Proposed Action:	Implement the Hackberry Creek Capital Improvement Program – see Appendix G.
BACKGROUND INFORMATION	
Site and Location:	Area along a 1.2 mile stretch of Hackberry Creek passing through the Town of Highland Park
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Previous losses from flash flooding to vehicles, single family residential, and public infrastructure (i.e. roads/bridges) is in the hundreds of thousands of dollars.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduces risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500,000
Potential Funding Sources:	Local Funds, NCTCOG, Dallas County, State of Texas, FEMA
Lead Agency/Department Responsible:	Town of Highland Park Engineering Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Hackberry Creek Development Report

2025 ANALYSIS:
Defer to plan update. Amend action to change “Appendix G” to “Appendix H” which has been updated.

	Town of Highland Park – Previous Action #2
Proposed Action:	Reconstruct Drainage System and Street in the 4500-4700 blocks of Westside Drive
BACKGROUND INFORMATION	
Site and Location:	4500 – 4700 blocks of Westside Drive
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Previous losses (with incomplete documentation) from flash flooding to vehicles, single and multi-family residential buildings, and office buildings is in the hundreds of thousands of dollars.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$700,000
Potential Funding Sources:	Local Funds, NCTCOG, Dallas County, State of Texas, FEMA
Lead Agency/Department Responsible:	Town of Highland Park Engineering Department
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Hackberry Creek Development Report

2025 ANALYSIS:
Defer to plan update.

	Town of Highland Park – Previous Action #3
Proposed Action:	Construct hard roof over Highland Park Dept. of Public Safety parking lot at Town Hall to protect Town rolling stock from total loss or damage from large hail.
BACKGROUND INFORMATION	
Site and Location:	Highland Park Town Hall 4700 Drexel Drive North Side Parking Lot
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Project would mitigate the potential of losing 16 police vehicles to hail damage, with a total value of about $750,000.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Thunderstorm Wind, Winter Storm, Lightning, Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$360,000
Potential Funding Sources:	Local Funds, NCTCOG, Dallas County, State of Texas, FEMA
Lead Agency/Department Responsible:	Town of Highland Park Department of Public Safety
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	Town of Highland Park – Previous Action #4
Proposed Action:	Create & Enforce Policies requiring police officers to maintain weather awareness and plan for vehicle sheltering options prior to hail affecting their immediate area, along with educating local business owners of the need for temporary shelter for Town vehicles during severe weather.
BACKGROUND INFORMATION	
Site and Location:	Highland Park Town Hall 4700 Drexel Drive
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	This project would reduce the likelihood of losing use of a police vehicle due to the driver failing to plan for sheltering options before a hailstorm occurs. Replacement costs for one fully outfitted police vehicle exceed $60,000.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds
Lead Agency/Department Responsible:	Town of Highland Park Department of Public Safety
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Becomes a part of Department Policy and General Orders regarding emergency response and equipment maintenance

2025 ANALYSIS:
Defer to plan update.

	Town of Highland Park – Previous Action #5
Proposed Action:	Install flood warning systems at Wycliffe and St. Johns consists of stilling wells, Remote Processing Units (RPUs), Dynamic Message Signs (DMS), a radio communication system, and a central computer system.
BACKGROUND INFORMATION	
Site and Location:	Wycliffe and St. Johns
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life; Enhance risk assessment.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$810,000
Potential Funding Sources:	Local Funds
Lead Agency/Department Responsible:	Town of Highland Park Engineer
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency response and equipment maintenance

2025 ANALYSIS:
Delete from plan. The Town no longer considers this a priority.

	Town of Highland Park – Previous Action #6
Proposed Action:	Develop and implement a maintenance protocol for Drainage Systems and Flood Control Structures in and around the Exall and Wycliffe Dams. Improvements may include roadway reconstruction, culvert / bridge construction and associated bank protection and improvements.
BACKGROUND INFORMATION	
Site and Location:	Exall and Wycliff Dams
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of flooding to those within the area of these dams.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam or Levee Failure
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5.5 million
Potential Funding Sources:	Local Funds, State and Federal Grants, Private Businesses
Lead Agency/Department Responsible:	Town of Highland Park Engineer
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency response and equipment maintenance

2025 ANALYSIS:
Delete from plan. The Town no longer considers this a priority.

CITY OF LANCASTER

	City of Lancaster – Previous Action #1
Proposed Action:	Install lightning prediction systems in Lancaster Community Park, Bear Creek Nature Park, Lancaster City Park, Stanford Park, Cedardale park, Jaycee Park, Lancaster Recreation Center, and Lancaster Senior Center to provide early warning of the possibility of lightning in the immediate area and increase public safety during outdoor activities
BACKGROUND INFORMATION	
Site and Location:	Community Parks and outdoor locations
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Avoid losses to life.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Lancaster Quality of Life and Cultural Services, Parks and Recreation
Implementation Schedule:	Within 12-18 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex A: Warning, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #2
Proposed Action:	Install a combined technology of structural protection devices (lightning rods), arrestors, and grounding minimize lightning damage to critical facilities and emergency communications infrastructure
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities, including communications infrastructure
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Lancaster Facilities / Building Maintenance, Fire Department, Police Department, Public Works
Implementation Schedule:	Within 12-18 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #3
Proposed Action:	Improve and increase the capacity of storm water system by expending the Ten Mile Creek downstream channel to prevent flooding in flood prone areas to include structural stormwater management projects
BACKGROUND INFORMATION	
Site and Location:	Ten Mile Creek area
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce losses of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Natural Systems Protection Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), Capital Improvement Program
Lead Agency/Department Responsible:	City of Lancaster Public Works, Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #4
Proposed Action:	Construction of storm shelters and safe rooms in existing and new construction recreational, institutional, commercial and governmental buildings/facilities
BACKGROUND INFORMATION	
Site and Location:	Community public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Prevent loss of life. Construction of storm shelters and safe rooms in existing and new construction recreational, institutional and commercial buildings.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Lancaster Building Inspections Department, Engineering, Development Services
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #5
Proposed Action:	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Lancaster Development Services, Public Works, Emergency Management, Dallas County
Implementation Schedule:	Within 24 months of grant award
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Threats, Hazards Identification and Risk Assessment (regional)

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #6
Proposed Action:	Incorporate drought tolerant, fire resistant and xeriscaping practices for existing and new city facilities. This program will also be expanded to include residential areas through regulatory and incentive measure mitigate the risk. The program can also include installing water saving equipment in city facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Conserve water and provide mitigation against wildland fire and drought.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Lancaster Public Works, Water Utilities / Utility Billing, Parks and Recreation; Fire Department, Facilities Department
Implementation Schedule:	Within 12-18 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #7
Proposed Action:	Create and implement a weatherization assistance program to assist the vulnerable population and protect them from Extreme Temperatures / Heat / Extreme Cold.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life during extreme heat or winter weather.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winter Storm
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), State and Federal Grants, Private Funds
Lead Agency/Department Responsible:	Dallas County Department of Health and Human Serves, Public Works, Utility Billing Office, Development Services, Code Enforcement
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #8
Proposed Action:	Install backup generators and automatic transfer switches (UPS systems) in all city facilities that house critical infrastructure, personnel and equipment to include existing and new City of Lancaster facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide critical facilities, including City Hall; Water Pumping Stations to provide critical drinking water to the community; Public Safety Building; Fire Stations; Municipal Court; Recreation Center (Shelter); Senior Center; Library; Lancaster Airport; Animal Services (Animal Shelter)
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm.
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Lancaster Fire Department, Police Department, Facilities Department, Public Works, City Manager's Office; Emergency Management, Parks and Recreation
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation; Animal Sheltering Plans

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #9
Proposed Action:	Purchase hail and wind resistant window coverings for city facilities (existing and new).
BACKGROUND INFORMATION	
Site and Location:	Community-wide public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Prevent future property losses.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Lancaster Building Services, Emergency Management, Facilities, Parks and Recreation
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #10
Proposed Action:	Conduct creek and stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.
BACKGROUND INFORMATION	
Site and Location:	Community-wide creeks and streams
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce losses related to flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Lancaster Public Works, Engineering
Implementation Schedule:	Within 18-24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #11
Proposed Action:	Improve creek and stream bank stabilization measures with the use of hard / soft engineering techniques that combine low profile rock with vegetative plating to allow for a more natural condition of Ten Mile Creek.
BACKGROUND INFORMATION	
Site and Location:	Community-wide creeks and streams
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce losses related to flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Lancaster Public Works, Engineering
Implementation Schedule:	Within 18-24 months of plan adoption.
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #12
Proposed Action:	Enhancement of Outdoor Warning Siren System to include communications, security, to provide alert, warning and notification to residents and visitors during all hazards emergencies / disasters to include newer technologies to include NWS polygon activation, wind sensor for high wind activations.
BACKGROUND INFORMATION	
Site and Location:	Current Outdoor Warning Siren locations: **2770** W Main St; 200 Wintergreen Rd; 2929 W Bear Creek Rd; 3501 Waters St; 1541 Reindeer Rd; 1221 E Wheatland Rd; 1341 Ten Mile Rd; 626 W Pleasant Run Rd; 2601 Pike Dr.; 1680 W Main St; 640 N Bluegrove Rd; 3030 N Dallas Ave; 211 W Belt Line Rd; 102 Cedardale Rd; 1901 Dewberry Blvd; 641 W Wintergreen Rd; 676 Ferris Rd; 3130 Lomita Dr.; 1913 Lancaster Hutchins Rd; 3445 Sherwood Ave
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Prevents loss of life.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornadoes, High Winds, Hail, Flood, Earthquake, Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), Capital Improvement Plan
Lead Agency/Department Responsible:	City of Lancaster Emergency Management, Fire Department
Implementation Schedule:	Within 12-18 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation, Annex A: Warning

2025 ANALYSIS:
Defer to plan update. Amend action and update the Site and Location to, “Current Outdoor Warning Siren locations: 2770 W Main St; 3130 Lomita;1541 Reindeer Rd; 1541 W. Reindeer Rd.1221; 1341 Ten Mile Rd;2601 Pike Dr.;640 N. Bluegrove; E Wheatland Rd; 1341 Ten Mile Rd; 626 W Pleasant Run Rd; 2601 Pike Dr.; 1680 W Main St; 640 N Bluegrove Rd; 211 W Belt Line Rd; 1901 Dewberry Blvd; 676 Ferris Rd; 1000 Cedardale; 3445 Sherwood Ave.; 1999 Jefferson St.; 2500 Nokomis; 626 W. Pleasant Run Rd.”

	City of Lancaster – Previous Action #13
Proposed Action:	Reduce Urban Heat Island Effect by distributing cool roof products to home owners that reflect sunlight and heat away from buildings.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce heat. The use of this techniques will not only conserve energy but will also mitigate the effects of extreme heat.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	Homeowners and Business Owners
Lead Agency/Department Responsible:	City of Lancaster Public Works, Building Inspections Department, Development Services
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #14
Proposed Action:	Develop a comprehensive loss reduction program, involving buy outs and relocation in areas along Ten Mile Creek to reduce losses and repetitive damages. Buyout structures that are in the floodplain. Land Acquisition for repetitive loss structures.
BACKGROUND INFORMATION	
Site and Location:	Community-wide floodplain and repetitive loss structures along Ten Mile Creek
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce the effects of flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection (green space)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Lancaster City Administration, Public Works, Engineering, Parks and Recreation
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #15
Proposed Action:	Improve and Enhance Storm Water Draining capabilities to prevent flooding in flood prone areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce the effects of flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), Capital Improvement Program (CIP)
Lead Agency/Department Responsible:	City of Lancaster Public Works, Engineering, Development Services
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation and Capital Improvement Plans

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #16
Proposed Action:	Develop a Wildland Fire Urban Interface or Wildland Fire Community Preparedness Plan and participate in Fire Wise Programs.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life and property.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire, Drought
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Lancaster Fire Department, Emergency Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex F: Firefighting, Annex P: Hazard Mitigation; Animal Sheltering Plans

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #17
Proposed Action:	Promote land use program, identify undeveloped land within the floodplain, and assess uses for conservation or recreation. Acquire floodplain and protect environmentally sensitive areas along Ten Mile Creek and watersheds and convert them into open space land.
BACKGROUND INFORMATION	
Site and Location:	Ten Mile Creek area
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	The removal of structures from flood prone areas will minimize future flood losses. This will be done by acquiring and demolishing of structures from voluntary property owners and preserving land subject to repetitive flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection (vacant land)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce the risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Lancaster Development Services, Public Works Department, Parks and Recreation
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation

2025 ANALYSIS:
Defer to plan update.

	City of Lancaster – Previous Action #18
Proposed Action:	Implement safe room rebate program for residents of the City of Lancaster.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Prevent loss of life.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Lancaster Emergency Management, City Administration, Building Inspections Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances

2025 ANALYSIS:
Defer to plan update.

CITY OF RICHARDSON

	City of Richardson – Previous Action #1
Proposed Action:	Utility undergrounding to critical facilities to reduce loss of essential services.
BACKGROUND INFORMATION	
Site and Location:	Richardson City Hall @ 411 W. Arapaho Road Richardson, TX 75080; Richardson Emergency Operations Center @ 1621 E. Lookout Drive Richardson, TX 75082; Richardson Fire Administration and Fire Station 1 @ 300 Greenville Avenue, Richardson, TX 75081; Richardson Police Department Headquarters @ 200 Greenville Avenue Richardson, TX 75081
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outage.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado, Flood, Hail, Lightning, Winter Storm, Wildfire, Earthquake
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$150,000 per mile, $3,000,000 for 20 miles to critical facilities
Potential Funding Sources:	General obligations bonding, utility user's tax, utility connect fees, transfer tax fee (when properties are sold), residential user surcharge, utility providers, ratepayers, city, and/or property owners, State and Federal Grants
Lead Agency/Department Responsible:	City of Richardson Development Services
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive/Master Plan

2025 ANALYSIS:
Defer to plan update. In progress. Most new construction for City facilities follow modern codes requiring underground utility service delivery. New Fire Station 3 was constructed with underground services from the pole to the meter. The Senior Center renovation included underground electrical service from the nearest transformer to the structure. The new Police and Fire Headquarters also has underground services.

	City of Richardson – Previous Action #2
Proposed Action:	Enhance building codes and enforcement, including development of standard for structural sound and asset tie-down.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages to structures through improved construction techniques; Reduce recovery efforts for the community after an event; Reduce risk of injury or fatality to citizens.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000 (staff time)
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Richardson Building Inspection Department
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Adoption of International Building Codes and National Electric Code, and Ordinance 4186

2025 ANALYSIS:
Defer to plan update. In progress. The City of Richardson recently adopted the 2021 National Codes which apply to new and updated projects across the City. Richardson will continue to update codes and ordinances to improve structural resilience.

	City of Richardson – Previous Action #3
Proposed Action:	Land Use Program: Continue to develop and maintain special use parks and green belt areas as flooding mitigation strategies, further prohibiting development in the floodplain. Declare a moratorium on the acceptance of any request for rezoning in flood prone areas other than for rezoning for less intense use.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages to structures through restrictions in development; Reduce recovery efforts for the community after an event; Reduce risk of injury or fatality to citizens; Restore functions of the natural floodplain.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000 staff time
Potential Funding Sources:	General obligations bonding and city budget
Lead Agency/Department Responsible:	City of Richardson Development Services
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Zoning Ordinance (CZO)

2025 ANALYSIS:
Defer to plan update. The City continues to maintain parks and green belt areas that mitigate the flood plain.

	City of Richardson – Previous Action #4
Proposed Action:	Prior to a hazard event, identify lead contacts for serving vulnerable populations and coordinate actions to maximize safety and information sharing. Access and functional needs populations (such as people with physical or developmental disabilities, the extremely elderly, people dependent on auxiliary medical equipment, and others) will require additional measures in order to support alerts, warnings, evacuation, and medical response.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of injury or fatality to citizens; Reduce economic impact of events; Reduce recovery time.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Earthquakes, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, and Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000 (staff time)
Potential Funding Sources:	General obligations bonding and city budget
Lead Agency/Department Responsible:	City of Richardson Community Services
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Essential Support Function (ESF) 2 Communications, Support Function Warning and ESF 15 External Affairs

2025 ANALYSIS:
Completed. ADA Coordinator position was created to handle access and functional needs for a variety of city wide initiatives. This roll is currently filled and funded

	City of Richardson – Previous Action #5
Proposed Action:	Require placement of new critical facilities in low-risk areas. Ensure that no public facilities are proposed for flood hazard areas. Protect new critical facilities to 2 feet above the 500-year flood elevation.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages to critical facilities; Ensure continuity of critical services; Reduce risk of injuries to critical service employees.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000,000
Potential Funding Sources:	State and Federal Grants, General obligations bonding and city budget
Lead Agency/Department Responsible:	City of Richardson Capital Projects
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive/Master Plan

2025 ANALYSIS:
Defer to plan update. The Comprehensive Zoning and Development ordinance requires that any new project comply with no construction of permanent facilities in the Flood Plain.

	City of Richardson – Previous Action #6
Proposed Action:	Assess the long-term cost benefit of standard use of absorbent building material in place of concrete for sidewalks, parking lots etc. Implement the use of this material at new public facilities where feasible.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce impacts of flooding; Reduce damages to structures and infrastructure.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	State and Federal Grants, General obligations bonding and city budget
Lead Agency/Department Responsible:	City of Richardson Capital Projects
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive/Master Plan

2025 ANALYSIS:
Defer to plan update. The City has a landscaping ordinance that helps regulate and improve the ability of commercial properties to reduce flooding impacts. The City is continually looking at new projects and ideas to enhance the ability to reduce flooding risk with absorbent materials.

	City of Richardson – Previous Action #7
Proposed Action:	Promote wildland urban boundary zones to separate developed areas from high-hazard areas.
BACKGROUND INFORMATION	
Site and Location:	Citywide with focus near UTD campus, Breckinridge Park, and Northeastern portions of Richardson which have greater concentration of Wildland Urban Interface
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000 (staff time)
Potential Funding Sources:	City budget (staff time)
Lead Agency/Department Responsible:	City of Richardson Development Services, Fire
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Support Function #4 Fire, Evacuation Plan, International Fire Code (IFC) Section 308.1.6 and 308.2

2025 ANALYSIS:
Defer to plan update. The Richardson Fire Marshal continues to provide fire safety, education, and plans review including sites, buildings, and fire protection systems for new and renovated structures with wildland urban interface.

	City of Richardson – Previous Action #8
Proposed Action:	Participate in Firewise Community designation program, including creation of defensible spaces around homes and neighborhoods to increase the success potential of fire fighters. Actions include removing vegetation immediately adjacent to homes, improving ingress and egress, and replacing flammable structure materials with fire-resistant materials (e.g., decks and roofing).
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of wildfires and the spread of wildfire through education of effective practices and fuels reduction; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$60,000
Potential Funding Sources:	State and Federal Grant Programs and city budget
Lead Agency/Department Responsible:	City of Richardson Fire Department
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Support Function #4 Fire, Evacuation Plan, International Fire Code (IFC) Section 308.1.6 and 308.2

2025 ANALYSIS:
Defer to plan update. In Progress. The City continues to evaluate the potential implementation opportunities for communitywide investments, suggested homeowner actions, and education activities to reduce fire risk. Richardson has maintained an ISO 1 status which lowers insurance premiums.

	City of Richardson – Previous Action #9
Proposed Action:	Install Environmental Sensor Stations (ESS) and Road Weather Information Systems (RWIS) to support winter road maintenance activities, expediting closures when needed, to protect the public.
BACKGROUND INFORMATION	
Site and Location:	Collins Boulevard; Galatyn Parkway overpass; Spring Valley Tunnel
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages and injuries on roadways and bridges during winter storm events through education and awareness programs; Reduce demand on emergency response during winter storms.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$300,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Richardson Office of Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive/Master Plan

2025 ANALYSIS:
Completed and Defer to plan update. In FY 2022, the upgrade/replacement of the current weather stations (ESS) occurred using General Funds. The City of Richardson replaced weather stations (ESS) to provide better monitoring and lightning alerting. Weather stations must be serviced yearly and replaced every 5 years. Richardson will continue to evaluate available funding opportunities to maintain weather stations and systems. The City has not completed a project for road temperature sensors, although the City intends to explore these programs and systems during the next HMP planning period.

	City of Richardson – Previous Action #10
Proposed Action:	Adopt subdivision regulations including installation of permanent address markings to aid in post-incident emergency response, assessment, and expedite recovery processes.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of injuries or fatalities; Expedite recovery efforts.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations - Response

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000 (staff time)
Potential Funding Sources:	General obligations bonding, city budget, and/or property owners
Lead Agency/Department Responsible:	City of Richardson Development Services
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Ordinance 3719 Neighborhood Development Overlay

2025 ANALYSIS:
Completed. Chapter 13, Article VII of the Richardson Ordinances addresses the requirement for residences to have front and rear numbering on the houses. The ordinance also requires that non-residential structures have the address number posted and the person responsible for it.

	City of Richardson – Previous Action #11
Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Promote hazard awareness and protect citizens from potential injuries and damages.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$18,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Richardson Communications Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Essential Support Function (ESF) 2 Communications, Support Function Warning and ESF 15 External Affairs

2025 ANALYSIS:
Defer to plan update. In Progress. Education and awareness programs are ongoing in Richardson. The city uses General Funding and a private sector grant award to provide awareness and outreach materials and staffing for Emergency Management to educate the public regarding hazards and preparedness actions.

	City of Richardson – Previous Action #12
Proposed Action:	Enhance Emergency Operations Center capabilities to improve EOC server room, system redundancies, warning, coordination, situational awareness, and communication abilities with residents, businesses, and community at-large.
BACKGROUND INFORMATION	
Site and Location:	Richardson Emergency Operations Center
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens through improved communications and early warning; Ensure continuity of emergency services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$247,500
Potential Funding Sources:	Hazard Mitigation Grants, Homeland Security Grants, State and Federal Grants, general obligations bonding, city budget, and/or property owners
Lead Agency/Department Responsible:	City of Richardson Office of Emergency Management
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan; Capital Improvement Plan; Essential Support Function (ESF) 2 Communications, Support Function Warning and ESF 15 External Affairs

2025 ANALYSIS:
Defer to plan update. In progress. 2023 – OEM used UASI funding to replace outdated and vulnerable laptops from the EOC laptop cache. The new laptops use modern operating systems and threat monitoring to allow the EOC to function and provide coordination and warning

capabilities. 2023 COR IT Upgraded and replaced the UPS batteries in the EOC data center to meet longevity requirements and improve operational resilience. 2024 – OEM has approved general funding to upgrade the AV system and technology to improve the EOC operational readiness.

	City of Richardson – Previous Action #13
Proposed Action:	Remove structures from flood-prone areas to minimize future flood losses through implementation of drainage improvements, conservation easements, floodwalls, retaining walls, culverts, and stream corridor restoration including elevation, acquisition, and flood-proofing.
BACKGROUND INFORMATION	
Site and Location:	Community-wide high flood risk properties and repetitive loss properties Drainage improvement list is included in Appendix H
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages or injuries through flood mitigation at high-risk structures; Reduce the need for emergency response in high risk areas; Reduce repetitive flood losses/claims; Reduce community recovery efforts and costs.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$82,866,206
Potential Funding Sources:	State and Federal Grants, Hazard Mitigation Grants, general obligations bonding, city budget, and/or property owners
Lead Agency/Department Responsible:	City of Richardson Capital Projects
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Chapter 9 Floodplain Management Ordinance, Stormwater Ordinance, Floodplain Maps, Flood Insurance Studies, Hydrologic Studies, Hydraulic Studies

2025 ANALYSIS:
Defer to plan update. The City of Richardson is working on numerous projects that revolve around drainage and floodplain management – 2024, 2023, 2022, 2021, 2020 Open Channel Maintenance, Breckenridge Park Erosion Control, Cottonwood Creek Detention Basins, FY24 Stormwater Repairs, Lawnmeadow Drainage Project Phase 1, Lois Branch Flood Prevention, Lower Duck Creek Watershed Study, Cottonwood Creek Watershed Study. 2023/2024 City of Richardson applied to BRIC funding for the second phase of the Cottonwood Creek Detention

Basin on the East Fork of Cottonwood Creek. Amend action to change “Appendix H” to “Appendix I” which has been updated.

	City of Richardson – Previous Action #14
Proposed Action:	Improve stormwater management, operations, and maintenance for stream flooding that erodes away bridge supports. Design bridges expansion joints for longer periods of high heat and develop a more robust inspection and maintenance process.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages caused by flooding by maintaining or restoring drainage capacity.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Natural Systems Protection Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Extreme Heat
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 (annually)
Potential Funding Sources:	Hazard Mitigation Grants, general obligations bonding, city budget, and/or property owners
Lead Agency/Department Responsible:	City of Richardson Health Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Stormwater Ordinance, Flood Insurance Studies, Hydrologic Studies, Hydraulic Studies

2025 ANALYSIS:
Defer to plan update. The City of Richardson is working on numerous projects that revolve around drainage and floodplain management – 2024, 2023, 2022, 2021, 2020 Open Channel Maintenance, Breckenridge Park Erosion Control, Cottonwood Creek Detention Basins, FY24 Stormwater Repairs, Lawnmeadow Drainage Project Phase 1, Lois Branch Flood Prevention, Lower Duck Creek Watershed Study, Cottonwood Creek Watershed Study. 2023/2024 City of Richardson applied to BRIC funding for the second phase of the Cottonwood Creek Detention Basin on the East Fork of Cottonwood Creek.

	City of Richardson – Previous Action #15
Proposed Action:	Monitor streams and waterways for potential flooding problems including installation of gauges, sensors, and precipitation measuring sites.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages caused by flooding through improved risk assessment, and early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$86,000
Potential Funding Sources:	Hazard Mitigation Grants, general obligations bonding, city budget, and/or property owners
Lead Agency/Department Responsible:	City of Richardson Health Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Stormwater Ordinance, Flood Insurance Studies, Hydrologic Studies, Hydraulic Studies

2025 ANALYSIS:
Defer to plan update. The City of Richardson has not completed a project for gauges, sensors, or precipitation measuring sites although the City intends to explore these programs and systems during the next HMP planning period.

	City of Richardson – Previous Action #16
Proposed Action:	Increase the City of Richardson's community's rating under the Community Rating System program.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce flood insurance premiums for local residents; Reduce flood risk and build resiliency.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds (staff time), CAP-SSSE
Lead Agency/Department Responsible:	City of Richardson Capital Projects
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	National Flood Insurance Program (NFIP), NFIP Community Rating System, Stormwater Management Plan, Chapter 9 Floodplain Management Ordinance, Stormwater Ordinance, Floodplain Maps, Flood Insurance Studies, Hydrologic Studies, Hydraulic Studies

2025 ANALYSIS:
Completed. The City received CRS rating 7 in July of 2023.

	City of Richardson – Previous Action #17
Proposed Action:	Encourage purchase and use of NOAA all-hazard radios by residents, businesses, faith-based groups, and other large meeting areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens through improved communications and early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000 (staff time)
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Richardson Communications Division
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Essential Support Function (ESF) 2 Communications, Support Function Warning and ESF 15 External Affairs

2025 ANALYSIS:
Defer to plan update. OEM uses general fund obligations to keep a cache of Weather Radios to give away and promote awareness to residents, businesses, faith-based groups, and other large meeting areas. The City uses General Funding and a private sector grant award to provide awareness and staffing for Emergency Management to educate the public to use multiple methods of warning including the NWS recommendation for every household and business to have a NOAA radio.

	City of Richardson – Previous Action #18
Proposed Action:	Implement lightning detection system to increase awareness and warning time.
BACKGROUND INFORMATION	
Site and Location:	Outdoor areas including parks and pools
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of death or injury to residents and visitors.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$11,000 per unit
Potential Funding Sources:	Hazard Mitigation Grants, State and Federal Grant Programs, general obligations bonding, city budget
Lead Agency/Department Responsible:	City of Richardson Parks and Recreation
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Essential Support Function (ESF) 2 Communications, Support Function Warning and ESF 15 External Affairs

2025 ANALYSIS:
Completed and Defer to plan update. In FY 2022 the City of Richardson upgraded lightning detection/weather stations using General Funds to provide better monitoring and lightning alerting. National lightning alerting subscriptions purchased annually using general operating funds and are allocated to Emergency Management staff for weather and special event monitoring. We will have to maintain lightning detection capabilities annually during the next 5-year cycle of this plan so the City would like to keep this in the plan.

	City of Richardson – Previous Action #19
Proposed Action:	Participate and maintain StormReady Community designation in partnership with the National Weather Service.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Winter Storm, Tornado, Hail, Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$32,500
Potential Funding Sources:	Hazard Mitigation Grants, general obligations bonding, city budget
Lead Agency/Department Responsible:	City of Richardson Communications
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Essential Support Function (ESF) 2 Communications, Support Function Warning and ESF 15 External Affairs

2025 ANALYSIS:
Completed and Defer to plan update. In 2023, OEM participated in the renewal process for Storm Ready and passed. We will have to renew Storm Ready again during the next 5-year cycle of this plan so the City would like to keep this in the plan.

	City of Richardson – Previous Action #20
Proposed Action:	Implementation of retrofit, redevelopment, and abatement programs to strengthen existing structures, especially unreinforced masonry buildings. Determine storm vulnerability and complete an exposure assessment of City transportation assets.
BACKGROUND INFORMATION	
Site and Location:	City Hall @ 411 W. Arapaho Road Richardson, TX 75080; Service Center @ 1260 Columbia Drive, Richardson, TX 75081
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,552,000
Potential Funding Sources:	Hazard Mitigation Grants, general obligations bonding, city budget
Lead Agency/Department Responsible:	City of Richardson Capital Projects
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Capital Improvements Plan

2025 ANALYSIS:
Defer to plan update. City of Richardson is in process of rebuilding the New City Hall building. This design will incorporate more stringent building standards, environmental factors, and new construction codes that will reduce risk. In addition, The City of Richardson recently completed a site assessment at the Service Center and various risks are being addressed.

	City of Richardson – Previous Action #21
Proposed Action:	Prioritize retrofitting, redevelopment, and increasing resiliency of public housing.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages at public housing; Reduce risk of injury to residents.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Winter Storm
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$550,000
Potential Funding Sources:	Hazard Mitigation Grants, general obligations bonding, city budget, and/or property owners
Lead Agency/Department Responsible:	City of Richardson Capital Projects
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Capital Improvements Plan

2025 ANALYSIS:
Defer to plan update. The City follows the currently adopted building codes to increase resiliency of housing.

	City of Richardson – Previous Action #22
Proposed Action:	Installation of safe room structures in residential homes through implementation of Richardson Safe Room Rebate Program.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing in-home safe rooms in high risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	50% of cost (up to $3,000) per shelter. Number of shelters to be determined by award.
Potential Funding Sources:	Hazard Mitigation Grants, State and Federal Grant Programs, general obligations bonding, city budget, and/or property owners
Lead Agency/Department Responsible:	City of Richardson Capital Projects
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Essential Support Function (ESF) 2 Communications, Support Function Warning and ESF 15 External Affairs

2025 ANALYSIS:
Completed. The NCTCOG has discontinued the Safe Room Rebate Program. During it's time, Richardson received funding for 23 safe rooms.

	City of Richardson – Previous Action #23
Proposed Action:	Develop warming / cooling shelters, including generators and supplies.
BACKGROUND INFORMATION	
Site and Location:	Heights and Huffhines Recreation Centers
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to vulnerable populations during extreme heat or winter storms.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$30,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Richardson Office of Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, Essential Support Function (ESF) 1 Transportation, ESF 3 Public Works and Engineering, and ESF 15 External Affairs

2025 ANALYSIS:
Defer to plan update. 2023 OEM Applied for Fire Station Generators for Station 5 and 6, these stations are used for their lobbies as warming centers or cooling centers in extreme weather. This was done under the Post Fire Mitigation program. No funds have been obligated yet. Using annual general funding, OEM has continually purchased and updated multiple warming and cooling center go kits and shelter supplies. OEM keeps supplies ready and on hand to provide and coordinate emergency shelter when needed.

	City of Richardson – Previous Action #24
Proposed Action:	Implement drought tolerant landscape design through measures such as incorporating drought tolerant or xeriscape practices into landscape ordinances to reduce dependence on irrigation.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce water usage throughout the community.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Richardson Capital Projects
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Landscape Ordinance

2025 ANALYSIS:
Defer to plan update. Parks department assesses the nature of new landscape installations and designs to include drought and energy efficient landscaping per industry standard recommendations. Parks will continue to utilize energy efficient and drought tolerant projects to improve sustainability.

	City of Richardson – Previous Action #25
Proposed Action:	Improve water facilities resiliency by reducing the criticality and improving the condition of these facilities. Create redundancies, replace outdated electrical equipment, control valves, yard pipe improvements, and reduce the need for frequent staff intervention through the installation of sloped roofs to prevent facility flooding and protect life and property from extended water outages.
BACKGROUND INFORMATION	
Site and Location:	Northside Distribution and Transfer Pump Station, 1201 Point North Pkwy, Richardson, TX 75080; Eastside Ground Storage Tank, Northside North Ground Storage Tank; Westside Distribution Pump Station, 101 N. Cottonwood Dr., Richardson, TX 75080; Eastside Ground Storage Tank, 3306 Apollo Rd, Richardson, TX 75044; Shiloh Pump Station and Shiloh Ground Storage Tank, 2600 Shiloh Road, Richardson, TX 75082; Westside Ground Storage Tank, Northside South Ground Storage Tank; Eastside Pump Station #1, 3306 Apollo Rd, Richardson, TX 75044; Eastside Pump Station #2, 3306 Apollo Rd, Richardson, TX 75044; Custer Pump Station, 701 W Renner Rd, Richardson, TX 75080
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Life safety and health, Infrastructure, Economic $13,186,700 / $15,296,137
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$13,186,700
Potential Funding Sources:	Hazard Mitigation Grants, general obligations bonding, city budget, and/or property owners
Lead Agency/Department Responsible:	City of Richardson Public Services
Implementation Schedule:	Within 60 months of plan adoption
Incorporation into Existing Plans:	Public Services Resiliency Plan, Water Service Emergency Response Plan, Floodplain Maps, Flood Insurance Studies, Hydrologic Studies, Hydraulic Studies

2025 ANALYSIS:
In Progress, 2021, 2022 OEM Applied for BRIC Grant Funding for the Shiloh, East Side, and West Side Pump Stations, funding has not been obligated. The City is also working on bond

funded projects such as the 825 pressure zone improvements, Eastside 5.0 MG ground storage tank, Floyd Road Large Valve Replacement, Ruth Young Park Waterline, and Surge Tank rehab.

	City of Richardson – Previous Action #26
Proposed Action:	Conduct stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.
BACKGROUND INFORMATION	
Site and Location:	Community-wide streams
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce losses related to flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Richardson Development Services and Capital Projects
Implementation Schedule:	Within 18-24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update. The City of Richardson is working on numerous projects that revolve around drainage and floodplain management – 2024, 2023, 2022, 2021, 2020 Open Channel Maintenance, Breckenridge Park Erosion Control, Cottonwood Creek Detention Basins, FY24 Stormwater Repairs, Lawnmeadow Drainage Project Phase 1, Lois Branch Flood Prevention, Lower Duck Creek Watershed Study, Cottonwood Creek Watershed Study. 2023/2024 City of Richardson applied to BRIC funding for the second phase of the Cottonwood Creek Detention Basin on the East Fork of Cottonwood Creek.

CITY OF ROWLETT

	City of Rowlett – Previous Action #1
Proposed Action:	Install carports at critical facilities for emergency vehicles.
BACKGROUND INFORMATION	
Site and Location:	Fleet yard, police department headquarters, fire administration, and all fire stations.
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to critical assets; Ensure continuity of emergency services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Thunderstorm Wind, Extreme Heat, Lightning, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rowlett Public Works, Police, and Fire Department
Implementation Schedule:	Within 36 months of plan adoption and funding availability
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Rowlett – Previous Action #2
Proposed Action:	Acquire and install generator with hard wired quick connections at the Rowlett Community Center.
BACKGROUND INFORMATION	
Site and Location:	Rowlett Community Center, 5300 Main Street, Rowlett, TX 75088
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Provide power for critical facilities during power outages and ensure continuity of critical services.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winter Storm, Flood, Tornado, Wildfire, Thunderstorm Wind, Earthquake
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$350,000
Potential Funding Sources:	Local Funds, HMGP, CDBG, Bond Funding
Lead Agency/Department Responsible:	City of Rowlett Public Works
Implementation Schedule:	Within 12 months of plan adoption and funding availability
Incorporation into Existing Plans:	Emergency Operations Plan

2025 ANALYSIS:
Completed through local funds.

	City of Rowlett – Previous Action #3
Proposed Action:	Earthquake Vulnerability Study. Adopt new building standards as indicated by the findings of the study.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improved risk assessment; Improved construction techniques.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake
Effect on New/Existing Buildings:	Reduce risk to future structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	Local Funds, PDM
Lead Agency/Department Responsible:	City of Rowlett Community Development
Implementation Schedule:	Within 12-24 months of plan adoption and funding availability
Incorporation into Existing Plans:	Adoption of new building standards

2025 ANALYSIS:
Defer to plan update.

	City of Rowlett – Previous Action #4
Proposed Action:	Perform a comprehensive flood risk study. This flood risk study is meant to incorporate all existing studies and flood risk data (e.g., Flood Insurance Studies, USACE Lake Lavon EAP, etc.) and obtain new data (e.g., LIDAR), to determine City wide and parcel-specific flood risk from Dam or Levee Failure and excessive rainfall.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; reduce risk of damages or injuries through improved building standards; reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, PDM, HMGP, TWDB
Lead Agency/Department Responsible:	City of Rowlett Public Works
Implementation Schedule:	Within 12-24 months of plan adoption and funding availability
Incorporation into Existing Plans:	Floodplain Ordinance

2025 ANALYSIS:
Defer to plan update. Amended new action to include " Designate and maintain a certified floodplain manager to perform a comprehensive risk study."

	City of Rowlett – Previous Action #5
Proposed Action:	Update and install lightning detection and notification systems at all large City parks.
BACKGROUND INFORMATION	
Site and Location:	Springfield Park, Katy Railroad Park, Herfurth Park, Pecan Grove Park/Wet Zone, and Community Park
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of death or injury to residents and visitors.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$75,000
Potential Funding Sources:	Local Funds, (CIP), HMGP, Bond
Lead Agency/Department Responsible:	City of Rowlett Parks and Recreation
Implementation Schedule:	Within 24 months of plan adoption and funding availability
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update. In progress. All completed except for Katy Railroad Park. Amend Site and Location to remove Katy Railroad Park.

	City of Rowlett – Previous Action #6
Proposed Action:	Merritt Road Interconnector - Phase 2. The design phase for this project is to be completed by the end of summer 2019. This four-lane project is designed to decrease congestion for approximately 8,000 daily commuters (as of May 2019) on, eliminate the flood risk for, and increase the capacity for evacuations through the existing Liberty Grove Road, which passes over Muddy Creek. The road will provide elevated protection over approximately 2,000 linear feet of an existing Special Flood Hazard Area (SFHA).
BACKGROUND INFORMATION	
Site and Location:	Liberty Grove Road to President George Bush Turnpike over Muddy Creek.
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of flood damages to critical infrastructure; Reduce risk to residents during extreme flood events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$12,000,000
Potential Funding Sources:	Local Funds, (CIP), HMGP, Bond Funding
Lead Agency/Department Responsible:	City of Rowlett Public Works
Implementation Schedule:	Within 24-36 months of plan adoption and funding availability
Incorporation into Existing Plans:	Capital Improvement Plan and Master Thoroughfare Plan

2025 ANALYSIS:
Completed.

	City of Rowlett – Previous Action #7
Proposed Action:	Update and expand the City's Outdoor Warning Siren (OWS) system.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens through improved communications and early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$450,000
Potential Funding Sources:	Local Funds, (CIP), HMGP, PDM, Bond
Lead Agency/Department Responsible:	City of Rowlett OEM
Implementation Schedule:	Within 12-24 months of plan adoption and funding availability
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Completed.

	City of Rowlett – Previous Action #8
Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Promote hazard awareness and protect citizens from potential injuries and damages.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Rowlett OEM and PIO
Implementation Schedule:	Within 12 months of plan adoption and funding availability
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Rowlett – Previous Action #9
Proposed Action:	Implement a grant program for the hail- and / or wind-resistance enhancement of residential roofing.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages to residential structures.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$250,000
Potential Funding Sources:	Local Funds, HMGP, CDBG-DR / CDBG-MIT
Lead Agency/Department Responsible:	City of Rowlett OEM and Community Development
Implementation Schedule:	Within 24-36 months of plan adoption and funding availability
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Rowlett – Previous Action #10
Proposed Action:	Develop and implement a safe room rebate program for individual safe rooms in single-family residences.
BACKGROUND INFORMATION	
Site and Location:	Community-wide non-rental single-family homes
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000 rebate max + $150 administrative cost per rebate
Potential Funding Sources:	Local Funds, HMGP, State and Federal Grants
Lead Agency/Department Responsible:	City of Rowlett OEM
Implementation Schedule:	Within 12-24 months of plan adoption and funding availability
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Completed.

	City of Rowlett – Previous Action #11
Proposed Action:	Wildfire vulnerability study.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Enhanced risk assessment; Improved land management.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	Local Funds, PDM
Lead Agency/Department Responsible:	City of Rowlett Fire Department and Community Development
Implementation Schedule:	Within 24 months of plan adoption and funding availability
Incorporation into Existing Plans:	CWPP

2025 ANALYSIS:
Defer to plan update.

	City of Rowlett – Previous Action #12
Proposed Action:	Construct a hardened, hazard-resistant public safety complex.
BACKGROUND INFORMATION	
Site and Location:	Location to be built on City-owned land
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to critical assets and ensure continuity of emergency services
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$30,000,000
Potential Funding Sources:	Local Funds, HMGP, Bonds
Lead Agency/Department Responsible:	City of Rowlett Public Works, Police Department, Fire Department, Community Development, IT, Office of Emergency Management
Implementation Schedule:	Within 36 months of plan adoption and funding availability
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Completed.

	City of Rowlett – Previous Action #13
Proposed Action:	Storm drain system redirection and improvements at Garner Road, Chiesa Road, and Wayne Way.
BACKGROUND INFORMATION	
Site and Location:	Garner Road, Chiesa Road, and Wayne Way
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$.1. Million
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rowlett Public Works
Implementation Schedule:	Within 24 months of plan adoption and funding availability
Incorporation into Existing Plans:	Drainage Plan

2025 ANALYSIS:
Defer to plan update.

	City of Rowlett – Previous Action #14
Proposed Action:	Installation of grouted rip rock and regaining of bank areas in Lakecrest II, Meadowlark, Blue Quail, and Bob White Street along Chiesa Stream.
BACKGROUND INFORMATION	
Site and Location:	Lakecrest II, Meadowlark, Blue Quail, and Bob White Street along Chiesa Stream
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$700,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rowlett Public Works
Implementation Schedule:	Within 24 months of plan adoption and funding availability
Incorporation into Existing Plans:	Drainage Plan

2025 ANALYSIS:
Defer to plan update.

CITY OF SACHSE

	City of Sachse – Previous Action #1
Proposed Action:	Acquire and distribute NOAA weather radios.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens through improved communications and early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Sachse Emergency Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #2
Proposed Action:	Obtain certification in the National Weather Service StormReady Program.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Winter Storm, Tornado, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Sachse Emergency Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #3
Proposed Action:	Adopt ordinance requiring tie-downs for mobile homes; Require manufactured housing be securely anchored to permanent foundations.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages to structures and infrastructure; Reduce risk of injuries or fatalities.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Sachse City Administrator
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #4
Proposed Action:	Build safe room shelters throughout the jurisdiction so that residents can reach shelter in less than five minutes.
BACKGROUND INFORMATION	
Site and Location:	Community-wide, including manufactured home parks
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Sachse Public Works
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #5
Proposed Action:	Require "safe rooms" to be added when constructing new schools, daycares, rest homes and critical care facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing shelter in new critical facilities during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Sachse City Administrator
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #6
Proposed Action:	Require standards for burial of electrical, telephone, cable lines and other utilities in new developments.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado, Flood, Hail, Lightning, Winter Storm, Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing and future structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Sachse City Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #7
Proposed Action:	Bury existing utility lines.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado, Flood, Hail, Lightning, Winter Storm, Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing and future structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Sachse Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #8
Proposed Action:	Develop and implement a safe room rebate program for individual safe rooms in single-family residences.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000 per safe room
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Sachse City Administrator
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #9
Proposed Action:	Establish city parks along low-lying areas, referenced the Capital Improvement Plan, City of Sachse Park and Open Space Master Plan and Building Restrictions to reduce losses and repetitive damage.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages from flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Sachse Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #10
Proposed Action:	Purchase and install new sirens to cover expanding population and cover the entire jurisdiction. The sirens will be narrow banded updated sirens that will help improve communication as well as meet the regulations.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of injurie through early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind, Hail, Flood, Earthquake, Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Sachse Office of Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Completed in 2024.

	City of Sachse – Previous Action #11
Proposed Action:	Install lightning prediction systems around Parks and Schools to provide advanced warning to patrons in the event of lightning strikes.
BACKGROUND INFORMATION	
Site and Location:	Community facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMPG)
Lead Agency/Department Responsible:	City of Sachse Office of Emergency Management, Parks and Recreation, Public Works
Implementation Schedule:	Within 24 months from plan adoption.
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Completed through local funds.

	City of Sachse – Previous Action #12
Proposed Action:	Coordinate with dam owners to attain proper inundation studies for dam safety and establish / implement action items which prove to be more cost efficient.
BACKGROUND INFORMATION	
Site and Location:	Community-wide dam hazard areas
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; reduce risk of damages or injuries through improved building standards; reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Sachse Public Works, Office of Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan, Flood Damage Prevention Ordinance, EAP

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #13
Proposed Action:	Make Improvements to the Stormwater Drainage System Capacity at specific problem areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide flood hazard areas
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages or injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1 Million
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Sachse Engineering
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan, Flood Damage Prevention Ordinance

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #14
Proposed Action:	Conduct a Flood Protection Study to determine the most appropriate mitigation actions to alleviate the inundation of multiple arterial thoroughfares near Long Branch of Muddy Creek.
BACKGROUND INFORMATION	
Site and Location:	Long Branch of Muddy Creek
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages or injuries from flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$150,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Sachse Engineering
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan, Flood Damage Prevention Ordinance, Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #15
Proposed Action:	Buyout structures that are in the floodplain. These include properties on Woodbridge Parkway, Sachse and Merritt Roads.
BACKGROUND INFORMATION	
Site and Location:	Community-wide floodplain, including repetitive loss residences
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce the effects of flooding; Reduce risk to residents.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection (green space)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.5 Million
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), State and Federal Grants
Lead Agency/Department Responsible:	City of Sachse Administration, Public Works, Building and Code Departments
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #16
Proposed Action:	Conduct creek and stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.
BACKGROUND INFORMATION	
Site and Location:	Community-wide creeks and streams
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce losses related to flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	City of Sachse Public Works, Building and Codes
Implementation Schedule:	Within 18-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #17
Proposed Action:	Implement water-wise program for the City of Sachse. This program will include purchasing water saving equipment and fixtures in all City facilities such as low flow fixtures, greywater reuse systems, and drought tolerant landscaping.
BACKGROUND INFORMATION	
Site and Location:	Community-wide public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce water usage at public facilities. Water is an increasingly expensive resource especially during drought. Reducing water consumption is one of the easiest and most inexpensive ways of achieving cost savings.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Sachse Permits and Inspections
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #18
Proposed Action:	Participate in Firewise Community designation program, including creation of defensible spaces around homes and neighborhoods to increase the success potential of fire fighters. Actions include removing vegetation immediately adjacent to homes, improving ingress and egress, and replacing flammable structure materials with fire-resistant materials (e.g., decks and roofing).
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of wildfires and the spread of wildfire through education of effective practices and fuels reduction; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$60,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Sachse Code Enforcement and Health Services
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #19
Proposed Action:	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; Reduce risk of damages or injuries through building code improvements; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Sachse Public Works
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Building Ordinance / Building Codes

2025 ANALYSIS:
Defer to plan update.

	City of Sachse – Previous Action #20
Proposed Action:	Upgrade Outdoor Warning System.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages to new structures and reduce injuries/loss of life
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$170,000
Potential Funding Sources:	Local Funds, Federal and State Grants
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan – Support Function - Warning

2025 ANALYSIS:
Defer to plan update.

CITY OF SEAGOVILLE

	City of Seagoville – Previous Action #1
Proposed Action:	Acquire and distribute NOAA weather radios.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens through improved communications and early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam or Levee Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Seagoville City Administrator
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Seagoville – Previous Action #2
Proposed Action:	Obtain certification in the National Weather Service StormReady Program.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Winter Storm, Tornado, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Seagoville City Administrator
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Seagoville – Previous Action #3
Proposed Action:	Adopt and implement a program for clearing debris from bridges, drains and culverts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages caused by flooding by maintaining or restoring drainage capacity.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 (annually)
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Seagoville City Administrator
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes/Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Seagoville – Previous Action #4
Proposed Action:	Add thick vegetation to public lands along riverbanks.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of erosion or scour due to flooding; Reduce damages to infrastructure including roadways, sidewalks, bridges, and culverts; Reduce demands on emergency response during high water events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing and future structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$20,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Seagoville Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Seagoville – Previous Action #5
Proposed Action:	Educate community on the dangers of low water crossings through the installation of warning signs and promotion of "Turn Around, Don't Drown" Program.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of injuries, fatalities and damages through education and awareness.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Seagoville Emergency Manager
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Seagoville – Previous Action #6
Proposed Action:	Conduct public education program on fire risks and wildland fire mitigation, with the assistance of the Texas Forest Service.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	CWPP

2025 ANALYSIS:
Defer to plan update.

	City of Seagoville – Previous Action #7
Proposed Action:	Install warning signs at hazardous bridges and roadways subject to ice.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages and injuries on roadways and bridges during winter storm events through education and awareness programs; Reduce demand on emergency response during winter storms.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Seagoville Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Seagoville – Previous Action #8
Proposed Action:	Educate citizens on mitigation measures to prevent frozen pipes; Educate homeowners on carbon monoxide monitors/alarms.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages and injuries through mitigation education and awareness.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Seagoville Emergency Manager
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	City of Seagoville – Previous Action #9
Proposed Action:	Build safe room shelters throughout the jurisdiction so that residents can reach shelter in less than five minutes.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing shelter in high risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Seagoville Public Works
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Seagoville – Previous Action #10
Proposed Action:	Develop and implement a safe room rebate program for individual safe rooms in single-family residences.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000 per safe room
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Seagoville City Administrator
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Seagoville – Previous Action #11
Proposed Action:	Develop and implement a Weatherization Assistance Program (WAP) which provides assistance to income eligible households by weatherizing their homes, conserving energy and reducing high utility cost in the process.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to vulnerable populations during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winder Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, Private contributions, State and Federal Grants
Lead Agency/Department Responsible:	City of Seagoville Code Enforcement and Health Services
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Seagoville – Previous Action #12
Proposed Action:	Buyout or remaining structures that are in the floodplain.
BACKGROUND INFORMATION	
Site and Location:	Community-wide floodplain
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce the effects of flooding; Reduce risk to residents.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection (green space)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP), State and Federal Grants
Lead Agency/Department Responsible:	City of Seagoville Administration, Public Works, Building and Codes Departments
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

TOWN OF SUNNYVALE

	Town of Sunnyvale – Previous Action #1
Proposed Action:	Acquire and distribute NOAA weather radios.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens through improved communications and early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Sunnyvale Emergency Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	Town of Sunnyvale – Previous Action #2
Proposed Action:	Obtain certification in the National Weather Service StormReady Program.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Winter Storm, Tornado, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	Town of Sunnyvale Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Delete action. The Town no longer considers this a priority.

	Town of Sunnyvale – Previous Action #3
Proposed Action:	Restrict future development in high-risk areas. Implement a program that preserves floodplains as Open Space by developing an open space acquisition, reuse, and preservation plan targeting hazard areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages to new structures and infrastructure through building restrictions in high risk areas.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Wildfire
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	Town of Sunnyvale Manager
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update.

	Town of Sunnyvale – Previous Action #4
Proposed Action:	Require "safe rooms" to be added when constructing new schools, daycares, rest homes and critical care facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing shelter in new critical facilities during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	Town of Sunnyvale Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes

2025 ANALYSIS:
Defer to plan update.

	Town of Sunnyvale – Previous Action #5
Proposed Action:	Adopt and implement a program for clearing debris from bridges, drains and culverts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages caused by flooding by maintaining or restoring drainage capacity.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 (annually)
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Sunnyvale Manager, Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update. In progress.

	Town of Sunnyvale – Previous Action #6
Proposed Action:	Upgrade undersized stormwater drains and culverts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide drainage system
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Sunnyvale Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan, Drainage Plan

2025 ANALYSIS:
Defer to plan update. In progress.

	Town of Sunnyvale – Previous Action #7
Proposed Action:	Add building insulation to walls and attics and wrap/insulate pipes at public facilities.
BACKGROUND INFORMATION	
Site and Location:	Community public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages at public buildings resulting from freezing temperatures; Reduce energy consumption and costs during extreme temperatures.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$250,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Sunnyvale Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Delete action. The Town no longer considers this a priority.

	Town of Sunnyvale – Previous Action #8
Proposed Action:	Undertake a comprehensive study of flood risk and reduction alternatives, with the assistance of the US Army Corps of Engineers. Adopt or revise flood damage prevention ordinance to include flood risk areas identified in the study. This study will cover all incorporated and unincorporated areas of the county that currently have limited studies with no determined base flood elevations as well as unmapped areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide flood hazard areas
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; reduce risk of damages or injuries through improved building standards; reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations (for unmapped or limited study areas)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Sunnyvale Floodplain Manager
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan, Flood Damage Prevention Ordinance

2025 ANALYSIS:
Delete action. The Town no longer considers this a priority.

	Town of Sunnyvale – Previous Action #9
Proposed Action:	Build safe room shelters throughout the jurisdiction so that residents can reach shelter in less than five minutes.
BACKGROUND INFORMATION	
Site and Location:	Community-wide, including manufactured home parks
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing shelter in high risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Sunnyvale Public Works
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	Town of Sunnyvale – Previous Action #10
Proposed Action:	Develop and implement a safe room rebate program for individual safe rooms in single-family residences.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000 per safe room
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Sunnyvale Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Delete action. The Town no longer considers this a priority.

	Town of Sunnyvale – Previous Action #11
Proposed Action:	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; Reduce risk of damages or injuries through building code improvements; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Sunnyvale Public Works
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update.

	Town of Sunnyvale – Previous Action #12
Proposed Action:	Develop and implement a Weatherization Assistance Program (WAP) which provides assistance to income eligible households by weatherizing their homes, conserving energy and reducing high utility cost in the process.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to vulnerable populations during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, Private contributions, State and Federal Grants
Lead Agency/Department Responsible:	Town of Sunnyvale Code Enforcement and Health Services
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Delete action. The Town no longer considers this a priority.

	Town of Sunnyvale – Previous Action #13
Proposed Action:	Protect critical infrastructure that is located in the floodplain.
BACKGROUND INFORMATION	
Site and Location:	Critical infrastructure in the floodplain
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Sunnyvale Development Services
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	Town of Sunnyvale – Previous Action #14
Proposed Action:	Install lightning prediction systems around Parks and Schools to provide advanced warning to patrons in the event of lightning strikes.
BACKGROUND INFORMATION	
Site and Location:	Community facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce loss of life.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMPG)
Lead Agency/Department Responsible:	Town of Sunnyvale Development Services, Public Works, Fire Department
Implementation Schedule:	Within 24 months from plan adoption.
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	Town of Sunnyvale – Previous Action #15
Proposed Action:	Participate in Firewise Community designation program, including creation of defensible spaces around homes and neighborhoods to increase the success potential of fire fighters. Actions include removing vegetation immediately adjacent to homes, improving ingress and egress, and replacing flammable structure materials with fire-resistant materials (e.g., decks and roofing).
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of wildfires and the spread of wildfire through education of effective practices and fuels reduction; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$60,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Sunnyvale Development Services
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Delete action. The Town no longer considers this a priority.

	Town of Sunnyvale – Previous Action #16
Proposed Action:	Implement water-wise program for the Town of Sunnyvale. This program will include purchasing water saving equipment and fixtures in all Town facilities such as low flow fixtures, greywater reuse systems, and drought tolerant landscaping.
BACKGROUND INFORMATION	
Site and Location:	Community-wide public facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce water usage at public facilities. Water is an increasingly expensive resource especially during drought. Reducing water consumption is one of the easiest and most inexpensive ways of achieving cost savings.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Sunnyvale Development Services
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update.

	Town of Sunnyvale – Previous Action #17
Proposed Action:	Conduct stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.
BACKGROUND INFORMATION	
Site and Location:	Community-wide creeks and streams
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce losses related to flooding.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, Hazard Mitigation Grant Program (HMGP)
Lead Agency/Department Responsible:	Town of Sunnyvale Public Works, Building and Code Departments
Implementation Schedule:	Within 18-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update. In progress.

	Town of Sunnyvale – Previous Action #18
Proposed Action:	Conduct studies to develop inundation maps for Lake Ray Hubbard and Duck Creek Tributary and how it affects the Town of Sunnyvale. These studies will be done in coordination with the owners and operators of the dam as well as relevant consultants. Data obtained from the studies will assist the town in developing the most appropriate mitigation actions to save lives and property.
BACKGROUND INFORMATION	
Site and Location:	Lake Ray Hubbard and Duck Creek Tributary
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; reduce risk of damages or injuries through improved building standards; reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Dam or Levee Failure
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Sunnyvale Public Works and Transportation
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan, Flood Damage Prevention Ordinance, EAP

2025 ANALYSIS:
Delete action. The Town no longer considers this a priority.

CITY OF UNIVERSITY PARK

	City of University Park – Previous Action #1
Proposed Action:	Development of Storm Water Master Plan for Watershed #1 including computer model of current system performance, identification of system deficiencies, and recommended improvements.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; Inform effective drainage project decisions to reduce damages to structures and infrastructure.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$300,000
Potential Funding Sources:	Local Funds, HMGP, State and Federal Funding
Lead Agency/Department Responsible:	City of University Park Public Works, City Engineer
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Completed through local funds.

	City of University Park – Previous Action #2
Proposed Action:	Development of Storm Water Master Plan for Watersheds #3 and #5 including computer model of current system performance, identification of system deficiencies, and recommended improvements.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; Inform effective drainage project decisions to reduce damages to structures and infrastructure.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$350,000
Potential Funding Sources:	Local Funds, HMGP, State and Federal Funding
Lead Agency/Department Responsible:	City of University Park Public Works, City Engineer
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of University Park – Previous Action #3
Proposed Action:	Construction of new storm sewer inlets, mains, and underground detention system to reduce flooding in Northeast portion of the City.
BACKGROUND INFORMATION	
Site and Location:	Northeast portion of the City
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$13,200,000
Potential Funding Sources:	Local Funds, HMGP, State and Federal Grants
Lead Agency/Department Responsible:	City of University Park Public Works, City Engineer
Implementation Schedule:	Within 18-36 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan, Drainage Plan

2025 ANALYSIS:
Defer to plan update. In Progress. Phase 1 has been completed, phase 2 and phase 3 are ongoing.

CITY OF WILMER

	City of Wilmer – Previous Action #1
Proposed Action:	Acquire and distribute NOAA weather radios.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens through improved communications and early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer City Administrator
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Delete action. Additional communication capabilities are available.

	City of Wilmer – Previous Action #2
Proposed Action:	Obtain certification in the National Weather Service StormReady Program.
BACKGROUND INFORMATION	
Site and Location:	Community critical facilities
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Winter Storm, Tornado, Hail
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer City Administrator
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update. In progress. Application submitted in 2024.

	City of Wilmer – Previous Action #3
Proposed Action:	Adopt ordinance requiring tie-downs for mobile homes; Require manufactured housing be securely anchored to permanent foundations.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages to structures and infrastructure; Reduce risk of injuries or fatalities.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Wilmer City Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Wilmer – Previous Action #4
Proposed Action:	Strengthen building codes to mandate the use of steel connectors in new and existing construction.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages to structures and infrastructure; Reduce risk of injuries or fatalities.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Wilmer City Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Wilmer – Previous Action #5
Proposed Action:	Upgrade undersized stormwater drains and culverts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide drainage system
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan; Drainage Plan

2025 ANALYSIS:
Defer to plan update. In progress.

	City of Wilmer – Previous Action #6
Proposed Action:	Undertake a comprehensive study of flood risk and reduction alternatives, with the assistance of the US Army Corps of Engineers. Adopt or revise flood damage prevention ordinance to include flood risk areas identified in the study. This study will cover all incorporated and unincorporated areas of the county that currently have limited studies with no determined base flood elevations as well as unmapped areas.
BACKGROUND INFORMATION	
Site and Location:	Community-wide flood hazard areas
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; reduce risk of damages or injuries through improved building standards; reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations (for unmapped or limited study areas)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer Emergency Manager
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan, Flood Damage Prevention Ordinance

2025 ANALYSIS:
Defer to plan update. In progress.

	City of Wilmer – Previous Action #7
Proposed Action:	Implement and enhance an area-wide telephone Emergency Notification System ("Reverse 911").
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens through improved communication and early warning.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake, Flood, Thunderstorm Wind, Winter Storm, Tornado, Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer City Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

2025 ANALYSIS:
Completed.

	City of Wilmer – Previous Action #8
Proposed Action:	Require "safe rooms" to be added when constructing new schools, daycares, rest homes and critical care facilities.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing shelter in new critical facilities during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Wilmer City Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes

2025 ANALYSIS:
Defer to plan update.

	City of Wilmer – Previous Action #9
Proposed Action:	Adopt and implement a program for clearing debris from bridges, drains and culverts.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages caused by flooding by maintaining or restoring drainage capacity.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 (annually)
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer City Manager
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update. In progress. Will be included in updated Emergency Operations Plan.

	City of Wilmer – Previous Action #10
Proposed Action:	Add thick vegetation to public lands along river banks.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of erosion or scour due to flooding; Reduce damages to infrastructure including roadways, sidewalks, bridges, and culverts; Reduce demands on emergency response during high water events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$20,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Floodplain Management Plan

2025 ANALYSIS:
Defer to plan update. In progress.

	City of Wilmer – Previous Action #11
Proposed Action:	Educate community on the dangers of low water crossings through the installation of warning signs and promotion of "Turn Around, Don't Drown" Program.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of injuries, fatalities and damages through education and awareness.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer Floodplain Administrator
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update. In progress.

	City of Wilmer – Previous Action #12
Proposed Action:	Conduct public education program on fire risks and wildland fire mitigation, with the assistance of the Texas Forest Service.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer City Manager
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	CWPP

2025 ANALYSIS:
Defer to plan update. In progress.

	City of Wilmer – Previous Action #13
Proposed Action:	Install warning signs at hazardous bridges and roadways subject to ice.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages and injuries on roadways and bridges during winter storm events through education and awareness programs; Reduce demand on emergency response during winter storms.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update. In progress.

	City of Wilmer – Previous Action #14
Proposed Action:	Educate citizens on mitigation measures to prevent frozen pipes; Educate homeowners on carbon monoxide monitors/alarms.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk of damages and injuries through mitigation education and awareness.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer City Manager
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	N/A

2025 ANALYSIS:
Defer to plan update. In progress.

	City of Wilmer – Previous Action #15
Proposed Action:	Build safe room shelters throughout the jurisdiction so that residents can reach shelter in less than five minutes.
BACKGROUND INFORMATION	
Site and Location:	Community-wide, including manufactured home parks
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing shelter in high risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer Public Works
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan; Capital Improvement Plan

2025 ANALYSIS:
Defer to plan update.

	City of Wilmer – Previous Action #16
Proposed Action:	Develop and implement a safe room rebate program for individual safe rooms in single-family residences.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000 per safe room
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer City Manager
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

2025 ANALYSIS:
Defer to plan update.

	City of Wilmer – Previous Action #17
Proposed Action:	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; Reduce risk of damages or injuries through building code improvements; Reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Earthquake
Effect on New/Existing Buildings:	Reduce risk to new structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer Public Works
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Building Ordinance / Building Codes

2025 ANALYSIS:
Defer to plan update.

	City of Wilmer – Previous Action #18
Proposed Action:	Develop and implement a Weatherization Assistance Program (WAP) which provides assistance to income eligible households by weatherizing their homes, conserving energy and reducing high utility cost in the process.
BACKGROUND INFORMATION	
Site and Location:	Community-wide
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce risk to vulnerable populations during extreme weather events.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

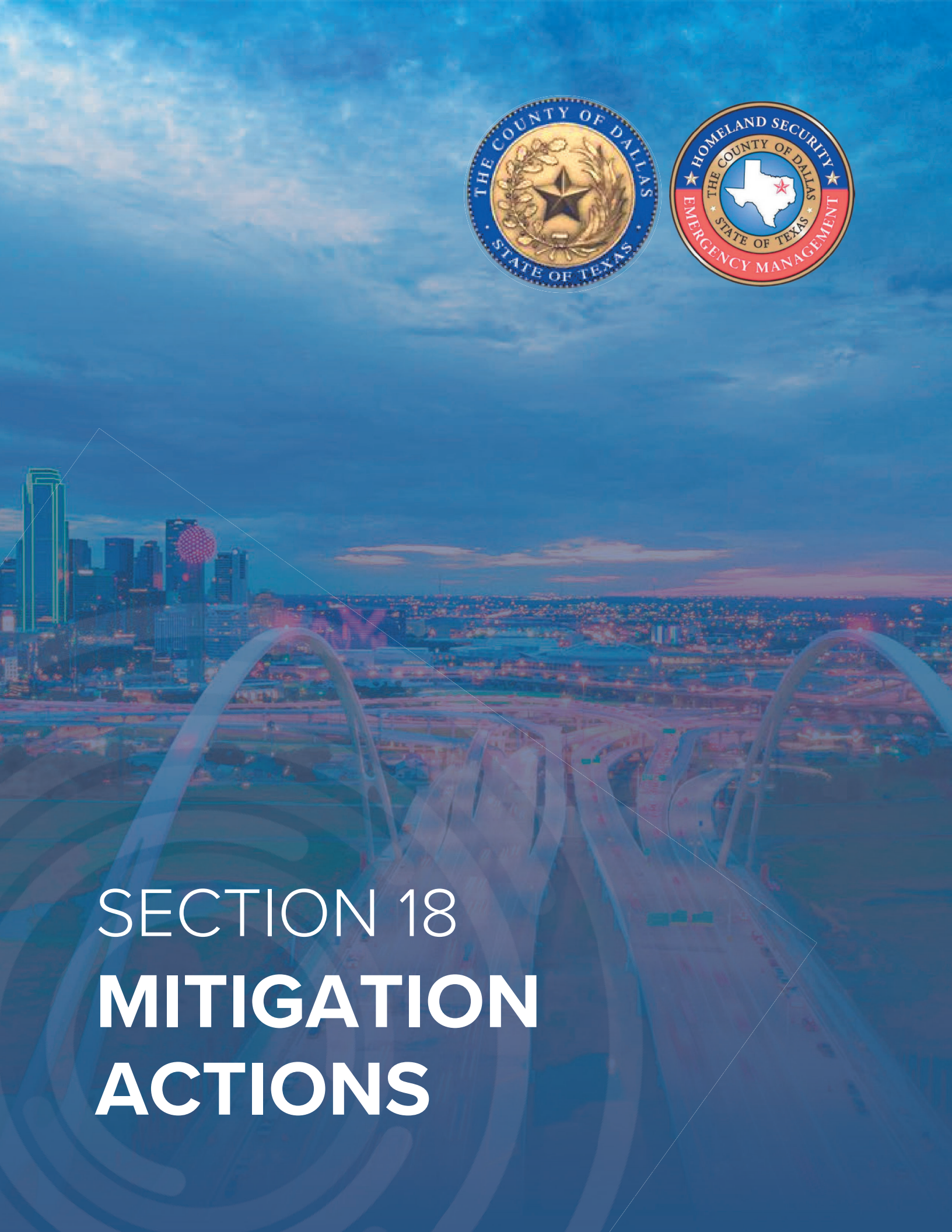
MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, Private contributions, State and Federal Grants
Lead Agency/Department Responsible:	City of Seagoville Code Enforcement and Health Services
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes / Ordinances

2025 ANALYSIS:
Defer to plan update.

	City of Wilmer – Previous Action #19
Proposed Action:	Coordinate with dam / levee owners in adjacent jurisdictions to attain proper inundation studies for dam safety and establish / implement action items which prove to be more cost efficient.
BACKGROUND INFORMATION	
Site and Location:	Community-wide dam hazard areas
Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Improve risk assessment; reduce risk of damages or injuries through improved building standards; reduce risk of damages and injuries.
Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Wilmer Public Works, City Manager's Office
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan, Flood Damage Prevention Ordinance, EAP

2025 ANALYSIS:
Delete action. There is no dam/levee in response area.



SECTION 18
MITIGATION ACTIONS

SECTION 18: MITIGATION ACTIONS

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SUMMARY

As discussed in Section 2, at the mitigation workshop the planning team and stakeholders met to develop mitigation actions for each of the natural hazards included in the Plan Update. Each of the actions in this section were prioritized based on FEMA's Social, Technical, Administrative, Political, Legal, Economic, and Environmental (STAPLEE) criteria necessary for the implementation of each action.

As part of the economic evaluation of the STAPLEE analysis, jurisdictions analyzed each action in terms of the overall costs, measuring whether the potential benefit to be gained from the action outweighed costs associated with it. As a result of this exercise, priority was assigned to each mitigation action by marking them as High (H), Moderate (M), or Low (L). An action that is ranked as "High" indicates that the action will be implemented as soon as funding is received. A "Moderate" action is one that may not be implemented right away depending on the cost and number of citizens served by the action. Actions ranked as "Low" indicate that they will not be implemented without first seeking grant funding and after "High" and "Moderate" actions have

been completed. This analysis was also used to prioritize actions related to High Hazard Potential Dams (HHPDs).

Within each mitigation action worksheet, the Planning Team considered all potential funding sources that could be utilized to implement the proposed project. To ensure all potential funding resources are considered and are not limited to those sources identified within the action worksheet, please see Appendix G for a list of all available State and Federal grant programs as of 2024. The Planning Team will continue to seek out other available funding sources during the 5-year cycle as notices of funding opportunity (NOFO) are released.

All mitigation actions created by Planning Team members are presented in this section in the form of a Mitigation Action Table. More than one hazard is sometimes listed for an action, if appropriate. Actions presented in this section represent a comprehensive range of mitigation actions per current State and FEMA Guidelines, including one action, per hazard, and at least two different types for each participating jurisdiction.

Table 18-1. Dallas County Mitigation Action Matrix

TYPE OF ACTION	
Action #1 – Plans/Regulations (Blue)	Action #4 – Structural (Orange)
Action #2 – Education/Awareness (Red)	Action #5 – Preparedness/Response (Black)
Action #3 – Natural Systems Protections (Green)	

Jurisdiction	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Hail	Lightning	Thunderstorm Wind	Tornado	Wildfire	Winter Storm
Dallas County	●●	●●	●●●	●●	●●●	●●	●●	●●	●●	●●●	●●
Town of Addison	N/A	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
City of Balch Springs	N/A	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
City of Carrollton	●●●●	●●●●	●●●●	●●●●	●●●●	●●●●	●●●●	●●●●	●●●●	●●●●	●●●●
City of Cedar Hill	●●●●	●●●●	●●	●●	●●●●	●●	●●	●●	●●	●●●●	●●
City of Cockrell Hill	N/A	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
City of Coppell	●●●	●●●	●●●	●●●	●●●●	●●●	●●●	●●●	●●●	●●●	●●●
City of DeSoto	N/A	●●	●●	●●	●●●	●●	●●	●●	●●	●●	●●
City of Duncanville	●●●	●●	●●	●●	●●●	●●	●●	●●	●●	●●	●●

Jurisdiction	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Hail	Lightning	Thunderstorm Wind	Tornado	Wildfire	Winter Storm
City of Farmers Branch	N/A	●●●	●●●●	●●●●	●●●●●	●●●●	●●●●	●●●●	●●●●	●●●●	●●●●
City of Glenn Heights	N/A	●●	●●●	●●●	●●●●	●●	●●●	●●●	●●●	●●●	●●
Town of Highland Park	●●	●●	●●	●●	●●	●●●	●●	●●	●●	●●	●●
City of Hutchins	N/A	●●●	●●	●●	●●●	●●	●●	●●	●●	●●●	●●
City of Lancaster	N/A	●●●	●●	●●	●●●	●●	●●	●●	●●	●●●	●●
City of Richardson	N/A	●●●	●●●	●●●●	●●●●	●●●	●●●	●●●	●●●	●●●	●●●
City of Rowlett	●●●●	●●●	●●●	●●●	●●●●	●●●	●●●	●●●	●●●	●●●	●●●
City of Sachse	●●●	●●	●●●	●●	●●●●	●●●	●●●	●●●	●●●	●●●	●●●
City of Seagoville	N/A	●●	●●	●●	●●●	●●	●●	●●	●●	●●	●●
Town of Sunnyvale	●●●	●●	●●●	●●	●●●●	●●	●●	●●●	●●●	●●●	●●
City of University Park	N/A	●●	●●	●●	●●●	●●	●●	●●	●●	●●	●●
City of Wilmer	N/A	●●	●●●	●●	●●●●	●●	●●	●●●	●●●	●●	●●

DALLAS COUNTY

DALLAS COUNTY MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Harden/retrofit critical facilities to hazard-resistant levels.	County-wide*	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	County Public Works, City Engineer, City Administrator	12-24 Months	Emergency Management Plan, Capital Improvement Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
	*including all participating jurisdiction critical facilities													

DALLAS COUNTY MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
2	Acquire and install generators with hard wired quick connections at all critical facilities.	County-wide*	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	County Public Works, City Engineer, City Administrator	12-24 Months	Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.
	*including all participating jurisdiction critical facilities													
3	Implement education and awareness programs utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	County-wide*	Promote hazard awareness and protect citizens from potential injuries and damage.	Education and Awareness	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	County and Local Emergency Managers	24 Months	N/A	Promotes public safety.
	*including all participating jurisdiction critical facilities													

DALLAS COUNTY MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
4	Coordinate with local dam owners and/or the state dam agency to assess and rehabilitate all High Hazard Potential Dams in Dallas County, implementing mitigation measures recommended in the assessment.	All Dallas County High Hazard Potential Dams	Reduce risk of damages to structures; Ensure continuity of critical services; Reduce risk of injury and fatalities to residents.	Structure and Infrastructure	Dam Failure	Water Systems	Y	Moderate	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	County and Local Emergency Managers	48 Months	High Hazard Dam EAP's	N/A
5	Dallas County Earthquake Study: Conduct a study to identify the vulnerability and potential for earthquakes in Dallas County. Identify cost-effective actions items.	County-wide	Improve risk assessment; Reduce risk of damages or injuries through building code improvements; Reduce risk of damages and injuries.	Local Plans and Regulations	Earthquake	Safety/Security	Y	L	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Dallas County Department of Planning and Development in conjunction with HSEM	24-36 Months	Building Ordinances / Building Codes	N/A

DALLAS COUNTY MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
6	Develop and implement Dallas County Weatherization Assistance Program (WAP). Weatherization Assistance Program (WAP) provides assistance to income eligible households by weatherizing their homes, conserving energy, and reducing high utility costs in the process. Eligible applications will be considered for assessments. Each dwelling will be assessed and audited before any work begins. As part of the WAP program, DCHHS equips homes with weather stripping, caulking, insulation, repaired or new doors and windows, solar screens, repaired or retrofitted heating and cooling units and duct work.	County-wide	Reduce damages to structures; Reduce risk to vulnerable population.	Structure and Infrastructure	Extreme Heat, Winter Storm	Safety/Security	N/A	H	$400,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Dallas County Health and Human Services	12-24 Months	Emergency Management Plan	N/A

DALLAS COUNTY MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
7	Develop and implement a safe room rebate program for individual safe rooms in single-family residences. The majority of funds will be used as direct rebates to residents and builders up to $3,000 possible rebates, following the procedures in the Metro Safe Room Rebate Program lead by the North Central Texas Council of Governments.	County-wide	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme with events.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety/Security	N/A	M	$6,000 per safe room	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Dallas County Emergency Management and Office of the Fire Marshall	24 Months	Emergency Management Plan	N/A
8	Conduct a risk and vulnerability assessment to determine the number of people, property, and infrastructure exposed to flooding and wildfire hazards and identify appropriate action items Implement feasible alternatives for risk reduction.	County-wide flood and wildfire hazard areas	Improve risk assessment; Reduce risk of damages and injuries.	Structure and Infrastructure, Local Plans and Regulations	Flood, Wildfire	Safety/Security	Y	L	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Dallas County Department of Planning and Development in conjunction with HSEM, Public Works and the Office of the Fire Marshall	36 Months	Drainage Plan, CWPP	Protects communities and reduces risk of flooding.

TOWN OF ADDISON

TOWN OF ADDISON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Include sheltering in updates to public parks so that park patrons can quickly reach a shelter during inclement weather events.	Town-wide	Improves safety for park patrons during weather events.	Structure and Infrastructure	Hail, Lightning, Thunderstorm Wind, Tornado	Shelter	Y	M	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Addison Parks and Recreation Department	18-24 Months	Capital Improvement Plan	N/A
2	Implement a training program to maintain operational readiness and resilience for staff in continuity and emergency support roles.	Town-wide	Ensure continuity of critical services during and after event; Promotes coordination and full organizational response following an incident.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$20,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Addison Fire Department	12-18 Months	Emergency Operations Plan	Promote public safety.

TOWN OF ADDISON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Adopt and implement a routine tree trimming program that clears tree limbs near power lines and/or hanging in right-of-way; Remove dead trees from right-of-way and drainage systems on a scheduled basis.	Town-wide	Reduce damages to infrastructure; Ensure continuity of services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security Energy (Power/Fuel)	Y	H	$160,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Addison Parks and Recreation Department	12 Months	Maintenance Plan, CWPP, Drainage Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
4	Implement water-wise program for the Town of Addison. This program will include purchasing water saving equipment and fixtures in all Town facilities such as low flow fixtures, greywater reuse systems, and drought tolerant landscaping.	Town-wide public facilities	Reduce water usage at public facilities. Water is an increasingly expensive resource especially during drought.	Structure and Infrastructure	Drought	Safety/Security	Y	M	$200,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Addison Parks and Recreation Department	24 Months	Capital Improvement Plan	N/A

TOWN OF ADDISON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	Town-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Addison Fire Department	12-24 Months	Emergency Operations Plan; Public Education Curriculum	Promotes public safety.
6	Harden/retrofit public buildings and critical facilities to hazard-resistant levels.	Town-wide	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	L	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Addison General Services	24 Months	Emergency Operations Plan, COOP Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF BALCH SPRINGS

CITY OF BALCH SPRINGS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Develop and implement comprehensive education and outreach program utilizing media, social media, bulletins, pamphlets, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Balch Springs Emergency Management	24 Months	Emergency Management Plan	Promotes public safety.
2	Harden/retrofit public buildings and critical facilities to hazard-resistant levels.	City-wide	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	L	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Balch Springs Emergency Management	48 Months	N/A	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF BALCH SPRINGS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Acquisition / demolition of flood-prone and repetitive loss properties.	City-wide*	Reduce risk of damages or injuries through flood mitigation at high risk structures; Reduce the need for emergency response in high risk areas; Reduce repetitive flood losses / claims.	Structure and Infrastructure	Flood	Safety/Security	Y	H	$1,300,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Balch Springs Building Inspectors and Engineering Department	24-36 Months	Floodplain Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
	* high flood risk properties and repetitive loss properties													
4	Build community safe room central to the jurisdiction so that residents can reach shelter in a timely manner.	City-wide	Reduce risk to citizens by providing shelter during extreme weather events.	Structure and Infrastructure	Hail, Lightning, Thunderstorm Wind, Tornado	Safety/Security	N/A	M	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Balch Springs Emergency Management and Building Inspection Departments	24-36 Months	Emergency Management Plan, Capital Improvement Plan	N/A

CITY OF BALCH SPRINGS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Implement water-wise program for the City of Balch Springs. This program will include purchasing water saving equipment and fixtures, such as low flow fixtures, in all city facilities.	City-wide facilities	Reduce water usage at city facilities.	Structure and Infrastructure	Drought	Safety/Security Water Systems	N/A	M	$8,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Balch Springs Permits and Inspection Department and Public Works	24 Months	Capital Improvement Plan	N/A
6	Develop and implement a Weatherization Assistance Program (WAP) which provides assistance to income eligible households by weatherizing their homes, conserving energy, and reducing high utility cost in the process.	City-wide	Reduce risk to vulnerable populations during extreme weather events.	Structure and Infrastructure	Extreme Heat, Winter Storm	Safety/Security	N/A	M	$3,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Balch Springs Code Enforcement and Neighborhood Services	24 Months	Local Building Codes / Ordinances	N/A

CITY OF BALCH SPRINGS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
7	Purchase and distribute hail and wind resistant window coverings to homeowners.	City-wide	Reduce risk to structures; Reduce risk of injuries or fatalities.	Structure and Infrastructure	Hail, Thunderstorm Wind, Tornado	Safety/Security	Y	L	$2,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Balch Springs Emergency Management	36 Months	Emergency Management Plan	N/A
8	Acquire and install generators with hard wired quick connections at all critical facilities.	City-wide critical facilities	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Balch Springs Emergency Management	12-24 Months	Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

CITY OF CARROLLTON

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Develop and implement comprehensive education and outreach program utilizing media, social media, bulletins, pamphlets, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Emergency Management	12 Months	Emergency Response Plan	Promotes public safety.
2	Work with area jurisdictions, response and recovery partners, and Dallas County to put in place a regional sheltering plan to accommodate evacuees of a potential large-scale dam failure.	City-wide*	Currently there is a lack of regional planning for large scale sheltering in the event of a dam failure.	Education and Awareness	Dam Failure	Safety/Security	N/A	H	$5,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Emergency Management	12 Months	Emergency Response Plan	Promotes public safety.
	*Dallas County, the City of Carrollton, and neighboring communities													

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Implement a water-wise program for the City of Carrollton. This program will include purchasing water saving equipment and fixtures, such as low flow fixtures and upgrades including drought mitigation measures such as greywater reuse systems, drought tolerant landscaping at public facilities throughout the city.	City-wide public facilities	Reduce damages and water usage at public facilities.	Structure and Infrastructure	Drought	Safety/Security Water Systems	Y	M	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Public Works	24 Months	Capital Improvement Plan	N/A
4	Upgrade drainage and targeted regrading of streets and properties that tend to retain water after large rain events resulting in having to pump out standing water.	City-wide*	This will reduce the impact the city has seen from recent flash flooding events.	Structure and Infrastructure	Flood	Safety/Security	Y	H	$400,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Public Works	12-24 Months	Drainage Plan	Protects communities and reduces risk of flooding.
	* Identified areas based on recent events and hazard analyses													

CITY OF CARROLLTON MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Conduct Stream Bank Erosion Studies: Conduct a study to identify the vulnerability to stream bank erosion due to flood events. Identify and implement cost-effective action items.	City-wide*	Identifying high risk areas and identifying / implementing effective mitigation actions will reduce impacts to structures and infrastructure in the impacted area.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Environmental Services	24 Months	Drainage Plan	Protects communities and reduces risk of flooding.
	*identified streams and flood prone areas													
6	Implement flood mitigation infrastructure improvements in downtown Carrollton to alleviate systemic standing water during heavy rain events. This would include drainage improvements and other actions deemed necessary.	Downtown Carrollton	Reduce losses to area businesses reduce damage to structures and infrastructure, reduce recovery time after a flood event and ensure continuity of services.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$2,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Public Works	24 Months	Capital Improvement Plan	Protects communities and reduces risk of flooding.

CITY OF CARROLLTON MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
7	Procure and install flood warning barrier system to prevent motorists from driving into flooded areas.	City-wide	Reduce the risk to citizens and reduce the need for emergency services during high water events.	Education and Awareness	Flood	Safety/Security	N/A	H	$300,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Public Works, Emergency Management, Engineering	12 Months	Emergency Management Plan	Protects communities and reduces risk of flooding.
8	Add additional drains and supporting infrastructure in older neighborhoods to increase offloading of flash flood waters.	City-wide	Reduce the damage to structures and infrastructure, reduce the risk to residents, and reduce the need for emergency services.	Structure and Infrastructure	Flood	Safety/Security	Y	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Public Works	12-24 Months	Capital Improvement Plan, Drainage Plan	Protects communities and reduces risk of flooding.

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
9	Construct covered parking structures to protect City vehicles and critical equipment from damage during severe hailstorms.	City-wide critical facilities	Prevent damage to critical vehicles and equipment while ensuring continuity of emergency services.	Structure and Infrastructure	Hail, Lightning, Thunderstorm Wind, Tornado	Safety/Security	N/A	H	$250,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Police Department	12 Months	Capital Improvement Plan	N/A
10	Create and execute plans for providing temporary shelters (post-emergency shelter) for citizens affected by natural disasters that result in the loss of or inability to return to their homes. Standby contracts for assistance are one option that will be considered.	City-wide	The city currently has plans for emergency shelters in place. However, plans for temporary housing are not as extensive.	Local Plans and Regulations, Preparedness /Response	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security Shelter	N/A	M	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Emergency Management	24 Months	Emergency Response Plan	Protects communities and reduces risk of flooding.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
11	Create and execute plan for providing mobile and modular WIFI connectivity after a disaster. This capability can support both emergency City operations as well as be deployed in shelters to assist evacuees with registering for disaster assistance on their own devices as well as provide entertainment for kids.	City-wide	This would be a new capability that addresses challenges seen in recent events.	Local Plans and Regulations, Preparedness /Response	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security Shelter	N/A	M	$25,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Emergency Management, IT	24 Months	Emergency Response Plan	Protects communities and reduces risk of flooding.
12	Procure charging stations to be deployed in shelters after a disaster to supply evacuees with power for their devices. This will allow for evacuees to access important information via their devices, call family and friends for emergency contacts, and provide entertainment to children during a stressful time.	City-wide	This would enhance community efforts in emergency management as the community currently does not have this capability.	Structure and Infrastructure, Preparedness /Response	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security Shelter	N/A	M	$25,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Emergency Management	24 Months	Emergency Response Plan	Protects communities and reduces risk of flooding.

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
13	Procure equipment or contracts to provide for emergency sandbagging of critical facilities and infrastructure during a high-water event.	City-wide*	Reduce damages at critical facilities.	Structure and Infrastructure, Preparedness /Response	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	L	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Public Works, Emergency Management	24-36 Months	Emergency Response Plan	Protects communities and reduces risk of flooding.
	*critical facilities and infrastructure													
14	Plan for and establish City-owned stand-by contracts for targeted flood remediation of private homes if authorized by City Administration. Actions to include mitigation measures such as elevation, acquisition / demolition, and relocation, among other feasible alternatives.	City-wide	Reduce damages to structures and enhance recovery for private citizens.	Local Plans and Regulations, Structure and Infrastructure	Flood	Safety/Security	Y	M	$100,000 per structure	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Manager's Office, Emergency Management	24-36 Months	Emergency Response Plan	Protects communities and reduces risk of flooding.

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
15	Reinstitute a solicitation permitting program to combat fraudulent businesses practices. This will allow for the control of who can solicit door to door for repair work after a disaster resulting in widespread residential and commercial damage.	City-wide	Reduce damages to structures and enhance recovery for private citizens.	Local Plans and Regulations	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$5,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Police Department	12 Months	Local Ordinances	Promote public safety.
16	Acquire several portable traffic lights or other traffic control devices for intersection management after a disaster that disrupts power for an extended length of time.	City-wide intersections	Reduce loss of life and property.	Structure and Infrastructure, Preparedness /Response	Earthquake, Hail, Lightning, Thunderstorm Wind, Tornado, Winter Storm	Safety/Security	N/A	H	$200,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Public Works	12 Months	N/A	N/A

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
17	Expand City drone program to allow for damage assessment and recovery support after an incident causing widespread residential and commercial damage.	City-wide	Reduce loss of life and property.	Structure and Infrastructure, Preparedness /Response	Dam Failure, Earthquake, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Police Department	12 Months	Emergency Response Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
18	Acquire and install generators with hard wired quick connections at all critical facilities. This will include but is not limited to the Police Department, Fire Administration, Animal Services Center, and the City Resolution Center.	City-wide critical facilities	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Energy (Power/Fuel)	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Emergency Management, Public Works	12-24 Months	Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
19	Adopt and implement a routine tree trimming program that clears tree limbs near power lines and / or hanging in right-of-way; Remove dead trees from right-of-way and drainage systems on a scheduled basis.	City-wide	Reduce damages to infrastructure; Ensure continuity of services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations	Structure and Infrastructure	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security, Energy (Power/Fuel)	Y	M	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Environmental Services	24 Months	Maintenance Plan, CWPP, Drainage Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
20	Create and execute plan for a back-up facility for the City Resolution Center (Call Center) so it can continue to operate during a disaster if the facility itself is lost.	City-wide	Ensure continuity of critical services.	Local Plans and Regulations	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	M	$50,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Administrative Services	24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
21	Plan for providing additional medical supplies and equipment for Animal Shelter to support operations during a disaster.	City Animal Shelter	Increase the capability for local Animal Services to support displaced citizens and emergency response animals.	Local Plans and Regulations, Preparedness /Response	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Animal Services	12 Months	Emergency Response Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
22	Create plan for Utility Customer Services to manage and secure money on hand during a disaster that disrupts power to the facility or damages / destroys the facility itself.	City-wide	This action would fill an identified gap to provide continuity of services during hazard events.	Local Plans and Regulations, Preparedness /Response	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Administrative Services, Utility Customer Services	12 Months	N/A	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
23	Upgrade current or construct a new Emergency Operations Center facility that will have the latest software and technology to effectively respond to all hazards.	City-wide	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Emergency Management	12-24 Months	Capital Improvement Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
24	Create mobile city-wide communication system capability utilizing mesh-network technology. This would include equipping fire and police units with modular mesh network nodes that could be used in conjunction with others in the same area to provide increased network capacity as needed during an emergency situation.	City-wide	Address modern communications and disaster response needs.	Education and Awareness	Dam Failure, Earthquake, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	M	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton IT, Emergency Management	24 Months	Capital Improvement Plan	Promote public safety.

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
25	Upgrade / install cameras throughout the city to provide damage assessment and situational awareness capability during disaster events.	City-wide	Increase the city's damage assessment and situational awareness capabilities	Education and Awareness, Preparedness /Response	Dam Failure, Earthquake, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton IT, Engineering, Emergency Management, Public Works	12 Months	N/A	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
26	Build or provide provision for mobile or back-up emergency operation center location in the event the primary site is rendered un-usable by a disaster event.	City-wide	Provide continuity of critical services.	Structure and Infrastructure	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security Communication	N/A	M	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Emergency Management	24-36 Months	Emergency Response Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
27	Upgrade pump station facilities including the pump controls to better function during disaster situations that stress the system and make precise control very important.	City-wide pump stations	Reduce risk to structures and infrastructure.	Structure and Infrastructure	Dam Failure, Flood, Thunderstorm Wind	Safety/Security	Y	H	$500,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Public Works, Engineering	12 Months	Capital Improvement Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
28	Equip City traffic signals with emergency generators with quick connect wiring system to restore power in the event of disruption due to thunderstorm wind damage.	City-wide intersections	Reduce loss of life, property and ensure continuity of traffic flow.	Structure and Infrastructure	Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Winter Storm	Safety/Security	N/A	H	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Public Works	12 Months	Capital Improvement Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
29	Develop and implement a Texas Safe Room Rebate Program to provide safe rooms for the City of Carrolton residents.	City-wide public residences	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.	Structure and Infrastructure	Tornado	Communication, Safety/Security	N/A	H	$4,000 per safe room	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Emergency Management, Building Inspections	12 Months	N/A	N/A
30	Retrofit City facilities to include storm safe rooms.	City-wide public facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Tornado	Safety/Security	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Facilities, Engineering, Building Inspection	12-24 Months	Emergency Response Plan	N/A

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
31	Winterize City buildings and critical infrastructure to better withstand the effects of winter storms. This would include but is not limited to protecting water pipes / system, retrofitting roofs to break up / withstand ice and snow loads, and other similar efforts.	City-wide*	Ensure continuity of critical services.	Structure and Infrastructure	Winter Storm	Safety/Security	Y	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Facilities, Public Works, Emergency Management	24 Months	Emergency Response Plan	N/A
	*public buildings and critical infrastructure													
32	Purchase and install temperature gauges / detectors for Public Works infrastructure, roadways, and vehicles (mobile detectors to sample roadway temperatures) to determine when additional intervention is need during cold weather.	City-wide*	Reduce loss of life and property.	Structure and Infrastructure, Preparedness /Response	Winter Storm	Safety/Security	N/A	H	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Public Works	12 Months	Emergency Response Plan	N/A
	*Critical roadways, infrastructure, and on mobile vehicles for random temperature testing of roadways													

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
33	Purchase and distribute hail and wind resistant window coverings to homeowners.	City-wide	Reduce risk to structures; Reduce risk of injuries or fatalities.	Structure and Infrastructure	Hail, Thunderstorm Wind, Tornado	Safety/Security	Y	L	$2,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Emergency Management	36 Months	Emergency Response Plan	N/A
34	Conduct studies to develop dam inundation maps and models for all dams that affect the City of Carrollton.	City-wide	Improve risk assessment; reduce risk of damages or injuries through improved building standards; reduce risk of damages and injuries.	Local Plans and Regulations	Dam Failure, Flood	Communication, Safety/Security	Y	H	$200,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Engineering	12-24 Months	Emergency Management Plan, Continuity of Operations Plan	Protects communities and reduces risk of flooding.

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
35	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.	City-wide	Improve risk assessment; Reduce risk of damage or injuries through building code improvements; Reduce risk of damages and injuries.	Local Plans and Regulations	Earthquake	Safety/Security	Y	L	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Public Works	24-36 Months	Building Ordinance / Building Codes	N/A

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
36	Promote land use program, identify land within the floodplain, and assess uses for conservation or recreation.	City-wide floodplain	Reduce risk of damages to structures through restrictions in development; Reduce recovery efforts for the comm-unity after an event; Reduce risk of injury or fatality to citizens; Restore functions of the natural floodplain.	Local Plans and Regulations	Dam Failure, Flood	Safety/Security	Y	H	$2,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Community Development	12-24 Months	Comprehensive Zoning Ordinance (CZO)	Protects communities and reduces risk of flooding.

CITY OF CARROLLTON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
37	Harden/retrofit critical facilities to hazard-resistant levels.	City-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Carrollton Facilities, Engineering, Building Inspection	12-24 Months	Emergency Response Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF CEDAR HILL

CITY OF CEDAR HILL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Develop and implement comprehensive education and outreach program utilizing media, social media, bulletins, pamphlets, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Emergency Management, Building Inspections Department	12 Months	Emergency Management Plan	Promotes public safety.
2	Implementation of safe room rebate program for the construction of residential safe rooms for residents of Cedar Hill.	City-wide	Prevent loss of life among residents during severe weather events.	Structure and Infrastructure	Earthquake, Hail, Lightning, Thunderstorm Wind, Tornado	Safety/Security Shelter	Y	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Emergency Management, Building Inspections Department	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances	N/A

CITY OF CEDAR HILL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Purchase bulldozer for fuel reduction work in wildfire threat areas.	City-wide*	Lower wildfire threat and avoid loss to property and life.	Local Plans and Regulations, Natural Systems Protection	Drought, Wildfire	Safety/Security	N/A	M	$250,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Public Works	12-18 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	N/A
	*identified high fuels areas													
4	Implementation of a residential NOAA Weather Radio program to purchase and provide a weather radio to all homes in the city.	City-wide	Prevent loss of life among residents during severe weather events.	Education and Awareness	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communications	N/A	M	$482,130	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Emergency Management	24 Months	Southwest Regional Emergency Management Plan, Annex A: Warning	Promotes public safety.

CITY OF CEDAR HILL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Promote land use program, identify undeveloped land within the floodplain, and assess uses for conservation or recreation. Implement storm water retention basins upstream of all streams reflected in the A and AE floodplains, to allow for a more natural environment.	City floodplain*	Avoid losses. The program will include developing an open space re-use, and preservation plan targeting as well as developing a land banking program for the preservation of the natural and beneficial functions of flood hazard areas.	Local Plans and Regulations	Flood	Water Systems	Y	M	$300,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Public Works	12-24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects communities and reduces risk of flooding.
	*including the areas upstream of Bentle Branch													

CITY OF CEDAR HILL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
6	Conduct inundation extent study of Joe Pool Lake to determine the extent of flooding. This study will be done in coordination with the owners and operators of the dams.	Joe Pool Lake	Reduce risk of flood damages through improved drainage capacity/stormwater diversion; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.	Structure and Infrastructure, Local Plans and Regulations (for unmapped areas)	Dam Failure, Flood	Water Systems	Y	H	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Public Works, City of Cedar Hill Transportation	12-24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, USACE, GIS Mapping of flooded areas around Joe Pool Lake	Protects communities and reduces risk of flooding.
7	Acquire floodplain and protect environmentally sensitive areas identified by FIRM Panel as designated A and AE zones.	City floodplain*	Preserve/ restore the natural function of the floodplain.	Structure and Infrastructure, Natural Systems Protection (vacant land)	Dam Failure, Flood	Safety/Security	Y	M	$200,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Public Works, City of Cedar Hill Parks and Recreation	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects communities and reduces risk of flooding.
	*Red Oak Creek and Bentle Branch Creek areas, Balcones Escarpment													

CITY OF CEDAR HILL MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
8	Develop a weatherization assistance program similar to that of Dallas County.	City-wide	Reduce loss of life during extreme heat or winter weather.	Structure and Infrastructure	Extreme Heat, Winter Storm	Safety/Security	N/A	L	$5,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Dallas County Department of Health and Human Serves, Utility Billing Office, Environmental, Neighborhood Services	36 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	N/A
9	Incorporate drought tolerant, fire resistant and xeriscaping practices for existing and new city facilities. This program will also be expanded to include residential areas through regulatory and incentive measures to mitigate the risk. The program can also include installing water saving equipment in city facilities.	City-wide public facilities	Conserve water and provide mitigation against wildland fire and drought.	Structure and Infrastructure, Local Plans and Regulations	Drought, Wildfire	Safety/Security	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Public Works Department, Utility Billing	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	N/A

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
10	Construction of storm shelters and safe rooms in existing and new construction recreational, institutional, commercial, and governmental buildings/facilities.	City-wide	Reduce loss of life and property.	Structure and Infrastructure	Tornado, Thunderstorm Wind	Safety/Security	Y	M	$2,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Building Inspections Department, Engineering	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, local ordinances	N/A
11	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.	City-wide	Reduce loss of life and property.	Education and Awareness	Earthquake	Safety/Security	N/A	L	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Public Works, Dallas County	24-36 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Threats, Hazards Identification and Risk Assessment (regional)	N/A

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
12	Reduce Urban Heat Island Effect by distributing cool roofing products to homeowners that reflect sunlight and heat away from buildings.	City-wide	Reduce loss of life and property due to extreme heat.	Structure and Infrastructure	Extreme Heat	Safety/Security	N/A	L	$5,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Public Works Department, Building Inspections Department	24-36 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, local ordinances.	N/A
13	Install and enhance in place lightning prediction systems in city recreational areas (parks and trails) to provide advanced warning to park patrons in the event of lightning strikes.	City-wide facilities and park facilities	Reduce loss of life and property.	Structure and Infrastructure	Lightning	Safety/Security	N/A	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Parks and Recreation	24 Months	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation, Parks and Recreation Plans	N/A

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
14	Improve and enhance storm water draining capabilities to prevent flooding in flood prone and escarpment areas. Stormwater management projects will include: installing, re-routing, or increasing the capacity of a storm drainage system, increasing capacity of stormwater detention and retention basins, and increasing dimensions of drainage culverts in flood-prone areas.	City-wide	Reduce the effects of flooding.	Structure and Infrastructure	Flood	Safety/Security Water Systems	N/A	H	$200,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Public Works Department	12-24 Months	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation, and Capital Improvement Plans	Protects communities and reduces risk of flooding.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
15	Buy-out structures that are in the floodplain.	City-wide	Reduce the effects of flooding; Reduce flood hazard risks to citizens; Reduce repetitive flood losses and emergency response; Protect lives; Reduce flood recovery measures.	Structure and Infrastructure, Natural Systems Protection (green space)	Flood	Safety/Security Water Systems	Y	L	$5,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Administration, Engineering and Parks and Recreation	24-36 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects communities and reduces risk of flooding.
16	Purchase hail and wind resistant window coverings for city facilities (existing and new).	City-wide	Prevent future property losses and ensure continuity of city services.	Structure and Infrastructure	Hail, Tornado, Thunderstorm Wind	Safety/Security	Y	L	$200,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Emergency Management, Facilities	24-36 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	N/A

CITY OF CEDAR HILL MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
17	Enhancement of Outdoor Warning Siren System to include communications, security, to provide alert, warning and notification to residents and visitors during all hazards emergencies/disaster.	City-wide at 15 identified sites*	Enhancement of Outdoor Warning Siren System to include communications, security, to provide alert, warning and notification to residents and visitors during all hazards emergencies/disaster.	Education and Awareness	Hail, Tornado, Thunderstorm Wind	Communication	N/A	H	$400,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Fire Department, Emergency Management	12-18 Months	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation, Annex A: Warning	N/A
	*Kingswood Water Tower; Bray Elementary; CHISD DAEP Campus; Waterford Oaks Elementary; High Pointe Elementary; Mobley Road and Cartwright; Cedar Hill Senior Center; Independence Way; Lake Ridge Parkway; Texas Plume Road; Vedral Place; Harvell Drive and Collins Boulevard; Fire Station 212; Duncanville Road and Bear Creek Road; Prairie View Park													

CITY OF CEDAR HILL MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
18	Conduct creek and stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.	City-wide creeks and streams	Reduce losses related to flooding.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security Water Systems	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Public Works, Building and Codes	18-24 Months	Emergency Management Plan	Protects communities and reduces risk of flooding.
19	Harden/retrofit critical facilities to hazard-resistant levels.	City-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Public Works	12-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
20	Acquire and install generators with hard wired quick connections at all critical facilities.	City-wide critical facilities	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FE MA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Public Works	12-24 Months	Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.
21	Provide emergency generators and automatic transfer switches for Tri-City Animal Shelter to provide emergency power to allow staff and animals to shelter-in-place during all hazard's emergencies and disasters.	Tri-Cities Animal Shelter	Reduce loss of life; Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$400,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FE MA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Tri-Counties Animal Shelter, City of Cedar Hills Facilities Departmen t	12 Months	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation Animal Sheltering Plans	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
22	Provide emergency generators and automatic transfer switches for Cedar Hill Government Center / Cedar Hill ISD Administration, Police Department and other City of Cedar Hill facilities to provide emergency power to allow staff to provide critical services to the community.	City-wide*	Reduce loss of life; Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cedar Hill Police Department, Facilities Department, City Manager's Office	12 Months	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation Animal Sheltering Plans	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.
	*Cedar Hill Government Center, Cedar Hill Police Department, and other City of Cedar Hill Facilities													

CITY OF COCKRELL HILL

CITY OF COCKRELL HILL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Develop and implement comprehensive education and outreach program utilizing media, social media, bulletins, pamphlets, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Manager	24 Months	Emergency Management Plan	Promotes public safety.
2	Acquire and distribute NOAA weather radios.	City-wide critical facilities	Reduce risk to citizens through improved communications and early warning.	Education and Awareness	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Manager	24 Months	Emergency Management Plan	Promotes public safety.

CITY OF COCKRELL HILL MITIGATION ACTIONS														
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3	Obtain certification in the National Weather Service StormReady Program.	City-wide critical facilities	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.	Education and Awareness	Flood, Hail, Thunderstorm Wind, Tornado, Winter Storm	Communication	N/A	M	$10,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Manager	24 Months	Emergency Management Plan	Promotes public safety.
4	Require new public buildings to be sited on low-risk parcels.	Community (future) public facilities	Reduce risk of damage to public structures by locating buildings outside of known hazard areas; Ensure continuity of public services following a significant event.	Local Plans and Regulations	Flood, Wildfire	Safety/Security	Y	H	$2,500	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Manager	12 Months	Local Building Codes / Ordinances	Protects communities and reduces risk of flooding.

CITY OF COCKRELL HILL MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Restrict future development in high risk areas.	City-wide	Reduce the risk of damage to new structures and infrastructure through building restrictions in high risk areas.	Local Plans and Regulations	Flood, Wildfire	Safety/Security	Y	H	$2,500	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Manager	12 Months	Local Building Codes / Ordinances	Protects communities and reduces risk of flooding.
6	Incorporate higher standards for hazard resistance in local application of the building code.	City-wide	Reduce risk of damage to structures through improved construction techniques; Reduce recovery efforts for the community after an event.	Local Plans and Regulations	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	M	$5,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Manager	24 Months	Local Building Codes / Ordinances	Protects communities and reduces risk of flooding.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
7	Require "safe rooms" to be added when constructing new schools, daycares, rest homes and critical care facilities.	City-wide	Reduce risk to citizens by providing shelter in new critical facilities during extreme weather events.	Local Plans and Regulations	Tornado, Thunderstorm Wind	Safety/Security	N/A	M	$5,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Manager	24 Months	Local Building Codes / Ordinances	N/A
8	Adopt and implement a program for clearing debris from bridges, drains and culverts.	City-wide	Reduce damages caused by flooding by maintaining or restoring drainage capacity.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$50,000 (annually)	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Manager	24 Months	Local Building Codes / Ordinances	Protects communities and reduces risk of flooding.

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9	Upgrade undersized stormwater drains and culverts.	City-wide drainage system	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$3,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Manager	24 Months	Floodplain Management Plan, Drainage Plan	Protects communities and reduces risk of flooding.
10	Undertake a comprehensive study of flood risk and reduction alternatives, with the assistance of the US Army Corps of Engineers. Adopt or revise flood damage prevention ordinance to include flood risk areas identified in the study. This study will cover all incorporated and unincorporated areas of the county that currently have limited studies with no determined base flood elevations as well as unmapped areas.	City-wide flood hazard areas	Improve risk assessment; Reduce risk of damage or injuries through improved building standards; Reduce risk of damages and injuries.	Local Plans and Regulations (for unmapped and limited study areas)	Flood	Safety/Security	Y	H	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Manager	12-36 Months	Drainage Plan, Flood Damage Prevention Ordinance	Protects communities and reduces risk of flooding.

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11	Build safe room shelters throughout the jurisdiction so that residents can reach shelter in less than five minutes.	City-wide*	Reduce risk to citizens by providing shelter in high risk areas during extreme weather events.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety/Security	N/A	L	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Public Works	36 Months	Emergency Management Plan, Capital Improvement Plan	N/A
	*including manufactured home parks													
12	Develop and implement a safe room rebate program for individual safe rooms in single-family residences.	City-wide	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety/Security	N/A	M	$5,000 per safe room	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Emergency Manager	12-24 Months	Emergency Management Plan	N/A

CITY OF COCKRELL HILL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
13	Develop and implement a Weatherization Assistance Program (WAP) which provides assistance to income eligible households by weatherizing their homes, conserving energy, and reducing high utility cost in the process.	City-wide	Reduce risk to vulnerable populations during extreme weather events.	Structure and Infrastructure	Extreme Heat, Winter Storm	Safety/Security	N/A	M	$3,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Code Enforcement and Neighborhood Services	24 Months	Local Building Codes / Ordinances	N/A
14	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.	City-wide	Reduce loss of life and property.	Structure and Infrastructure	Earthquake	Safety/Security	N/A	L	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Administrators Office, Dallas County	24 Months	Local Building Codes / Ordinances	N/A

CITY OF COCKRELL HILL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
15	Implement a Fuels Management Program – A fuel management program will reduce hazardous vegetative fuels on public lands, near infrastructure or on private lands by working with landowners.	City-wide	Reduce fuels that could burn in order to reduce the risk of wildfires.	Structure and Infrastructure	Wildfire	Safety/Security	Y	L	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Fire and Public Works	36 Months	N/A	N/A
16	Implement water-wise program for the City of Cockrell Hill. This program will include purchasing water saving equipment and fixtures in all City facilities such as low flow fixtures, greywater reuse systems, and drought tolerant landscaping.	City-wide public facilities	Reduce water usage at public facilities. Water is an increasingly expensive resource especially during drought.	Structure and Infrastructure	Drought	Safety/Security	Y	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Public Works	24 Months	Capital Improvement Plan	N/A

CITY OF COCKRELL HILL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
17	Install lightning protection equipment in critical facilities and infrastructure to prevent lightning damage.	City-wide critical facilities	Reduce loss of life and property; Ensure continuity of services.	Structure and Infrastructure	Lightning	Safety/Security	N/A	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Public Works	12-18 Months	N/A	N/A
18	Purchase and distribute hail and wind resistant window coverings to homeowners.	City-wide	Reduce risk to structures; Reduce risk of injuries or fatalities.	Structure and Infrastructure	Hail, Thunderstorm Wind, Tornado	Safety/Security	Y	L	$2,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Emergency Manager	36 Months	Emergency Management Plan	N/A

CITY OF COCKRELL HILL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
19	Harden/retrofit critical facilities to hazard-resistant levels.	City-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Public Works	12-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
20	Acquire and install generators with hard wired quick connections at all critical facilities.	City-wide critical facilities	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Cockrell Hill Public Works	12-24 Months	Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

CITY OF COPPELL

CITY OF COPPELL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	City's Threat Hazard Identification Risk and Assessment (THIRA) Project.	City-wide*	Improved prioritization for facility evacuation from flood events; identification of safe city facilities as potential relocation sites during flood event; improved response and planning prior to and during flood events.	Structure and Infrastructure	Flood	Safety/Security, Transportation	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	12 Months	Emergency Management Plan	Protects communities and reduces risk of flooding.
	*City facilities and thoroughfares near floodplains													

CITY OF COPPELL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
2	Upgrade SCADA and remote monitoring capabilities to receive alerts when city facilities lose power and are running on generators.	All City facilities	Improved response time to emergency events; improved restoration of city facilities as potential shelter locations; improved response and planning for fuel supply during extended power outages.	Structure and Infrastructure	Extreme Heat, Hail, Lightning, Thunderstorm Wind, Tornado, Winter Storm	Safety/Security, Energy (Power/Fuel), Communication, Water Systems	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	12 Months	Emergency Management Plan	N/A

CITY OF COPPELL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Add additional drains and supporting infrastructure to increase offloading of flash flood waters.	City-wide	Reduce risk of damages or injuries through flood mitigation at high-risk structures; Reduce the need for emergency response in high risk areas; Reduce repetitive flood losses / claims; Reduce community recovery efforts and costs.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$2,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	24 Months	Drainage Plan	Protects communities and reduces risk of flooding.

CITY OF COPPELL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
4	Conduct Stream Bank Erosion Studies and Implement Streambank Stabilization: Conduct a study to identify the vulnerability to stream bank erosion due to flood events. Identify and implement cost-effective action items.	City-wide*	Reduce risk of flood damages; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	H	$5,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	12-24 Months	Drainage Plan	Protects communities and reduces risk of flooding.
	*Grapevine Creek, Cottonwood Branch, Denton Creek, and other city-wide streams													
5	Obtain re-certification in the National Weather Service StormReady Program.	City-wide	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.	Education and Awareness	Hail, Flood, Thunderstorm Wind, Tornado, Winter Storm	Communication	N/A	H	$500	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Emergency Management	12 Months	Emergency Management Plan, SOGs, COOP	Promotes public safety.

CITY OF COPPELL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
6	Install bridge deck / road surface temperature monitoring equipment.	City-wide at 4 identified sites*	Reduce risk of injuries on roadways and bridges during winter storm events; Reduce demand on emergency response during winter storms.	Education and Awareness	Extreme Heat, Winter Storm	Safety/Security Transportation	N/A	L	$20,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	36 Months	Emergency Management Plan - Annex W	N/A
	* North Denton Tap @ Denton Creek; North MacArthur @ Denton Creek; South Denton Tap @ Grapevine Creek; Freeport Parkway @ Cottonwood Branch													
7	Promote National Flood Insurance Program education and purchase of flood insurance.	City-wide	Increase flood risk awareness and flood insurance coverage; Reduce damage impact on residents after a flood event; Reduce the burden on state and federal resources.	Education and Awareness	Flood	Communication	N/A	M	$1,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Floodplain Administrator, Public Works	12 Months	Floodplain Management Plan	Protects communities and reduces risk of flooding.

CITY OF COPPELL MITIGATION ACTIONS														
*Reduces risk to new and/or existing buildings and infrastructure														
Action #	Proposed Action	Site	Benefit	Action Type	Hazards	Community Lifeline	Infra.*	Priority (High, Mod., Low)	Cost	Potential Funding Sources	Lead Agency	Timeline	Existing Plans	NFIP
8	Expand education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	H	$1,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Emergency Management	12 Months	N/A	Promotes public safety.
9	Bury existing overhead utilities to reduce impact to critical infrastructure and vulnerable residents.	City-wide at 3 identified sites*	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations	Structure and Infrastructure	Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security, Energy (Power/Fuel)	Y	M	$5,760,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	24-36 Months	Capital Improvement Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
	* S. Beltline Rd- E. Beltline to 635; S. Coppell Rd – Sandy Lake to Southwestern; S. Denton Tap – Sandy Lake to Beltline													

CITY OF COPPELL MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
10	Enhance mass-notification system and capabilities through community outreach subscription and education.	City-wide	Reduce risk to citizens through improved communications and early warning.	Education and Awareness	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	H	$6,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Emergency Management	12-24 Months	Emergency Management Plan - Annex A, B, E	Promotes public safety.
11	Procure and install additional weather station for use by Parks, Public Works and Emergency Management in warning and mitigation decisions.	City-wide at 8 identified sites*	Reduce loss of life and property.	Education and Awareness	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	H	$38,400 ($4,800 per site)	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	12-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
	*Sandy Lake @ Royal; Royal @ W. Bethel; Rolling Oaks @ 400 Freeport Pkwy; Freeport and Wrangler; Denton Tap @ Bethel School; Beltline @ Moore; Sandy Lake @ Moore; Fire Station 2 @ 366 S. MacArthur Blvd.													

CITY OF COPPELL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
12	Assess existing structures for retrofitting / hardening to hazard resistant levels.	City-wide public facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	M	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	24-36 Months	Coppell Continuity of Operations Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
13	Retrofit public buildings and critical infrastructure to improve wind mitigation measures and construction elements. This could include structural bracing, straps and clips, anchor bolts, laminated or impact-resistant glass, impact-resistant doors, and impact-resistant shutters, and similar.	City-wide at 8 identified sites*	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Earthquake, Hail, Thunderstorm Wind, Tornado	Safety/Security	Y	M	$2,500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	24-36 Months	Coppell Continuity of Operations Plan	N/A
	*Administration Building @ 265 Parkway Blvd; Service Center Building @ 816 S. Coppell Rd.; Town Center facility @ 255 Parkway Blvd.; Senior Center; CORE Facility @ 234 E. Parkway Blvd.; Fire Station 1; Fire Station 2; Fire Station 3													

CITY OF COPPELL MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
14	Incorporate drought tolerant, fire resistant and xeriscaping practices for existing and new city facilities.	City-wide public facilities	Reduce damages at public facilities.	Structure and Infrastructure	Drought, Extreme Heat, Wildfire	Safety/Security	Y	H	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	12 Months	Capital Improvement Plan	N/A
15	Add rated safe rooms to city owned public and critical facilities.	City-wide at 12 identified sites*	Reduce risk to staff and customers by providing shelter during extreme weather events.	Structure and Infrastructure	Hail, Thunderstorm Wind, Tornado	Safety/Security	N/A	M	$2,400,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	24-36 Months	Emergency Management Plan, Capital Improvement Plan	N/A
	* Administration Building @ 265 Parkway Blvd.; Town Center @ 255 Parkway Blvd.; CORE facility @ 234 E. Parkway Blvd.; Senior Center @ 234 W. Bethel Rd.; Service Center @ 816 S. Coppell Rd.; Animal Shelter @ 821 S. Coppell Rd.; Bio-Diversity Center @ 367 Freeport Pkwy.; Wagonwheel Tennis Center @ 950 Creekview Dr.; Fire Station 1 @ 520 Southwestern Blvd.; Fire Station 2 @ 366 S. MacArthur Blvd.; Fire Station 3 @ 133 E. Parkway Blvd.; Arts Center @ 505 Travis St.													

CITY OF COPPELL MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
16	Develop a post-disaster / recovery public education campaign to educate the public on processes and cautions following disasters.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages; Enhance recovery.	Education and Awareness, Preparedness /Response	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security Communication	N/A	M	$3,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Community Developme nt	24 Months	Emergency Response Plan	Promote public safety.
17	Promote the use of NOAA All-Hazard Weather Radios by Citizens. Purchase and provide radios at a reduced cost to citizens.	City-wide	Reduce risk to citizens through improved communica tions and early warning.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$10,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Emergency Manageme nt	24 Months	Emergency Management Plan - Annex A, E	Promotes public safety.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
18	Maintain Hunterwood Stream Stabilization Project. Installation and maintenance of gabion walls to mitigate stream bank erosion during extreme flood events.	Grapevine Creek/ Hunterwood Park	Reduce risk of flood damages; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.	Structure and Infrastructure	Flood	Safety/Security Water Systems	Y	H	$10,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	12 Months	Drainage Plan	Protects communities and reduces risk of flooding.
19	Implement Streambank Stabilization Measures.	City-wide streams	Reduce risk of flood damages; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security Water Systems	Y	H	$3,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	12-24 Months	Drainage Plan	Protects communities and reduces risk of flooding.

CITY OF COPPELL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
20	Harden/retrofit critical facilities to hazard-resistant levels.	City-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	12-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
21	Acquire and install generators with hard wired quick connections at all critical facilities.	City-wide critical facilities	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FE MA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Public Works	12-24 Months	Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

CITY OF COPPELL MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
22	Install awnings to protect police vehicle fleet.	Coppell Police Department	Protect emergency vehicles and equipment; Ensure continuity of critical services.	Structure and Infrastructure	Extreme Heat, Hail, Lightning, Thunderstorm Wind, Tornado, Winter Storm	Safety/Security	N/A	H	$78,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Coppell Police Department	24 Months	N/A	N/A

CITY OF DESOTO

CITY OF DESOTO MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Develop and implement comprehensive education and outreach program utilizing media, social media, bulletins, pamphlets, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Fire Rescue / Office of Emergency Management, Public Information Officer	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Promotes public safety.
2	Implementation of safe room rebate program for the construction of residential safe rooms for residents of DeSoto.	City-wide	Prevent loss of life among residents during severe weather events.	Structure and Infrastructure	Earthquake, Hail, Lightning, Thunderstorm Wind, Tornado	Safety/Security	Y	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Emergency Management, Building Inspections Department	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances	N/A

CITY OF DESOTO MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Implementation of a residential NOAA Weather Radio program to purchase and provide a weather radio to all homes in the city.	City-wide	Prevent loss of life among residents during severe weather events.	Education and Awareness	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$595,680	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Emergency Management	24 Months	Southwest Regional Emergency Management Plan, Annex A: Warning	Promotes public safety.
4	Install lightning prediction systems in Moseley Park, Grimes Park, Meadowcreek Park and other DeSoto Parks to provide early warning of the possibility of lightning in the immediate area and increase public safety during outdoor activities.	City-wide parks and outdoor locations	Avoid losses to life; Reduce potential injuries.	Structure and Infrastructure	Lightning	Safety/Security	N/A	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Parks and Recreation	12-18 Months	Southwest Regional Emergency Management Plan; Annex A: Warning, Annex P: Hazard Mitigation	N/A

CITY OF DESOTO MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Install a combined technology of structural protection devices (lightning rods), arrestors, and grounding to minimize lightning damage to critical facilities and emergency communications infrastructure.	City-wide facilities *	Avoid losses to life; Reduce potential injuries.	Structure and Infrastructure	Lightning	Safety/Security	N/A	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Facilities / Building Maintenance, Southwest Regional Communications Center (9-1-1 Dispatch)	12-18 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	N/A
	*Southwest Regional Communications Center (SWRCC) 9-1-1 Dispatch Center													
6	Improve and increase the capacity of storm water system by expanding the Ten Mile Creek downstream channel.	Ten Mile Creek Area	Reduce loss of life and property.	Natural Systems Protection, Structure and Infrastructure	Flood	Safety/Security	N/A	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Development Service, Engineering	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects communities and reduces risk of flooding.

CITY OF DESOTO MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
7	Adopt and enforce new building codes for construction of storm shelters and safe rooms in existing and new construction recreational, institutional, commercial, and governmental buildings/facilities.	City-wide	Reduce loss of life and property.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety/Security	Y	M	$2,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Development Service, Engineering	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances	N/A
8	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.	City-wide	Reduce loss of life and property.	Structure and Infrastructure	Earthquake	Safety/Security	N/A	L	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Development Services and Emergency Management, Dallas County	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Threats, Hazards Identification and Risk Assessment (regional)	N/A

CITY OF DESOTO MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
9	Incorporate drought tolerant, fire resistant and xeriscaping practices for existing and new city facilities. This program will also be expanded to include residential areas through regulatory and incentive measures to mitigate the risk. The program can also include installing water saving equipment in city facilities.	City-wide	Conserve water and provide mitigation against wildland fire and drought.	Structure and Infrastructure	Drought, Wildfire	Safety/Security	N/A	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Development Services Department / Utility Billing	12-18 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	N/A
10	Create and implement a weatherization assistance program to assist the vulnerable population and protect them from Extreme Temperatures / Heat.	City-wide	Reduce loss of life during extreme heat or winter weather.	Structure and Infrastructure	Extreme Heat, Winter Storm	Safety/Security	N/A	L	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Dallas County Department of Health and Human Serves, Utility Billing Office, City Health Inspector	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	N/A

CITY OF DESOTO MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
11	Install backup generators and automatic transfer switches (UPS systems) in all city facilities that house critical infrastructure, personnel, and equipment to include Desoto Police Department.	City-wide critical facilities	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Energy (Power/Fuel)	N/A	H	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Police Department, Facilities Department, City Manager's Office; Emergency Management	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Animal Sheltering Plans	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.
12	Purchase hail and wind resistant window coverings for city facilities (existing and new).	City-wide	Reduce loss of life and property.	Structure and Infrastructure	Hail, Thunderstorm Wind, Tornado	Safety/Security	Y	L	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Building Services / Facilities, Emergency Management, Facilities	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	N/A

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
13	Improve and enhance storm water draining capabilities to prevent flooding in flood prone areas. Stormwater management projects will include: installing, re-routing, or increasing the capacity of a storm drainage system, increasing capacity of stormwater detention and retention basins, and increasing dimensions of drainage culverts in flood-prone areas.	City-wide flood prone areas	Reduce the effects of flooding; Reduce damages to structures and infrastructure; Reduce risk to citizens.	Structure and Infrastructure	Flood	Safety/Security	Y	H	$200,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Development Services, Engineering	12-24 Months	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation, and Capital Improvement Plans	Protects communities and reduces risk of flooding.
14	Enhancement of Outdoor Warning Siren System to include communications, security, to provide alert, warning and notification to residents and visitors during all hazards emergencies/disasters.	City-wide at 10 identified sites*	Reduce loss of life and property.	Structure and Infrastructure	Earthquake, Flood, Hail, Thunderstorm Wind, Tornado, Wildfire	Communication	N/A	H	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Fire Department, Emergency Management	12-18 Months	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation, Annex A: Warning	Promotes public safety.
*Current Outdoor Warning Siren locations: 2319 Bolton Boone; 2035 Kestrel Avenue; 1501 Wintergreen Court; 1136 Harvest Hill Circle (in alley); 829 East Parkerville Road; 416 West Parkerville Road at DeSoto Drive; 433 South Cockrell Hill Road (at Cockrell Hill Elementary School); 515 North Cockrell Hill Road; 1409 North Cockrell Hill Road; 719 North Hampton Road														

CITY OF DESOTO MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
15	Reduce Urban Heat Island Effect by distributing cool roof products to homeowners that reflect sunlight and heat away from buildings.	City-wide	Reduce loss of life and property due to extreme heat.	Structure and Infrastructure	Extreme Heat	Safety/Security	Y	L	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Development Services, Building Inspections Department	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances	N/A
16	Buyout structures that are in the floodplain. Land Acquisition for repetitive loss structures.	City-wide floodplain*	Reduce the effects of flooding; Reduce risk to residents.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	L	$5,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto City Administration, Development Services Engineering and Parks and Recreation	12-24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
	*including repetitive loss properties													

CITY OF DESOTO MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
17	Conduct creek and stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.	City-wide creeks and streams	Reduce the effects of flooding; Reduce risk to residents.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Public Works, Engineering	18-24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
18	Harden/retrofit critical facilities to hazard-resistant levels.	City-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of DeSoto Public Works	12-24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF DUNCANVILLE

CITY OF DUNCANVILLE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Implementation of safe room rebate program for the construction of residential safe rooms for residents of Duncanville.	City-wide	Prevent loss of life among residents during severe weather events.	Structure and Infrastructure	Earthquake, Hail, Lightning, Thunderstorm Wind, Tornado	Safety/Security	Y	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Emergency Management, Building Inspections Department	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances	N/A
2	Develop and implement comprehensive education and outreach program utilizing media, social media, bulletins, pamphlets, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Fire Department / Office of Emergency Management, Public Information Officer	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Promotes public safety.

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3	Implementation of a residential NOAA Weather Radio program to purchase and provide a weather radio to all homes in the City.	City-wide	Prevent loss of life among residents during severe weather events.	Education and Awareness	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$411,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Emergency Management	24 Months	Southwest Regional Emergency Management Plan, Annex A: Warning	Promotes public safety.
4	Install lightning prediction systems in Waterview Park, War Memorial Park, Penn Springs Park, Chris Paris Park, Willow Run Park, Duncanville Recreation Center, and Duncanville Field House to provide early warning of the possibility of lightning in the immediate area and increase public safety during outdoor activities.	City-wide parks and outdoor locations	Prevent loss of life among residents during severe weather events.	Structure and Infrastructure	Lightning	Safety/Security	N/A	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Parks and Recreation	12-18 Months	Southwest Regional Emergency Management Plan; Annex A: Warning, Annex P: Hazard Mitigation	N/A

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Install a combined technology of structural protection devices (lightning rods), arrestors, and grounding to minimize lightning damage to critical facilities and emergency communications infrastructure.	City-wide public infrastructure*	Reduce loss of life and property.	Structure and Infrastructure	Lightning	Safety/Security	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Facilities / Building Maintenance, Fire Department, Police Department, Public Works	12-18 Months	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation	N/A
	*including communications and city-wide water infrastructure													
6	Improve and increase the capacity of storm water system by expanding the Ten Mile Creek downstream channel to prevent flooding in flood prone areas to include structural stormwater management projects.	Ten Mile Creek Area	Reduce loss of life and property.	Natural Systems Protections, Structure, and Infrastructure	Dam Failure, Flood	Safety/Security Water Systems	N/A	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Public Works, Engineering	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Promotes public safety.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
7	Construction of storm shelters and safe rooms in existing and new construction recreational, institutional, commercial, and governmental buildings/facilities.	City-wide	Reduce loss of life and property.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety/Security	Y	M	$2,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Building Inspections Department, Engineering, Public Works Department	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances	N/A
8	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.	City-wide	Reduce loss of life and property.	Structure and Infrastructure	Earthquake	Safety/Security	N/A	L	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Public Works and Emergency Management, Dallas County	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Threats, Hazards Identification and Risk Assessment (regional)	N/A

CITY OF DUNCANVILLE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
9	Incorporate drought tolerant, fire resistant and xeriscaping practices for existing and new city facilities. This program will also be expanded to include residential areas through regulatory and incentive measures to mitigate the risk. The program can also include installing water saving equipment in city facilities.	City-wide	Conserve water and provide mitigation against wildland fire and drought.	Structure and Infrastructure	Drought, Wildfire	Safety/Security	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Public Works, Water Utilities, Utility Billing, Parks and Recreation	12-18 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	N/A
10	Create and implement a weatherization assistance program to assist the vulnerable population and protect them from Extreme Temperatures / Heat.	City-wide	Reduce loss of life during extreme heat or winter weather.	Structure and Infrastructure	Extreme Heat, Winter Storm	Safety/Security	Y	L	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Dallas County Department of Health and Human Serves, Public Works, Utility Billing Office, City Health Inspector, Code Enforcement	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	N/A

CITY OF DUNCANVILLE MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
11	Install backup generators and automatic transfer switches (UPS systems) in all city facilities that house critical infrastructure, personnel, and equipment to include existing and new City of Duncanville facilities.	City-wide*	Reduce loss of life and property.	Structure and Infrastructure	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Energy (Power/Fuel)	N/A	H	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Fire Department, Police Department, Facilities Department, Public Works, City Manager's Office, Emergency Management, Parks and Recreation	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation; Animal Sheltering Plans	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.
	*Duncanville Fire Station #1 & Emergency Operations Center; Duncanville Field House, 1700 S Main St (shelter); Summit Water Pumping Station, 1839 Straus Rd, Cedar Hill, Texas 75104 (owned by the City of Duncanville) to provide critical drinking water to the community													
12	Purchase and install hail and wind resistant window coverings for city facilities (existing and new).	City-wide	Reduce loss of life and property.	Structure and Infrastructure	Hail, Thunderstorm Wind, Tornado	Safety/Security	Y	L	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Building Services, Emergency Management, Facilities, Parks and Recreation	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	N/A

CITY OF DUNCANVILLE MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
13	Improve and enhance storm water draining capabilities to prevent flooding in flood prone areas. Stormwater management projects will include: installing, re-routing, or increasing the capacity of a storm drainage system, increasing capacity of stormwater detention and retention basins, and increasing dimensions of drainage culverts in flood-prone areas.	City-wide flood prone areas	Reduce the effects of flooding.	Structure and Infrastructure	Flood	Water Systems Safety/Security	Y	H	$200,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Public Works, Engineering	12-24 Months	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation and Capital Improvement Plans	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
14	Improve creek and stream bank stabilization measures with the use of hard / soft engineering techniques that combine low profile rock with vegetative plating to allow for a more natural condition of Bentle Branch, Maulk, Home, and Ten Mile Creeks.	City-wide creeks and streams	Reduce the effects of flooding.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Public Works, Engineering	18-24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects communities and reduces risk of flooding.

CITY OF DUNCANVILLE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
15	Enhancement of Outdoor Warning Siren System to include communications, security, to provide alert, warning and notification to residents and visitors during all hazards emergencies/disasters to include newer technologies to include NWS polygon activation, wind sensor for high wind activations.	City-wide at 8 siren sites*	Reduce loss of life and property.	Structure and Infrastructure	Earthquake, Flood, Hail, Thunderstorm Wind, Tornado, Wildfire	Communication	N/A	H	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Fire Department, Emergency Management	12-18 Months	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation, Annex A: Warning	Promotes public safety.
	*Current Outdoor Warning Siren locations: Siren #1 - Baseball Field - South end of Highgate Drive; Siren #2 - Cedar Hill Rd, across from Villa Creek Drive; Siren #3 - South side of Danieldale Rd, west of Greenstone LN; Siren #4 - Intersection of E. Center St. & E. Freeman St; Siren #5 - W. Side of Tanglewood Drive, North of E. Center Street; Siren #6 - W. Side of Greenstone LN, North of Middale Rd; Siren #7 - West end of Wind River Drive; Siren #8 - W. Red Bird LN, between Bow Creek Dr. & Jungle Dr.													
16	Reduce Urban Heat Island Effect by distributing cool roof products to homeowners that reflect sunlight and heat away from buildings.	City-wide	Reduce loss of life and property due to extreme heat.	Structure and Infrastructure	Extreme Heat	Safety/Security	N/A	L	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Public Works, Building Inspections Department	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, local ordinances.	N/A

CITY OF DUNCANVILLE MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
17	Buyout structures that are in the floodplain. Land Acquisition for repetitive loss structures.	City-wide floodplain*	Reduce loss of life and property; Reduce the effects of flooding.	Structure and Infrastructure	Flood	Safety/Security	Y	L	$5,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville City Administration, Public Works/ Engineering and Parks and Recreation	12-24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects communities and reduces risk of flooding.
	*Including repetitive loss structures													
18	Conduct creek and stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.	City-wide creeks and streams	Reduce loss of life and property; Reduce the effects of flooding.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Public Works, Engineering	18-24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects communities and reduces risk of flooding.

CITY OF DUNCANVILLE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
19	Harden/retrofit critical facilities to hazard-resistant levels.	City-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Duncanville Public Works	12-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF FARMERS BRANCH

CITY OF FARMERS BRANCH MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Apply to participate in the FEMA CRS.	City-wide	Reduce risk to new and existing structures and infrastructure.	Local Plans and Regulations	Flood	Water Systems	N/A	M	$10,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Public Works	12 Months	N/A	Protects communities and reduces risk of flooding.
2	Increasing awareness by educating citizens regarding the National Flood Insurance Program, natural floodplain functions, local floodplain issues, the dangers of flooding, and the steps they can take to protect themselves when flooding occurs.	City-wide	Increase public awareness, increase participation in NFIP, reduce loss and injuries caused by flooding.	Education and Awareness	Flood	Water Systems	N/A	M	$10,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Public Works	12 Months	N/A	Protects communities and reduces risk of flooding.

CITY OF FARMERS BRANCH MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Establish riparian buffers along creek banks.	City-wide	Reduce risk of erosion or scour due to flooding; Reduce damages to infrastructure including roadways, sidewalks, bridges, gabions, walls, and culverts.	Natural Systems Protection	Flood	Water Systems	N/A	M	$20,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Public Works	12 Months	N/A	Protects communities and reduces risk of flooding.
4	Monitor creeks for potential flooding problems including installation of gauges, sensors, and precipitation measuring sites.	City-wide	Reduce damages caused by flooding through improved risk assessment, and early warning.	Education and Awareness	Flood	Water Systems	N/A	L	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Public Works	36 Months	N/A	Protects communities and reduces risk of flooding.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Identify and improve / repair erosion issues and degraded gabion walls along Farmers Branch Creek and Rawhide Creek. Consider the use of nature-based solutions engineering that utilize vegetative plating to allow for a more natural condition of creeks.	City-wide identified sites*	Reduces and prevents erosion and flood damage to properties that currently suffer severe erosion or that have failing erosion protection measures.	Structure and Infrastructure, Natural Systems Protection	Flood	Water Systems	Y	H	$3,500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Public Works	24 Months	Farmers Branch Creek Master Drainage Plan	Promotes public safety.
	*Farmers Branch Creek and Rawhide Creek													
6	Improve the drainage infrastructure along the concrete drainage channel which runs north of Medical Parkway, Maybrook Drive, and Villa Creek Drive between Templeton Trail and Ford Road.	City-wide identified sites*	Reduce flood risk to properties located along and adjacent to the channel.	Structure and Infrastructure, Natural Systems Protection	Flood	Water Systems	Y	M	$2,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Public Works	24 Months	Farmers Branch Creek Master Drainage Plan, Rawhide Creek Infrastructure Assessment	Promotes public safety.
	*Drainage Channel between Templeton Trail and Ford Road within Farmers Branch													

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
7	Perform a study to assess the condition of in-line weirs and dams located within Farmers Branch Creek and Rawhide Creek watersheds. Work with public and private owners to perform improvements where dams and in-line weirs are found to be structurally deficient.	City-wide identified sites*	Reduces and prevents erosion and flood damage to properties and structures downstream of in-line weirs and dams.	Local Plans and Regulations, Structure, and Infrastructure	Flood	Water Systems	Y	M	$2,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Public Works	24 Months	Farmers Branch Creek Master Drainage Plan, Rawhide Creek Infrastructure Assessment	Promotes public safety.
	*Farmers Branch Creek and Rawhide Creek within Farmers Branch													
8	Perform City-wide storm drain study to identify areas of localized flooding and storm drain deficiencies. Use plan to develop projects to mitigate storm drain deficiencies. Implement targeted actions to improve storm drain capacity.	City-wide	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.	Local Plans and Regulations, Structure, and Infrastructure	Flood	Safety/Security Transportation	Y	M	$7,500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Public Works	24 Months	N/A	Promotes public safety.

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9	Develop and implement a safe room rebate program for individual safe rooms in single-family residences.	City-wide	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.	Structure and Infrastructure	Tornado, Thunderstorm Wind	Communication, Safety/Security	N/A	M	$4,000 rebate + $150 administrative cost per safe room	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Emergency Management	24 Months	Emergency Response Plan	N/A
10	Implement education and awareness programs utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages. Include links to weather alerts and departmental phone listings with contact personnel for residents.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	H	$5,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Emergency Management	12 Months	N/A	Promotes public safety.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
11	Implement education program to increase awareness of the City's emergency notification system Branch Alert. By increasing awareness, more citizens will sign up and will be notified of flood issues or Dam failures.	City-wide	Enhance early notice to increase the number of resident's evacuation from the flood prone area. The structures in the area will still be vulnerable to flooding and damage, but individuals will have more time to prepare.	Education and Awareness	Flood	Communication Safety/Security	N/A	L	$10,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Fire Department, Emergency Management	36 Months	N/A	Promotes public safety.
12	Create and execute plan for providing temporary shelters (post-emergency shelter) for residents affected by natural disasters that result in the loss of or inability to return to their homes.	City-wide	Reduce losses of life and displaced residents.	Local Plans and Regulations, Preparedness /Response	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security, Shelter	N/A	M	$10,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Emergency Management	24 Months	Emergency Response Plan	Promotes public safety.

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13	Procure charging stations to be deployed in shelters after a disaster to supply evacuees with power for their devices. This will allow for evacuees to access important information via their devices, call family and friends for emergency contacts, and provide entertainment to children during a stressful time.	City-wide	Reduce losses of life and displaced residents.	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	M	$10,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Emergency Management	24 Months	Emergency Response Plan	Promotes public safety.
14	Expand City drone program to allow for damage assessment and recovery support after an incident causing widespread residential and commercial damage.	City-wide	Reduce loss of life and property; Recovery will be faster with advanced technology.	Structure and Infrastructure, Preparedness /Response	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Emergency Management	24 Months	Emergency Response Plan	Promotes public safety.

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15	Implement education program to discuss ways for homeowners and businesses to institute drought mitigation measures.	City-wide	Increase awareness to public, increase acreage with drought mitigation measures.	Education and Awareness	Drought	Communication	N/A	L	$10,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Fire Department, Emergency Management	36 Months	N/A	N/A
16	Increasing awareness by educating citizens regarding the dangers of extreme heat and the steps they can take to protect themselves when extreme temperatures occur.	City-wide	Increase public awareness, reduce extreme heat injuries.	Education and Awareness	Extreme Heat	Communication	N/A	M	$30,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Fire Department, Emergency Management	24 Months	N/A	N/A

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17	Acquire and install generators with hard wired quick connection at all critical facilities or replace existing generators with larger generator capacity to meet emergency sheltering and operation needs.	City-wide critical facilities *	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Energy (Power/Fuel)	N/A	M	$100,000 per location	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Facilities Department	24 Months	N/A	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.
	*Farmers Branch Manske Library													
18	Adopt on-site retention basin program to address excessive storm water / firefighting water source. Phase one will be to conduct an engineering study to identify properties that would provide the most benefit to manage runoff.	City-wide creeks*	Reduce risk of flood damages due to erosion or scour during flood events.	Local Plans and Regulations	Flood, Wildfire	Safety/Security	Y	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Public Works	24 Months	N/A	Protects communities and reduces risk of flooding.
	*Areas of Farmers Branch as identified by the floodplain manger to reduce runoff into the three creeks that manage storm water in the community; namely Farmers Branch, Rawhide, and Cooks creeks.													

CITY OF FARMERS BRANCH MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
19	Complete and update floodplain studies to identify flood prone and repetitive loss properties. Implement actions to remove structures from flood-prone areas to minimize future flood losses.	City-wide identified sites*	Reduce flood damage to properties that have suffered repetitive flood damage and to improve the city's flood management program.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$15,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Public Works	24 Months	Farmers Branch Creek Master Drainage Plan, Brookhaven Golf Course Flood Study	Protects communities and reduces risk of flooding.
	*Community-wide flood prone and repetitive loss properties along Farmers Branch Creek, Rawhide Creek, and Cooks Creek													
20	Acquire and distribute NOAA weather radios to residents and businesses within the City. Promote the purchase and use of the radios to all citizens.	City-wide	Increase public awareness, reduce bodily injury to citizens and damage to their property.	Education and Awareness	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	H	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Fire Department, Emergency Management	12 Months	N/A	Promotes public safety.

CITY OF FARMERS BRANCH MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
21	Conduct a comprehensive study of the outdoor warning siren coverage area provided by our eight current sirens and formulate / implement options to improve coverage to the increasingly built out City.	City-wide	Increase notification to citizens by ensuring efficient siren coverage.	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Fire Department, Emergency Management	12 Months	N/A	Promotes public safety.
22	Identify public outdoor areas lacking lightning detection / protection systems. Install systems in those areas. Expand lighting detection/protection system in public outdoor areas.	City-wide	Reduce injury to citizens, increase awareness to citizens in the area of lightning so they can take appropriate action.	Structure and Infrastructure	Lightning	Safety/Security	Y	M	$200,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Parks	24 Months	N/A	N/A

CITY OF FARMERS BRANCH MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
23	Relocate electrical, telephone, cable lines, and other utilities underground throughout the City.	City-wide	Increase response capability if primary EOC were impacted and not functional.	Structure and Infrastructure	Hail, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	L	$10,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Building Inspections	36 Months	N/A	N/A
24	Build community safe rooms in frequented city facilities to provide individuals quick access to a shelter.	City-wide*	Increase access to shelter which reduces the risk of injury to citizens during a tornado.	Structure and Infrastructure	Tornado	Safety/Security	N/A	H	$2,000,000 (per facility)	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Facilities Department	12-24 Months	Capital Improvement Plan	N/A
	* Farmers Branch Manske Library; Recreation Center; Aquatics Center/Natatorium; Branch Connection; City Hall													

CITY OF FARMERS BRANCH MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
24	Work with local and state agencies to determine locations to reduce fuel on public and private lands. Implement fuels reduction program.	City-wide sites*	Reduce fuels that could burn in order to reduce the risk of wildfires.	Structure and Infrastructure	Wildfire	Safety/Security	Y	L	$300,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Parks	36 Months	N/A	N/A
	* Elm Fork River Bottom/Burke Nature Preserve													
26	Dredge the retention ponds along the creeks within the City to remove silt buildup and increase the pond's storage capacity.	City-wide creeks*	Increase storage capacity of ponds and reduce flood risk to properties located along and adjacent to the creeks.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$750,000 (per pond)	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Public Works	24 Months	Drainage Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
	*Farmers Branch Creek, Rawhide Creek, and Cooks Creek within Farmers Branch													

CITY OF FARMERS BRANCH MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
27	Harden/retrofit critical facilities to hazard-resistant levels.	City-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Farmers Branch Public Works	12-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF GLENN HEIGHTS

CITY OF GLENN HEIGHTS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Require standard tie-downs of propane tanks.	City-wide	Reduce damages to structures and infrastructure; Reduce risk of hazardous material release and potential fires; Reduce risk of injuries or fatalities; Reduce risk of flood water contamination.	Local Plans and Regulations	Flood, Thunderstorm Wind, Tornado	Energy (Power/Fuel)	Y	M	$3,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Emergency Manager	24 Months	Local Building Codes/Ordinances	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF GLENN HEIGHTS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
2	Equip sewer manholes with watertight covers and inflow guards.	City-wide	Reduce risk of flood water contamination; Reduce risk of surface water infiltration and sewage backup; Ensure continuity of critical services.	Structure and Infrastructure	Flood	Safety/Security	Y	H	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Emergency Manager	12 Months	N/A	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
3	Adopt a landscape ordinance (selection and planting guidelines).	City-wide	Reduce impact on groundwater; Minimize impacts of expansive soils; Reduce rainfall runoff volume and risk of flooding; Reduce risk and spread of wildfire.	Local Plans and Regulations	Drought, Wildfire	Communication	Y	M	$3,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Emergency Manager	24 Months	Local Building Codes/Ordinances	N/A

CITY OF GLENN HEIGHTS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
4	Adopt and implement a routine tree trimming program that clears tree limbs near power lines and/or hanging in right-of-way; Remove dead trees from right-of way and drainage systems on a scheduled basis.	City-wide	Reduce damages to infrastructure; Ensure continuity of services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations	Structure and Infrastructure	Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security, Energy (Power/Fuel)	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Emergency Manager	24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
5	Acquire and install generators with hard wired quick connections at all critical facilities.	City-wide critical facilities	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Energy (Power/Fuel)	N/A	H	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Emergency Manager	12-24 Months	Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

CITY OF GLENN HEIGHTS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
6	Implement education and awareness programs utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages. Include links to weather alerts and departmental phone listings with contact personnel for residents.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	H	$5,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Emergency Manager	12 Months	Emergency Management Plan	Promotes public safety.
7	Update Outdoor Warning Siren system and emergency notification system.	City-wide	Reduce risk to citizens through improved communications and early warning.	Education and Awareness	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Emergency Manager	24 Months	Emergency Management Plan	Promotes public safety.

CITY OF GLENN HEIGHTS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
8	Adopt and implement routine fire hydrant maintenance plan.	City-wide	Reduce risk and spread of wildfires through routine maintenance of fire hydrants; Reduce risk of injury or damages.	Local Plans and Regulations	Wildfire	Safety/Security	Y	M	$85,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Emergency Manager	12 Months	N/A	N/A
9	Educate the community on the dangers of low water crossings through the installation of warning signs and promotion of "Turn Around, Don't Drown" Program.	City-wide	Reduce risk of injuries, fatalities and damages through education and awareness.	Education and Awareness	Flood	Communication	N/A	H	$10,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Emergency Manager	12 Months	N/A	Promotes public safety.

CITY OF GLENN HEIGHTS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
10	Build safe room shelters throughout jurisdiction to include community centers and/or manufactured home parks so that all park residents can reach shelter in less than five minutes.	City-wide*	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety/Security	N/A	L	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Public Works	36 Months	Emergency Management Plan, Capital Improvement Plan	N/A
	*Including manufactured home parks													
11	Adopt ordinance requiring tie-downs for mobile homes; Require manufactured housing be securely anchored to permanent foundations.	City-wide drainage system	Reduce damages to structures and infrastructure; Reduce risk of injuries or fatalities.	Local Plans and Regulations	Thunderstorm Wind, Tornado	Safety/Security	Y	M	$3,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Manager	24 Months	Local Building Codes / Ordinances	N/A

CITY OF GLENN HEIGHTS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
12	Upgrade undersized stormwater drains and culverts.	City-wide drainage system	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$3,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Public Works	24 Months	Floodplain Management Plan, Drainage Plan	Protects communities and reduces risk of flooding.
13	Acquire and distribute NOAA weather radios.	City-wide critical facilities	Reduce risk to citizens through improved communications and early warning.	Education and Awareness	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Emergency Manager	24 Months	Emergency Management Plan	Promote public safety.

CITY OF GLENN HEIGHTS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
14	Obtain certification in the National Weather Service StormReady Program.	City-wide critical facilities	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.	Education and Awareness	Flood, Hail, Thunderstorm Wind, Tornado, Winter Storm	Communication	N/A	M	$10,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Emergency Manager	24 Months	Emergency Management Plan	Promotes public safety.
15	Require "safe rooms" to be added when constructing new schools, daycares, rest homes and critical care facilities.	City-wide	Reduce risk to citizens by providing shelter in new critical facilities during extreme weather events.	Local Plans and Regulations	Thunderstorm Wind, Tornado	Safety/Security	N/A	M	$5,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Administrator	24 Months	Local Building Codes/Ordinances	N/A

CITY OF GLENN HEIGHTS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
16	Adopt and implement a program for clearing debris from bridges, drains and culverts.	City-wide	Reduce damages caused by flooding by maintaining or restoring drainage capacity.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$50,000 (annually)	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Public Works	24 Months	Local Building Codes/Ordinances	Protects communities and reduces risk of flooding.
17	Develop and implement a safe room rebate program for individual safe rooms in single-family residences.	City-wide	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.	Structure and Infrastructure	Tornado	Safety/Security	N/A	M	$5,000 per safe room	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Public Works	12-24 Months	Emergency Management Plan	N/A

CITY OF GLENN HEIGHTS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
18	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.	City-wide	Improve risk assessment; Reduce risk of damage or injuries through building code improvements; Reduce risk of damages and injuries.	Local Plans and Regulations	Earthquake	Safety/Security	Y	L	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Public Works	24-36 Months	Building Ordinance / Building Codes	N/A
19	Conduct creek and stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.	City-wide creeks and streams	Reduce losses related to flooding.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Public Works, Building and Codes	18-24 Months	Emergency Management Plan	Protects communities and reduces risk of flooding.

CITY OF GLENN HEIGHTS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
20	Develop and Implement Community Wildfire Protection Program.	City-wide	Reduce loss of life and property.	Local Plans and Regulations	Drought, Extreme Heat, Lightning, Wildfire	Safety/Security	Y	H	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Fire Department	12 Months	Emergency Management Plan	N/A
21	Harden/retrofit critical facilities to hazard-resistant levels.	City-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Glenn Heights Public Works	12-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

TOWN OF HIGHLAND PARK

TOWN OF HIGHLAND PARK MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Develop and Implement comprehensive education and outreach program utilizing media, social media, bulletins, pamphlets, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	Town-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Highland Park Emergency Manager	12 Months	Emergency Management Plan	Promotes public safety.
2	Install stormwater drainage system in accordance with the Town's Master Drainage Plan.	Town-wide at identified sites	Previous losses (with incomplete documentation) from flash flooding to back houses, single-family residential buildings, in the hundreds of thousands of dollars.	Structure and Infrastructure	Flood	Safety/Security	Y	H	$45,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Highland Park Engineering Department	12-24 Months	Capital Improvement Plan	Protects communities and reduces risk of flooding.

TOWN OF HIGHLAND PARK MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Install drainage flumes in easements to convey stormwater to the roadways.	Town-wide at identified sites	Previous losses (with incomplete documentation) from flash flooding to back houses, single-family residential buildings, in the hundreds of thousands of dollars.	Structure and Infrastructure	Flood	Safety/Security	Y	H	$15,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Highland Park Engineering Department	12-24 Months	Capital Improvement Plan	Protects communities and reduces risk of flooding.
4	Improvements to the Wycliff/Lakeside/St. Johns Intersection that includes roadway reconstruction, addition of a bridge and weir structure and associated bank protection and improvements.	Wycliff Dam	Reduce risk of flooding to those within the area of Wycliff dam.	Structure and Infrastructure	Dam Failure, Flood	Safety/Security	N/A	H	$20,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Highland Park Engineering Department	12-24 Months	Emergency response and equipment maintenance	Protects communities and reduces risk of flooding.

TOWN OF HIGHLAND PARK MITIGATION ACTIONS														
*Reduces risk to new and/or existing buildings and infrastructure														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Implement the Hackberry Creek Capital Improvement Program between Beverly and Armstrong – see Appendix H.	Identified site*	Previous losses from flash flooding to vehicles, single family residential, and public infrastructure (i.e., roads/bridges) is in the hundreds of thousands of dollars.	Structure and Infrastructure	Flood	Safety/Security	Y	H	$10,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Highland Park Engineering Department	12-24 Months	Hackberry Creek Development Report	Protects communities and reduces risk of flooding.
	*Area along 1.2 miles stretch of Hackberry Creek passing through the town of Highland Park													
6	Reconstruct Drainage System and Street in the 4500-4700 blocks of Westside Drive.	Identified site*	Reduce damages caused by flooding by maintaining or restoring drainage capacity.	Structure and Infrastructure	Flood	Safety/Security	Y	H	$700,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Highland Park Engineering Department	12-24 Months	Hackberry Creek Development Report	Protects communities and reduces risk of flooding.
	*4500-4700 blocks of Westside Drive													

TOWN OF HIGHLAND PARK MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
7	Construct hard roof over Highland Park Dept. of Public Safety parking lot at Town Hall to protect Town rolling stock from total loss or damage from large hail.	Town-wide identified sites*	Protect and reduce the loss of public property.	Structure and Infrastructure	Hail, Thunderstorm Wind, Tornado	Safety/Security	N/A	H	$360,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Highland Park Department of Public Safety	12-24 Months	Capital Improvement Plan	N/A
	Highland Park Town Hall; 4700 Drexel Drive; North Side Parking Lot													
8	Create & Enforce Policies requiring police officers to maintain weather awareness and plan for vehicle sheltering options prior to hail affecting their immediate area, along with educating local business owners of the need for temporary shelter for Town vehicles during severe weather.	Town-wide identified sites*	Protect and reduce the loss of life and property.	Local Plans and Regulations	Hail	Safety/Security	N/A	M	$1,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Highland Park Department of Public Safety	12-24 Months	Department Policy and General Orders	N/A
	*Highland Park Town Hall; 4700 Drexel Drive													

TOWN OF HIGHLAND PARK MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
9	Harden/retrofit critical facilities to hazard-resistant levels.	Town-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Highland Park Department of Public Safety	12-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
10	Acquire and install generators with hard wired quick connections at all critical facilities.	Town-wide critical facilities	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Highland Park Department of Public Safety	12-24 Months	Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

CITY OF HUTCHINS

CITY OF HUTCHINS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Develop and Implement comprehensive education and outreach program utilizing media, social media, bulletins, pamphlets, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management	24 Months	N/A	Promotes public safety.
2	Develop flood study and flood prevention methods for Buena Vida Way Road.	City-wide	Reduce losses due to flooding.	Structure and Infrastructure	Flood	Safety/Security	N/A	H	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Public Works	24 Months	N/A	Promotes public safety.

CITY OF HUTCHINS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Install lightning prediction systems throughout parks to provide early warning of the possibility of lightning in the immediate area and increase public safety during outdoor activities.	City-wide parks and outdoor locations	Reduce loss of life and property.	Structure and Infrastructure	Lightning	Safety/Security	N/A	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management	12-18 Months	N/A	N/A
4	Install a combined technology of structural protection devices (lightning rods), arrestors, and grounding minimize lightning damage to critical facilities and emergency communications infrastructure.	City-wide critical facilities *	Reduce loss of life and property.	Structure and Infrastructure	Lightning	Safety/Security	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management	12-18 Months	N/A	N/A
	*including communications infrastructure													

CITY OF HUTCHINS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Improve and increase the capacity of storm water systems to prevent flooding in flood prone areas to include structural stormwater management projects.	City-wide	Reduce loss of life and property.	Natural Systems Protection, Structure, and Infrastructure	Flood	Safety/Security Water Systems	Y	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management, Public Works	24 Months	N/A	Protects communities and reduces risk of flooding.
6	Construction of storm shelters and safe rooms in existing and new construction recreational, institutional, commercial, and governmental buildings/facilities.	City-wide	Reduce loss of life and property.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety/Security	Y	M	$2,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management	12 Months	N/A	N/A

CITY OF HUTCHINS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
7	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.	City-wide	Reduce loss of life and property.	Structure and Infrastructure	Earthquake	Safety/Security	N/A	L	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management	24 Months	N/A	N/A
8	Incorporate drought tolerant, fire resistant and xeriscaping practices for existing and new city facilities. This program will also be expanded to include residential areas through regulatory and incentive measures to mitigate the risk. The program can also include installing water saving equipment in city facilities.	City-wide public facilities	Reduce damages at critical facilities.	Structure and Infrastructure	Drought, Wildfire	Safety/Security	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management	12-18 Months	N/A	N/A

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9	Create and implement a weatherization assistance program to assist the vulnerable population and protect them from Extreme Temperatures/Heat.	City-wide	Reduce loss of life and property.	Structure and Infrastructure	Extreme Heat, Winter Storm	Safety/Security	Y	L	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management	12 Months	N/A	N/A
10	Install backup generators and automatic transfer switches (UPS systems) in all city facilities that house critical infrastructure, personnel, and equipment to include existing and new City of Hutchins facilities, to include Dallas Wastewater Lift Station.	City-wide critical facilities	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Energy (Power/Fuel)	N/A	H	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management, Public Works	12 Months	N/A	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

CITY OF HUTCHINS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
11	Purchase hail and wind resistant window coverings for city facilities (existing and new).	City-wide public facilities	Reduce damages at critical facilities.	Structure and Infrastructure	Hail, Thunderstorm Wind, Tornado	Safety/Security	Y	L	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management	12 Months	N/A	N/A
12	Conduct creek and stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.	City-wide creeks and streams	Reduce risk of erosion or scour due to flooding; Reduce damages to infrastructure including roadways, sidewalks, bridges, and culverts.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Public Works, Engineering	18-24 Months	N/A	Protects communities and reduces risk of flooding.

CITY OF HUTCHINS MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
13	Improve creek and stream bank stabilization measures with the use of hard / soft engineering techniques that combine low profile rock with vegetative plating to allow for a more natural condition of local streams and creeks.	City-wide creeks and streams	Reduce risk of flooding.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management, Public Works	18-24 Months	N/A	Protects communities and reduces risk of flooding.
14	Enhancement of Outdoor Warning Siren System to include communications, security, to provide alert, warning and notification to residents and visitors during all hazards emergencies / disasters to include newer technologies to include NWS polygon activation, wind sensor for high wind activations.	City-wide at identified warning siren sites	Reduce risk of injuries, fatalities, and damages through outdoor communication.	Structure and Infrastructure	Earthquake, Flood, Hail, Thunderstorm Wind, Tornado, Wildfire	Communication	N/A	H	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management	12-18 Months	N/A	Promotes public safety.

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15	Reduce Urban Heat Island Effect by distributing cool roof products to homeowners that reflect sunlight and heat away from buildings.	City-wide	Reduce loss of life and property due to extreme heat.	Structure and Infrastructure	Extreme Heat	Safety/Security	Y	L	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management	24 Months	N/A	N/A
16	Improve and Enhance Storm Water Draining capabilities to prevent flooding in flood prone areas.	City-wide	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.	Structure and Infrastructure	Flood	Safety/Security	Y	H	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management, Public Works	12-24 Months	N/A	Protects communities and reduces risk of flooding.

CITY OF HUTCHINS MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
17	Develop a Wildland Fire Urban Interface or Wildland Fire Community Preparedness Plan and participate in Fire Wise Programs.	City-wide	Reduce risk of wildfire damages through improved communication and education.	Local Plans and Regulations	Drought, Wildfire	Safety/Security, Communication	Y	H	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management	12 Months	N/A	N/A
18	Promote land use program, identify undeveloped land within the floodplain, and assess uses for conservation or recreation. Acquire floodplain and protect environmentally sensitive areas and watersheds and convert them into open space land.	City-wide	Reduce flood risk to structures and infrastructure in and near the floodplain.	Structure and Infrastructure, Natural Systems Protection (vacant land)	Flood	Safety/Security	Y	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management, Public Works	24 Months	N/A	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

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**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
19	Implement safe room rebate program for residents of the City of Hutchins.	City-wide	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety/Security	N/A	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management	12 Months	N/A	N/A
20	Harden/retrofit critical facilities to hazard-resistant levels.	City-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Hutchins Emergency Management	12-24 Months	N/A	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF LANCASTER

CITY OF LANCASTER MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Develop and Implement comprehensive education and outreach program utilizing media, social media, bulletins, pamphlets, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Emergency Management	24 Months	Emergency Management Plan	Promotes public safety.
2	Implementation of a residential NOAA Weather Radio program to purchase and provide a weather radio to all homes in the City.	City-wide	Prevent loss of life among residents during severe weather events.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$421,560	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Emergency Management	24 Months	Southwest Regional Emergency Management Plan, Annex A: Warning	Promotes public safety.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Install lightning prediction systems in Lancaster Community Park, Bear Creek Nature Park, Lancaster City Park, Stanford Park, Cedardale park, Jaycee Park, Lancaster Recreation Center, and Lancaster Senior Center to provide early warning of the possibility of lightning in the immediate area and increase public safety during outdoor activities.	City-wide parks and outdoor locations	Reduce loss of life and property.	Structure and Infrastructure	Lightning	Safety/Security	N/A	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Quality of Life and Cultural Services, Parks and Recreation	12-18 Months	Southwest Regional Emergency Management Plan, Annex A: Warning, Annex P: Hazard Mitigation	N/A
4	Install a combined technology of structural protection devices (lightning rods), arrestors, and grounding minimize lightning damage to critical facilities and emergency communications infrastructure.	City-wide critical facilities	Reduce loss of life and property.	Structure and Infrastructure	Lightning	Safety/Security	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Facilities / Building Maintenance, Fire Department, Police Department, Public Works	12-18 Months	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation	N/A

CITY OF LANCASTER MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Improve and increase the capacity of storm water system by expending the Ten Mile Creek downstream channel to prevent flooding in flood prone areas to include structural stormwater management projects.	Ten Mile Creek Area	Reduce loss of life and property.	Natural Systems Protection, Structure and Infrastructure	Flood	Safety/Security	Y	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Public Works, Engineering	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects communities and reduces risk of flooding.
6	Construction of storm shelters and safe rooms in existing and new construction recreational, institutional, commercial, and governmental buildings/facilities.	City-wide public facilities	Reduce loss of life and property.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety/Security	Y	M	$2,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Building Inspections Department, Engineering, Development Services	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances	N/A

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
7	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.	City-wide	Reduce loss of life and property.	Structure and Infrastructure	Earthquake	Safety/Security	N/A	L	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Development Services, Public Works, Emergency Management, Dallas County	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Threats, Hazards Identification and Risk Assessment (regional)	N/A
8	Incorporate drought tolerant, fire resistant and xeriscaping practices for existing and new city facilities. This program will also be expanded to include residential areas through regulatory and incentive measures to mitigate the risk. The program can also include installing water saving equipment in city facilities.	City-wide public facilities	Reduce loss of life and property.	Structure and Infrastructure	Drought, Wildfire	Safety/Security	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Public Works, Water Utilities / Utility Billing, Parks and Recreation; Fire Department, Facilities Department	12-18 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	N/A

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9	Create and implement a weatherization assistance program to assist the vulnerable population and protect them from Extreme Temperatures/Heat.	City-wide	Reduce loss of life during extreme heat or winter weather.	Structure and Infrastructure	Extreme Heat, Winter Storm	Safety/Security	Y	L	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Dallas County Department of Health and Human Serves, Public Works, Utility Billing Office, Development Services, Code Enforcement	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	N/A
10	Install backup generators and automatic transfer switches (UPS systems) in all city facilities that house critical infrastructure, personnel, and equipment to include existing and new City of Lancaster facilities.	City-wide critical facilities *	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire	Energy (Power/Fuel)	N/A	H	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Fire Department, Police Department, Facilities Department, Public Works, City Manager's Office; Emergency Management, Parks and Recreation	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation; Animal Sheltering Plans	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.
*Community-wide critical facilities, including City Hall; Water Pumping Stations to provide critical drinking water to the community; Public Safety Building; Fire Stations; Municipal Court; Recreation Center (Shelter); Senior Center; Library; Lancaster Airport; Animal Services (Animal Shelter)														

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
11	Purchase hail and wind resistant window coverings for city facilities (existing and new).	City-wide public facilities	Reduce loss of life and property.	Structure and Infrastructure	Hail, Thunderstorm Wind, Tornado	Safety/Security	Y	L	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Building Services, Emergency Management, Facilities, Parks and Recreation	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	N/A
12	Conduct creek and stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.	City-wide creeks and streams	Reduce risk of erosion or scour due to flooding; Reduce losses related to flooding.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	M	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Public Works, Engineering	18-24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects communities and reduces risk of flooding.

CITY OF LANCASTER MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
13	Improve creek and stream bank stabilization measures with the use of hard / soft engineering techniques that combine low profile rock with vegetative plating to allow for a more natural condition of Ten Mile Creek.	City-wide creeks and streams	Reduce losses related to flooding.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Public Works, Engineering	18-24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects communities and reduces risk of flooding.
14	Enhancement of Outdoor Warning Siren System to include communications, security, to provide alert, warning and notification to residents and visitors during all hazards emergencies / disasters to include newer technologies to include NWS polygon activation, wind sensor for high wind activations.	City-wide at identified sites*	Reduce loss of life and property.	Structure and Infrastructure	Earthquake, Flood, Hail, Thunderstorm Wind, Tornado, Wildfire	Communication	N/A	H	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Fire Department, Emergency Management	12-18 Months	Southwest Regional Emergency Management Plan; Annex P: Hazard Mitigation, Annex A: Warning	Protects communities and reduces risk of flooding.
*Current Outdoor Warning Siren locations: 2770 W Main St; 3130 Lomita;1541 Reindeer Rd; 1541 W. Reindeer Rd.1221; 1341 Ten Mile Rd;2601 Pike Dr.;640 N. Bluegrove; E Wheatland Rd; 1341 Ten Mile Rd; 626 W Pleasant Run Rd; 2601 Pike Dr.; 1680 W Main St; 640 N Bluegrove Rd; 211 W Belt Line Rd; 1901 Dewberry Blvd; 676 Ferris Rd; 1000 Cedardale; 3445 Sherwood Ave.; 1999 Jefferson St.; 2500 Nokomis; 626 W. Pleasant Run Rd."													

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15	Reduce Urban Heat Island Effect by distributing cool roof products to homeowners that reflect sunlight and heat away from buildings.	City-wide	Reduce loss of life and property due to extreme heat.	Structure and Infrastructure	Extreme Heat	Safety/Security	Y	L	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Public Works, Building Inspections Department, Development Services	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances	N/A
16	Develop a comprehensive loss reduction program, involving buy outs and relocation in areas along Ten Mile Creek to reduce losses and repetitive damages. Buyout structures that are in the floodplain. Land Acquisition for repetitive loss structures.	City-wide identified sites*	Reduce flood risk to structures and infrastructure in and near the floodplain.	Structure and Infrastructure, Natural Systems Protection (green space)	Flood	Safety/Security	Y	L	$5,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster City Administration, Public Works, Engineering, Parks and Recreation	12-24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
	*Community-wide floodplain and repetitive loss structures along Ten Mile Creek													

CITY OF LANCASTER MITIGATION ACTIONS														
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17	Improve and Enhance Storm Water Draining capabilities to prevent flooding in flood prone areas.	City-wide	Reduce damages caused by flooding by maintaining or restoring drainage capacity.	Structure and Infrastructure	Flood	Safety/Security	Y	H	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Public Works, Engineering, Development Services	12-24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation and Capital Improvement Plans	Protects communities and reduces risk of flooding.
18	Develop a Wildland Fire Urban Interface or Wildland Fire Community Preparedness Plan and participate in Fire Wise Programs.	City-wide	Reduce loss of life and property.	Local Plans and Regulations	Drought, Wildfire	Safety/Security	Y	H	$100,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Fire Department, Emergency Management	12 Months	Southwest Regional Emergency Management Plan, Annex F: Firefighting, Annex P: Hazard Mitigation; Animal Sheltering Plans	N/A

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
19	Promote land use program, identify undeveloped land within the floodplain, and assess uses for conservation or recreation. Acquire floodplain and protect environmentally sensitive areas along Ten Mile Creek and watersheds and convert them into open space land.	Ten Mile Creek Area	Eliminate risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.	Structure and Infrastructure, Natural Systems Protection (vacant land)	Flood	Safety/Security	Y	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Development Services, Public Works Department, Parks and Recreation	24 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
20	Implement safe room rebate program for residents of the City of Lancaster.	City-wide	Reduce loss of life and property.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety-Security	N/A	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Emergency Management, City Administration, Building Inspections Department	12 Months	Southwest Regional Emergency Management Plan, Annex P: Hazard Mitigation, Local Ordinances	N/A

CITY OF LANCASTER MITIGATION ACTIONS														
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21	Harden/retrofit critical facilities to hazard-resistant levels.	City-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Lancaster Emergency Management, City Administration, Building Inspections Department	12-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF RICHARDSON

CITY OF RICHARDSON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Enhance the Cyber Resilience of Community Infrastructure and Facilities.	City-wide	Increased Service Uptime/Reduced Service Interruption; Reduced cost of IT Disaster Recovery; Reduced cost of data breaches or privacy violations.	Structure and Infrastructure, Local Plans and Regulations	Cyber Attack	Safety/Security	Y	H	$1,500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Information Technology Department	36 Months	Continuity of Operations Plan, Emergency Management Plan	N/A
2	Enhance the Climate Resilience of Critical Infrastructure and City Facilities.	City-wide	Life and health safety; Reduction in economic losses; Reduce service interruption; Reduction in post incident recovery.	Structure and Infrastructure, Local Plans and Regulations	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	M	$5,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Capital Projects, Fleet and Facilities, Development Services	36 Months	Continuity of Operations Plan, Stormwater Plan, Comprehensive Plan, Emergency Management Plan	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outage.

CITY OF RICHARDSON MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Acquire and install generators with hard wired quick connections at all critical facilities.	City-wide	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Energy (Power/Fuel)	N/A	H	$800,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Fleet and Facilities	12-24 Months	Generator Master Plan, Continuity of Operations Plan, Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.
4	Acquire and install portable, temporary, and permanent electricity/energy solutions with quick connections and cutovers at all critical facilities.	City-wide	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure, Local Plans and Regulations	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Energy (Power/Fuel)	N/A	H	$1,500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Fleet and Facilities	12-24 Months	Generator Master Plan, Continuity of Operations Plan, Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

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5	Adopt a retention basin program in conjunction with development to address excessive stormwater/firefighting water sources.	City-wide	Requiring developers to implement on-site retention basin for new developments will prevent downstream impacts, reduce impacts to floodplain and provide additional potential water sources for firefighting uses.	Local Plans and Regulations	Flood, Wildfire	Safety/Security	Y	H	$6,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Capital Projects	24 Months	Continuity of Operations Plan, Stormwater Plan, Comprehensive Plan, Emergency Management Plan	Protects communities and reduces risk of flooding.

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**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
6	Require "safe rooms" to be added when constructing new schools, daycares, rest homes and critical care facilities.	City-wide	Reduce risk to citizens by providing shelter in new critical facilities during extreme weather events.	Local Plans and Regulations	Thunderstorm Wind, Tornado	Safety/Security	N/A	L	$5,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Development Services	24 Months	Comprehensive Plan, Unified Development Plan	N/A
7	Implement measures to secure traffic lights and traffic controls from high wind damage.	City-wide	Reduce damages to structures and infrastructure; Reduce risk of injuries or fatalities.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety/Security	Y	L	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Transportation	24 Months	Transportation Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF RICHARDSON MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
8	Require standards for burial of electrical, telephone, cable lines and other utilities in new developments.	City-wide	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations	Local Plans and Regulations	Earthquake, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security, Energy (Power/Fuel)	Y	L	$3,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Development Services	24 Months	Comprehensive Plan, Unified Development Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF RICHARDSON MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
9	Undertake an initiative to increase flood preparedness and response, such as education on NFIP and community education on flood danger. Increase initiatives and develop plans to upgrade the stormwater drains, culverts, basins, and retention/drainage capacity.	City-wide	Reduce flood risk through education and awareness; Increase flood insurance coverage.	Local Plans and Regulations, Education and Awareness, Structure, and Infrastructure	Flood, Wildfire	Communication Safety/Security	Y	L	$8,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Multiple Departments – City of Richardson	48-60 Months	Comprehensive Plan, Emergency Management Plan, Stormwater Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
10	Enhance the Winter Resilience of the community through public education efforts and programs and installation of warning measures for bridges and roads.	City-wide	Reduce risk of damages and injuries through mitigation education and awareness.	Education and Awareness, Local Plans and Regulations	Winter Storm	Communication Safety/Security	Y	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Multiple Departments – City of Richardson	48-60 Months	Comprehensive Plan, Emergency Management Plan	N/A

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**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
11	Utility undergrounding to critical facilities to reduce loss of essential services.	City-wide identified sites*	Reduce damage to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outage.	Structure and Infrastructure	Earthquake, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	M	$150,000 per mile $3,000,000 for 20 miles to critical facilities	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Development Services	24-48 Months	Comprehensive/Master Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
*Richardson City Hall @ 411 W. Arapaho Road Richardson, TX 75080; Richardson Emergency Operations Center @ 1621 E. Lookout Drive Richardson, TX 75082; Richardson Fire Administration and Fire Station 1 @ 300 Greenville Avenue, Richardson, TX 75081; Richardson Police Department Headquarters @ 200 Greenville Avenue Richardson, TX 75081														

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
12	Enhance building codes and enforcement, including development of standard for structural sound and asset tie-down.	City-wide	Reduce risk of damages to structures through improved construction techniques; Reduce recovery efforts for the community after an event; Reduce risk of injury or fatality to citizens.	Local Plans and Regulations	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	M	$2,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Building Inspection Department	24-36 Months	Adoption of International Building Codes and National Electric Code, and Ordinance 4186	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
13	Land Use Program: Continue to develop and maintain special use parks and green belt areas as flooding mitigation strategies, further prohibiting development in the floodplain. Declare a moratorium on the acceptance of any request for rezoning in flood prone areas other than for rezoning for less intense use.	City-wide	Reduce risk of damages to structures through restrictions in development; Reduce recovery efforts for the community after an event; Reduce risk of injury or fatality to citizens; Restore functions of the natural floodplain.	Local Plans and Regulations	Flood	Safety/Security	Y	H	$2,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Development Services	12-24 Months	Comprehensive Zoning Ordinance (CZO)	Protects communities and reduces risk of flooding.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
14	Require placement of new critical facilities in low-risk areas. Ensure that no public facilities are proposed for flood hazard areas. Protect new critical facilities to 2 feet above the 500-year flood elevation.	City-wide critical facilities	Reduce risk of damages to critical facilities; Ensure continuity of critical services; Reduce risk of injuries to critical service employees.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$5,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Capital Projects	12-24 Months	Comprehensive/Master Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
15	Assess the long-term cost benefit of standard use of absorbent building material in place of concrete for sidewalks, parking lots etc. Implement the use of this material at new public facilities where feasible.	City-wide critical facilities	Reduce impacts of flooding; Reduce damages to structures and infrastructure.	Structure and Infrastructure, Local Plans and Regulations	Flood	Safety/Security Water Systems	Y	M	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Capital Projects	24-48 Months	Comprehensive/Master Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
16	Promote wildland urban boundary zones to separate developed areas from high-hazard areas.	City-wide identified sites*	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.	Education and Awareness	Wildfire	Communication	N/A	M	$3,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Development Services, Fire	24-36 Months	Emergency Support Function #4 Fire, Evacuation Plan, International Fire Code (IFC) Section 308.1.6 and 308.2	N/A
	*Citywide with focus near UTD campus, Breckinridge Park, and Northeastern portions of Richardson which have greater concentration of Wildland Urban Interface													

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
17	Participate in Firewise Community designation program, including creation of defensible spaces around homes and neighborhoods to increase the success potential of fire fighters. Actions include removing vegetation immediately adjacent to homes, improving ingress and egress, and replacing flammable structure materials with fire-resistant materials (e.g., decks and roofing).	City-wide	Reduce risk of wildfires and the spread of wildfire through education of effective practices and fuels reduction; Reduce risk of damages and injuries.	Education and Awareness	Wildfire	Safety/Security Communication	N/A	M	$60,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Fire Department	24-36 Months	Emergency Support Function #4 Fire, Evacuation Plan, International Fire Code (IFC) Section 308.1.6 and 308.2	N/A

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
18	Install Environmental Sensor Stations (ESS) and Road Weather Information Systems (RWIS) to support winter road maintenance activities, expediting closures when needed, to protect the public.	City-wide identified sites*	Reduce risk of damages and injuries on roadways and bridges during winter storm events through education and awareness programs; Reduce demand on emergency response during winter storms.	Education and Awareness	Winter Storm	Safety/Security	N/A	M	$300,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Office of Emergency Management	24 Months	Comprehensive/Master Plan	N/A
	*Collins Boulevard; Galatyn Parkway overpass; Spring Valley Tunnel													

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
19	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$18,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Communications Department	24 Months	Essential Support Function (ESF) 2 Communications, Support Function Warning and ESF 15 External Affairs	Promotes public safety.
20	Enhance Emergency Operations Center capabilities to improve EOC server room, system redundancies, warning, coordination, situational awareness, and communication abilities with residents, businesses, and community at-large.	Richardson Emergency Operations Center	Reduce risk to citizens through improved communications and early warning; Ensure continuity of emergency services.	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	M	$247,500	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Office of Emergency Management	12-36 Months	Emergency Management Plan; Capital Improvement Plan; Essential Support Function (ESF) 2 Communications, Support Function Warning and ESF 15 External Affairs	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

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21	Remove structures from flood-prone areas to minimize future flood losses through implementation of drainage improvements, conservation easements, floodwalls, retaining walls, culverts, and stream corridor restoration including elevation, acquisition, and flood-proofing. (See Appendix I)	City-wide identified sites*	Reduce damages caused by flooding by maintaining or restoring drainage capacity.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security Water Systems	Y	M	$82,866,206	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Capital Projects	24-48 Months	Stormwater Management Plan, Chapter 9 Floodplain Management Ordinance, Stormwater Ordinance, Floodplain Maps, Flood Insurance Studies, Hydrologic Studies, Hydraulic Studies	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
	*City-wide high flood risk properties and repetitive loss properties. Drainage improvement list is included in Appendix I.													
22	Improve stormwater management, operations, and maintenance for stream flooding that erodes away bridge supports. Design bridges expansion joints for longer periods of high heat and develop a more robust inspection and maintenance process.	City-wide	Reduce damages caused by flooding by maintaining or restoring drainage capacity.	Natural Systems Protection, Local Plans and Regulations	Extreme Heat, Flood	Safety/Security Water Systems	Y	M	$50,000 (annually)	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Health Department	24 Months	Stormwater Management Plan, Stormwater Ordinance, Flood Insurance Studies, Hydrologic Studies, Hydraulic Studies	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
23	Monitor streams and waterways for potential flooding problems including installation of gauges, sensors, and precipitation measuring sites.	City-wide	Reduce damage caused by flooding through improved risk assessment and early warning.	Education and Awareness	Flood	Safety/Security Water Systems	N/A	M	$86,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Health Department	24 Months	Stormwater Management Plan, Stormwater Ordinance, Flood Insurance Studies, Hydrologic Studies, Hydraulic Studies	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
24	Encourage purchase and use of NOAA all-hazard radios by residents, businesses, faith-based groups, and other large meeting areas.	City-wide	Reduce risk to citizens through improved communications and early warning.	Education and Awareness	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado	Communication	N/A	M	$2,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Communications Division	24 Months	Essential Support Function (ESF) 2 Communications, Support Function Warning and ESF 15 External Affairs	Promotes public safety.

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25	Implement lightning detection system to increase awareness and warning time.	City-wide sites*	Reduce loss of life and property.	Education and Awareness	Lightning	Safety/Security	N/A	M	$11,000 per unit	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Parks and Recreation	24 Months	Essential Support Function (ESF) 2 Communications, Support Function Warning and ESF 15 External Affairs	N/A
	*Outdoor areas including parks and pools													
26	Participate and maintain StormReady Community designation in partnership with the National Weather Service.	City-wide	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.	Education and Awareness	Flood, Hail, Thunderstorm Wind, Tornado, Winter Storm	Safety/Security	N/A	M	$32,500	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Communications	24 Months	Essential Support Function (ESF) 2 Communications, Support Function Warning and ESF 15 External Affairs	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

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27	Implementation of retrofit, redevelopment, and abatement programs to strengthen existing structures, especially unreinforced masonry buildings. Determine storm vulnerability and complete an exposure assessment of City transportation assets.	City-wide identified locations*	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado	Safety/Security	Y	M	$2,552,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Capital Projects	24-36 Months	Capital Improvements Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
	*City Hall @ 411 W. Arapaho Road Richardson, TX 75080; Service Center @ 1260 Columbia Drive, Richardson, TX 75081													
28	Prioritize retrofitting, redevelopment, and increasing resiliency of public housing.	City-wide	Reduce damages at public housing; Reduce risk of injury to residents.	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado	Safety/Security	Y	M	$550,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Capital Projects	24-36 Months	Capital Improvement Plan	Protects communities and reduces risk of flooding.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
29	Develop warming / cooling shelters, including generators and supplies.	City-wide sites*	Reduce risk to vulnerable populations during extreme heat or winter storms.	Education and Awareness	Extreme Heat, Winter Storm	Communication	N/A	M	$30,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Office of Emergency Management	24 Months	Emergency Management Plan, Essential Support Function (ESF) 1 Transportation, ESF 3 Public Works and Engineering, and ESF 15 External Affairs	N/A
	*Heights and Huffhines Recreation Centers													
30	Implement drought tolerant landscape design through measures such as incorporating drought tolerant or xeriscape practices into landscape ordinances to reduce dependence on irrigation.	City-wide	Reduce water usage throughout the community.	Local Plans and Regulations	Drought	Safety/Security	Y	M	$5,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Capital Projects	24 Months	Local Landscape Ordinance	N/A

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31	Improve water facilities resiliency by reducing the criticality and improving the condition of these facilities. Create redundancies, replace outdated electrical equipment, control valves, yard pipe improvements, and reduce the need for frequent staff intervention through the installation of sloped roofs to prevent facility flooding and protect life and property from extended water outages.	City-wide sites*	Reduce damages to infrastructure.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	H	$13,186,700	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Public Services	60 Months	Public Services Resiliency Plan, Water Service Emergency Response Plan, Floodplain Maps, Flood Insurance Studies, Hydrologic Studies, Hydraulic Studies	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
	Northside Distribution and Transfer Pump Station, 1201 Point North Pkwy, Richardson, TX 75080; Eastside Ground Storage Tank, Northside North Ground Storage Tank; Westside Distribution Pump Station, 101 N. Cottonwood Dr., Richardson, TX 75080; Eastside Ground Storage Tank, 3306 Apollo Rd, Richardson, TX 75044; Shiloh Pump Station and Shiloh Ground Storage Tank, 2600 Shiloh Road, Richardson, TX 75082; Westside Ground Storage Tank, Northside South Ground Storage Tank; Eastside Pump Station #1, 3306 Apollo Rd, Richardson, TX 75044; Eastside Pump Station #2, 3306 Apollo Rd, Richardson, TX 75044; Custer Pump Station, 701 W Renner Rd, Richardson, TX 75080													

CITY OF RICHARDSON MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
32	Conduct stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.	City-wide	Reduce losses related to flooding.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	M	$50,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Richardson Development Services and Capital Projects	18-24 Months	Capital Improvement Plan	Protects communities and reduces risk of flooding.

CITY OF ROWLETT

CITY OF ROWLETT MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Plan for conversion of existing signalized intersections into modern roundabouts.	City-wide	Reduce risk to life and property.	Structure and Infrastructure	Extreme Heat, Lightning, Thunderstorm Wind, Tornado, Winter Storm	Safety/Security Transportation	N/A	L	$1,400,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Public Works, City of Rowlett Engineering	24 Months	N/A	N/A
2	Add building insulation to walls and attics and wrap / insulate pipes at critical and public facilities.	City-wide	Reduce risk of damages at public buildings resulting from freezing temperatures; Reduce energy consumption and costs during extreme temperatures.	Structure and Infrastructure	Winter Storm	Safety/Security	Y	L	$250,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Public Works	24 Months	N/A	N/A

CITY OF ROWLETT MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Adopt and implement program to insulate outdoor pipes at critical and public buildings.	City-wide facilities	Reduce risk of damages at public buildings resulting from freezing temperatures; Ensure continuity of public services.	Structure and Infrastructure, Local Plans and Regulations	Winter Storm	Safety/Security	Y	L	$10,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Public Works, City of Rowlett Engineering	12 Months	N/A	N/A
4	Upgrade undersized stormwater drains and culverts.	City-wide	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.	Structure and Infrastructure	Flood	Safety/Security	Y	L	$3,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Public Works, City of Rowlett Engineering	48 Months	N/A	Protects communities and reduces risk of flooding.

CITY OF ROWLETT MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Adopt and implement a program for clearing debris from bridges, drains, and culverts.	City-wide	Reduce damages caused by flooding by maintaining or restoring drainage capacity.	Structure and Infrastructure	Flood	Safety/Security, Water Systems	Y	M	$50,000 (annually)	Local Budget (staff time)	City of Rowlett Public Works, City of Rowlett Engineering	12 Months	N/A	Protects communities and reduces risk of flooding.
6	Evaluate implementing requirement for safe rooms to be added when constructing new schools, daycares, rest homes and/or critical care facilities.	City-wide	Reduce risk to citizens by providing shelter in new critical facilities during extreme weather events.	Local Plans and Regulations	Hail, Thunderstorm Wind, Tornado	Safety/Security, Food, Hydration, Shelter, Health/Medical	Y	L	$5,000	Local Budget (staff time)	City of Rowlett Community Development	24 Months	Local Building Codes/Ordinances	N/A
7	Evaluate and update subdivision regulations and/or internal processes to ensure consideration of both wildfire and flood risk in determination for required number of egress points.	City-wide	Additional egress points reduce risk to persons during flood events or wildfires.	Local Plans and Regulations	Flood, Wildfire	Transportation Safety/Security	N/A	L	$5,000	Local Budget (staff time)	City of Rowlett Community Development	24 Months	N/A	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF ROWLETT MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
8	Add bank vegetation on public lands along creeks/waterways.	City-wide	Reduce risk of erosion or scour due to flooding; Reduce damages to infrastructure including roadways, sidewalks, bridges, and culverts; Reduce demands on emergency response during high water events.	Natural Systems Protection	Dam Failure, Flood	Safety/Security Water Systems	Y	L	$25,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Community Development	12 Months	Reforestation Plan	Protects communities and reduces risk of flooding.

CITY OF ROWLETT MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
9	Harden water/wastewater infrastructure facilities.	City-wide	Reduce secondary impacts from the lack of operational water/wastewater facilities.	Structure and Infrastructure	Hail, Thunderstorm Wind, Tornado	Water Systems	N/A	L	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Public Works, City of Rowlett Engineering	36 Months	N/A	N/A
10	Consider updating landscaping regulations related to drought measures for new development.	City-wide	Water is conserved by using less water-intensive plants. Lower water risk for landscaping helps ensure adequate water availability for other uses during peak demand periods.	Local Plans and Regulations	Drought, Extreme Heat	Water Systems	N/A	L	$10,000	Local Budget	City of Rowlett Community Development	24 Months	N/A	N/A

CITY OF ROWLETT MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
11	Evaluate and update City tree preservation requirements to reduce impacts to above-ground utilities.	City-wide	Limiting trees near above-ground utilities may reduce the risk of power outages during severe weather events.	Local Plans and Regulations	Thunderstorm Wind, Tornado, Winter Storm	Energy	N/A	H	$5,000	Local Budget; Staff time	City of Rowlett Community Developme nt	24 Months	N/A	N/A
12	Perform an urban forest ecosystem / resource study and develop an urban forest master plan.	City-wide	Better planned reforestatio n initiatives may help stabilize soils and prevent erosion. Limiting erosion and supporting a strong root network can help prevent flooding during major rain events.	Local Plans and Regulations	Flood, Extreme Heat	Safety Security	N/A	H	$70,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Community Developme nt	12 Months	N/A	Protects communities and reduces risk of flooding.

CITY OF ROWLETT MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
13	Install solar-power backup power systems for City facilities.	City-wide city facilities	Reduction of sustained power outage caused by damaged electric utility lines and/or power grid conditions. Possible reduction in damage sustained from lack of heating and cooling of structures.	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety and Security, Energy	Y	M	$2,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Public Works, City of Rowlett Engineering	36 Months	N/A	N/A
14	Implement a rebate grant program for residential lightning protection system installations.	City-wide	Reduction of lightning-caused structure fires.	Structure or Infrastructure	Lightning	Safety/Security, Food, Hydration, Shelter	Y	L	$525,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Office of Emergency Management, City of Rowlett Community Development	36 Months	N/A	N/A

CITY OF ROWLETT MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
15	Establish a grant or rebate program for community safe rooms in mobile home parks.	City-wide identified mobile home parks	Reduction of risk of death/injury for approximately 450 persons residing in vulnerable living structures.	Structure and Infrastructure	Hail, Thunderstorm Wind, Tornado	Safety/Security	N/A	L	$750,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Office of Emergency Management, City of Rowlett Public Works, City of Rowlett Community Development	36 Months	N/A	N/A
16	Install non-community safe rooms in City Facilities.	City-wide critical facilities	Reduced risk of death/injury to City personnel and a limited number of visitors.	Structure and Infrastructure	Hail, Thunderstorm Wind, Tornado	Safety/Security	Y	M	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Community Development, City of Rowlett Office of Emergency Management, City of Rowlett Public Works, City of Rowlett Engineering	24 Months	N/A	N/A

CITY OF ROWLETT MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
17	Participate in the Community Rating System (CRS) program.	City-wide	Reduce flood insurance premiums for local residents; Reduce flood risk and build resiliency.	Local Plans and Regulations	Flood	Safety/Security, Food, Hydration, Shelter	N/A	L	$100,000 initial cost $25,000 annually	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Office of Emergency Management, City of Rowlett Community Development, City of Rowlett Public Works, City of Rowlett Engineering	12 Months	Floodplain Management Plan	Protects communities and reduces risk of flooding.
18	Update and maintain / enhance MS4 participation.	City-wide	Improving MS4 compliance should reduce blockages of storm sewer system inlets and general water flow, reducing risk for pedestrians, vehicles, and properties during major rain events.	Local Plans and Regulations	Flood	Water Systems	N/A	M	$25,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Engineering, City of Rowlett Community Development	12 Months	MS4	Protects infrastructure, reduces cost of repair, and prevents injury to residents.

CITY OF ROWLETT MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
19	Install carports at critical facilities for emergency vehicles.	City-wide critical facilities *	Reduce risk to critical assets; Ensure continuity of emergency services.	Structure and Infrastructure	Extreme Heat, Hail, Lightning	Safety and Security	N/A	L	$500,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Public Works, City of Rowlett Police Department, City of Rowlett Fire Department	36 Months	Capital Improvement Plan	N/A
	*Fleet yard, police department headquarters, fire administration, and all fire stations.													
20	Perform Earthquake Vulnerability Study. Consider adoption of new building standards, as indicated by the findings of the study.	City-wide	Improved risk assessment; Improved construction techniques.	Local Plans and Regulations	Earthquake	Safety/Security, Water Systems, Food, Hydration, Shelter	Y	L	$70,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Community Development	12-24 Months	Local Building Codes/Ordinances	N/A

CITY OF ROWLETT MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
21	Designate and maintain a certified floodplain manager to perform a comprehensive flood risk study. The study will incorporate all existing studies and flood risk data (e.g., FIS and USACE) and obtain new data (e.g., through LIDAR) to determine City-wide and parcel-specific flood risk from Dam or Levee Failure and excessive rainfall.	City-wide	Improve risk assessment; reduce risk of damages or injuries through improved building standards; reduce risk of damages and injuries.	Local Plans and Regulations	Dam Failure, Flood	Safety and Security; Water Systems	N/A	H	$160,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Public Works, City of Rowlett Community Development, City of Rowlett Engineering	12-24 Months	Floodplain Ordinance	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
22	Update and install lightning detection and notification systems at all large City parks.	City-wide parks*	Reduce risk of death or injury to residents and visitors.	Education and Awareness	Lightning	Safety and Security; Communications	N/A	M	$605,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Office of Emergency Management, City of Rowlett Community Engagement, City of Rowlett Public Works	24 Months	Emergency Operations Plan, OWS SOPs	N/A
	*Springfield Park, Katy Railroad Park, Herfurth Park, Pecan Grove Park/Wet Zone, and Community Park													

CITY OF ROWLETT MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
23	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety and Security	N/A	H	$1,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Office of Emergency Management, City of Rowlett Community Engagement	12 Months	N/A	Promotes public safety.
24	Implement a grant program for the hail- and / or wind-resistance enhancement of residential roofing.	City-wide	Reduce damages to residential structures.	Local Plans and Regulations	Hail, Thunderstorm Wind, Tornado	Food, Hydration, and Shelter	Y	L	$105,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Office of Emergency Management, City of Rowlett Community Development	24-36 Months	N/A	N/A

CITY OF ROWLETT MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
25	Perform a wildfire vulnerability study.	City-wide	Enhanced risk assessment; Improved land management.	Local Plans and Regulations	Wildfire	Safety and Security; Food, Hydration, Shelter	N/A	L	$70,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Fire Department, City of Rowlett Community Development	24 Months	CWPP	N/A
26	Storm drain system redirection and improvements at Garner Road, Chiesa Road, and Wayne Way.	City-wide*	Reduce risk of damages and injuries.	Structure and Infrastructure	Flood	Safety and Security; Water Systems	Y	H	$1,000,000	Local Budget; State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Public Works	24 Months	Drainage Plan	Protects infrastructure, reduces cost of repair, and prevents injury to residents.
	*Garner Road, Chiesa Road, and Wayne Way													

CITY OF ROWLETT MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
27	Installation of grouted rip rock and regaining of bank areas in Lakecrest II, Meadowlark, Blue Quail, and Bob White Street along Chiesa Stream.	City-wide streams *	Reduce risk of damages and injuries.	Structure and Infrastructure	Flood	Safety and Security	Y	M	$700,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Public Works	24 Months	Drainage Plan	Promotes public safety.
	*Lakecrest II, Meadowlark, Blue Quail, and Bob White Street along Chiesa Stream													
28	Install automatic flood gates and flood warning signals at high water crossings and flood prone areas.	City-wide sites*	Reduce the number of water rescues and possible damage to property and death/injury .	Structure and Infrastructure	Flood	Safety/Security, Transportation	N/A	H	$500,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Public Works	24 Months	N/A	Promotes public safety.
	*Main Street Trestle, Springfield Park, Castle Road, Liberty Grove													

CITY OF ROWLETT MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
29	Plan for temporary conversion of inoperable signalized intersections into a roundabout in response to disaster where the signal is / will be inoperative for a number of days or weeks.	City-wide	Removes the need for emergency services personnel to stand in the intersection exposed to traffic crash risk for temporary traffic control.	Local Plans and Regulations	Extreme Heat, Lightning, Thunderstorm Wind, Tornado, Winter Storm	Transportation	N/A	L	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Public Works, City of Rowlett Engineering, City of Rowlett Police Department	24 Months	N/A	N/A
30	Harden/retrofit critical facilities to hazard-resistant levels.	City-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Public Works	12-24 Months	N/A	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF ROWLETT MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
31	Acquire and install generators with hard wired quick connections at all critical facilities.	City-wide critical facilities	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FE MA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Rowlett Public Works	12-24 Months	N/A	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

CITY OF SACHSE

CITY OF SACHSE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Adopt and implement program to insulate outdoor pipes at critical and public buildings.	City-wide facilities	Reduce risk of damages at public buildings resulting from freezing temperatures; Ensure continuity of public services.	Structure and Infrastructure, Local Plans and Regulations	Winter Storm	Safety/Security	Y	L	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Public Works and Engineering	12 Months	Local Building Codes/Ordinances	N/A
2	Add building insulation to walls and attics and wrap / insulate pipes at critical and public facilities.	City-wide	Reduce risk of damages at public buildings resulting from freezing temperatures; Reduce energy consumption and costs during extreme temperatures.	Structure and Infrastructure	Winter Storm	Safety/Security	Y	L	$250,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Public Works	24 Months	N/A	N/A

CITY OF SACHSE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Develop and implement comprehensive education and outreach program utilizing media, social media, bulletins, pamphlets, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Emergency Manager	24 Months	Emergency Management Plan	Promotes public safety.
4	Acquire and install generators with hard wired quick connections at all critical facilities.	City-wide	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Dam Failure, Earthquake, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Energy (Power/Fuel)	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Emergency Manager	24 Months	Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

CITY OF SACHSE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Harden/retrofit critical facilities to hazard-resistant levels.	City-wide	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Emergency Manager	24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
6	Acquire and distribute NOAA weather radios.	City-wide critical facilities	Reduce risk to citizens through improved communications and early warning.	Education and Awareness	Earthquake, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Emergency Manager	24 Months	Emergency Management Plan	Promotes public safety.

CITY OF SACHSE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
7	Obtain certification in the National Weather Service StormReady Program.	City-wide critical facilities	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.	Education and Awareness	Flood, Hail, Thunderstorm Wind, Tornado, Winter Storm	Communication	N/A	M	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Emergency Manager	24 Months	Emergency Management Plan	Promotes public safety.
8	Adopt ordinance requiring tie-downs for mobile homes; Require manufactured housing be securely anchored to permanent foundations.	City-wide	Reduce damages to structures and infrastructure; Reduce risk of injuries or fatalities.	Local Plans and Regulations	Thunderstorm Wind, Tornado	Safety/Security	Y	M	$3,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse City Administrator	24 Months	Local Building Codes / Ordinances	N/A

CITY OF SACHSE MITIGATION ACTIONS														
*Reduces risk to new and/or existing buildings and infrastructure														
Action #	Proposed Action	Site	Benefit	Action Type	Hazards	Community Lifeline	Infra.*	Priority (High, Mod., Low)	Cost	Potential Funding Sources	Lead Agency	Timeline	Existing Plans	NFIP
9	Build safe room shelters throughout the jurisdiction so that residents can reach shelter in less than five minutes.	City-wide*	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety/Security	N/A	L	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Public Works	36 Months	Emergency Management Plan, Capital Improvement Plan	N/A
	*including manufactured home parks													
10	Require "safe rooms" to be added when constructing new schools, daycares, rest homes and critical care facilities.	City-wide	Reduce risk to citizens by providing shelter in new critical facilities during extreme weather events.	Local Plans and Regulations	Thunderstorm Wind, Tornado	Safety/Security	N/A	M	$5,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse City Administrator	24 Months	Local Building Codes / Ordinances	N/A

CITY OF SACHSE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
11	Require standards for burial of electrical, telephone, cable lines and other utilities in new developments.	City-wide	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations	Local Plans and Regulations	Dam Failure, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security, Energy (Power/Fuel)	Y	M	$3,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse City Administrator	24 Months	Local Building Codes / Ordinances	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF SACHSE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
12	Bury existing utility lines.	City-wide	Reduce damages to infrastructure; Ensure continuity of critical services during and after event; Reduce damages associated with power outages; Reduce risk of injuries or fatalities to vulnerable populations	Structure and Infrastructure	Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security, Energy (Power/Fuel)	Y	M	$10,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Public Works	24 Months	Capital Improvement Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
13	Develop and implement a safe room rebate program for individual safe rooms in single-family residences.	City-wide	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Communication Safety/Security	N/A	M	$5,000 per safe room	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse City Administrator	12-24 Months	Emergency Management Plan	N/A

CITY OF SACHSE MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
14	Establish city parks along low-lying areas, referenced the Capital Improvement Plan, City of Sachse Park and Open Space Master Plan and Building Restrictions to reduce losses and repetitive damage.	City-wide	Reduce risk of flood water contamination; Reduce risk of surface water infiltration and sewage backup; Ensure continuity of critical services.	Local Plans and Regulations	Flood	Safety/Security	N/A	M	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Public Works	12-24 Months	Capital Improvement Plan	Protects communities and reduces risk of flooding.
15	Coordinate with dam owners to attain proper inundation studies for dam safety and establish / implement action items which prove to be more cost efficient.	City-wide dam hazard areas	Reduce loss of life and property.	Local Plans and Regulations	Flood	Safety/Security	Y	L	$50,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Public Works, Office of Emergency Management	24-36 Months	Drainage Plan, Flood Damage Prevention Ordinance, EAP	Protects communities and reduces risk of flooding.

CITY OF SACHSE MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
16	Make Improvements to the Stormwater Drainage System Capacity at specific problem areas.	City-wide flood prone areas	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.	Structure and Infrastructure	Flood	Safety/Security	Y	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Engineering	24-36 Months	Drainage Plan, Flood Damage Prevention Ordinance, EAP	Protects communities and reduces risk of flooding.
17	Conduct a Flood Protection Study to determine the most appropriate mitigation actions to alleviate the inundation of multiple arterial thoroughfares near Long Branch of Muddy Creek.	Long Branch of Muddy Creek	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.	Local Plans and Regulations	Flood	Safety/Security	Y	H	$150,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Engineering	24-36 Months	Drainage Plan, Flood Damage Prevention Ordinance, EAP	Protects communities and reduces risk of flooding.

CITY OF SACHSE MITIGATION ACTIONS														
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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
18	Buyout structures that are in the floodplain. These include properties on Woodbridge Parkway, Sachse and Merritt Roads.	City-wide floodplain*	Eliminate risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	H	$1,500,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Administration, Public Works, Building and Code Departments	12-24 Months	Emergency Management Plan	Protects communities and reduces risk of flooding.
	*including repetitive loss properties													
19	Conduct creek and stream bank erosion studies: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.	City-wide creeks and streams	Eliminate risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	M	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Public Works, Building and Codes	18-24 Months	Emergency Management Plan	Protects communities and reduces risk of flooding.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
20	Implement water-wise program for the City of Sachse. This program will include purchasing water saving equipment and fixtures in all City facilities such as low flow fixtures, greywater reuse systems, and drought tolerant landscaping.	City-wide public facilities	Reduce damages at critical facilities.	Structure and Infrastructure	Drought	Safety/Security	Y	M	$200,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Permits and Inspections	24 Months	Capital Improvement Plan	N/A
21	Participate in Firewise Community designation program, including creation of defensible spaces around homes and neighborhoods to increase the success potential of fire fighters. Actions include removing vegetation immediately adjacent to homes, improving ingress and egress, and replacing flammable structure materials with fire-resistant materials (e.g., decks and roofing).	City-wide	Reduce damages due to wildfire through communication and awareness; Reduce loss of life and property.	Education and Awareness	Wildfire	Communication Safety/Security	N/A	M	$60,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Code Enforcement and Health Services	24-36 Months	Emergency Management Plan	N/A

CITY OF SACHSE MITIGATION ACTIONS														
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22	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.	City-wide	Reduce loss of life and property.	Local Plans and Regulations	Earthquake	Safety/Security	Y	L	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Public Works	24-36 Months	Building Ordinance / Building Codes	N/A
23	Upgrade Outdoor Warning System.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Structure and Infrastructure	Flood, Thunderstorm Wind, Tornado, Wildfire	Communication	N/A	H	$170,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Sachse Fire Department	12 Months	Emergency Operations Plan – Support Function - Warning	Promotes public safety.

CITY OF SEAGOVILLE

CITY OF SEAGOVILLE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
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1	Develop and implement comprehensive education and outreach program utilizing media, social media, bulletins, pamphlets, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville City Administrator	24 Months	Emergency Management Plan	Promotes public safety.
2	Acquire and distribute NOAA weather radios.	City-wide critical facilities	Reduce risk to citizens through improved communications and early warning.	Education and Awareness	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville City Administrator	24 Months	Emergency Management Plan	Promotes public safety.

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3	Obtain certification in the National Weather Service StormReady Program.	City-wide critical facilities	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.	Education and Awareness	Flood, Hail, Thunderstorm Wind, Tornado, Winter Storm	Communication	N/A	M	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville City Administrator	24 Months	Emergency Management Plan	N/A
4	Adopt and implement a program for clearing debris from bridges, drains and culverts.	City-wide	Reduce damages caused by flooding by maintaining or restoring drainage capacity.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$50,000 (annually)	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville City Administrator	24 Months	Local Building Codes/Ordinances	Protects communities and reduces risk of flooding.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Add thick vegetation to public lands along riverbanks.	City-wide	Reduce risk of erosion or scour due to flooding; Reduce damages to infrastructure including roadways, sidewalks, bridges, and culverts; Reduce demands on emergency response during high water events.	Natural Systems Protection	Flood	Safety/Security	Y	M	$20,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville Public Works	24 Months	Floodplain Management Plan	Protects communities and reduces risk of flooding.

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Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
6	Educate community on the dangers of low water crossings through the installation of warning signs and promotion of "Turn Around, Don't Drown" Program.	City-wide	Reduce risk of injuries, fatalities and damages through education and awareness.	Education and Awareness	Flood	Communication	N/A	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville Emergency Manager	12 Months	N/A	Promotes public safety.
7	Conduct public education program on fire risks and wildland fire mitigation, with the assistance of the Texas Forest Service.	City-wide	Reduce loss of life and property.	Education and Awareness	Wildfire	Communication Safety/Security	N/A	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville Fire Departmen t	12 Months	CWPP	N/A

CITY OF SEAGOVILLE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
8	Install warning signs at hazardous bridges and roadways subject to ice.	City-wide	Reduce risk of damages and injuries on roadways and bridges during winter storm events through education and awareness programs; Reduce demand on emergency response during winter storms.	Education and Awareness	Winter Storm	Communication	N/A	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville Public Works	12 Months	N/A	N/A

CITY OF SEAGOVILLE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
9	Educate citizens on mitigation measures to prevent frozen pipes; Educate homeowners on carbon monoxide monitors/alarms.	City-wide	Reduce risk of damages and injuries through mitigation education and awareness.	Education and Awareness	Winter Storm	Communication	N/A	M	$5,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville Emergency Manager	24-36 Months	N/A	N/A
10	Build safe room shelters throughout the jurisdiction so that residents can reach shelter in less than five minutes.	City-wide	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety/Security	N/A	L	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville Public Works	36 Months	Emergency Management Plan, Capital Improvement Plan	N/A

CITY OF SEAGOVILLE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
11	Develop and implement a safe room rebate program for individual safe rooms in single-family residences.	City-wide	Reduce risk to citizens by providing in-home safe rooms in high-risk areas during extreme weather events.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Communication, Safety/Security	N/A	M	$5,000 per safe room	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville City Administrator	12-24 Months	Emergency Management Plan	N/A
12	Develop and implement a Weatherization Assistance Program (WAP) which provides assistance to income eligible households by weatherizing their homes, conserving energy, and reducing high utility cost in the process.	City-wide	Reduce risk of damages and injuries through mitigation education and awareness.	Structure and Infrastructure	Extreme Heat, Winter Storm	Communication, Safety/Security	N/A	M	$50,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville Code Enforcement and Health Services	24 Months	Local Building Codes / Ordinances	N/A

CITY OF SEAGOVILLE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
13	Buyout or remaining structures that are in the floodplain.	City-wide floodplain	Reduce risk of damages and injuries through mitigation education and awareness.	Structure and Infrastructure, Natural Systems Protection	Flood	Safety/Security	Y	L	$5,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville Administration, Public Works, Building and Codes Departments	12-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
14	Harden/retrofit critical facilities to hazard-resistant levels.	City-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville Administration, Public Works, Building and Codes Departments	12-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF SEAGOVILLE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
15	Acquire and install generators with hard wired quick connections at all critical facilities.	City-wide critical facilities	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Seagoville Administration, Public Works, Building and Codes Departments	12-24 Months	Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

TOWN OF SUNNYVALE

TOWN OF SUNNYVALE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Acquire and distribute NOAA weather radios.	Community critical facilities *	Reduce risk to citizens through improved communications and early warning.	Education and Awareness	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$500	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Sunnyvale Emergency Manager	24 Months	Emergency Management Plan	Promotes public safety.
	*Town Hall, Fire Station, Police Department, Service Center, and Library.													
2	Restrict future development in high-risk areas. Implement a program that preserves floodplains as Open Space by developing an open space acquisition, reuse, and preservation plan targeting hazard areas.	Community-wide	Reduce risk of damages to new structures and infrastructure through building restrictions in high risk areas.	Local Plans and Regulations	Dam Failure, Flood, Wildfire	Safety/Security	Y	H	$2,500	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Sunnyvale Engineer	12 Months	Local Building Codes/Ordinances	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

TOWN OF SUNNYVALE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Require "safe rooms" to be added when constructing new schools, daycares, rest homes and critical care facilities.	Community-wide	Reduce risk to citizens by providing shelter in new critical facilities during extreme weather events.	Local Plans and Regulations	Tornado, Thunderstorm Wind	Safety/Security	N/A	M	$5,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Sunnyvale Engineer	24 Months	Local Building Codes	N/A
4	Adopt and implement a program for clearing debris from bridges, drains and culverts.	Community-wide	Reduce damages caused by flooding by maintaining or restoring drainage capacity.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$50,000 (annually)	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Sunnyvale Manager, Public Works	24 Months	Local Building Codes/Ordinances	Protects communities and reduces risk of flooding.

TOWN OF SUNNYVALE MITIGATION ACTIONS														
*Reduces risk to new and/or existing buildings and infrastructure														
Action #	Proposed Action	Site	Benefit	Action Type	Hazards	Community Lifeline	Infra.*	Priority (High, Mod., Low)	Cost	Potential Funding Sources	Lead Agency	Timeline	Existing Plans	NFIP
5	Upgrade undersized stormwater drains and culvert through development of Storm Water Master Plan.	Community-wide drainage system	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$3,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Sunnyvale Public Works	24 Months	Floodplain Management Plan, Drainage Plan	Protects communities and reduces risk of flooding.
6	Build safe room shelters in newly constructed public buildings throughout the jurisdiction so that residents can reach shelter in less than five minutes.	Community-wide*	Reduce risk to citizens by providing shelter in high risk areas during extreme weather events.	Structure and Infrastructure	Tornado, Thunderstorm Wind	Safety/Security	N/A	L	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Sunnyvale Manager	36 Months	Emergency Management Plan	N/A
	* including manufactured home parks													

TOWN OF SUNNYVALE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
7	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.	Community-wide	Improve risk assessment; Reduce risk of damages or injuries through building code improvements; Reduce risk of damages and injuries.	Local Plans and Regulations	Earthquake	Safety/Security	Y	L	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Sunnyvale Public Works	24-36 Months	Local Building Codes/Ordinances	N/A
8	Develop education program to provide monthly and seasonal awareness on how to mitigate different hazards.	Community-wide	Reduce risk to vulnerable populations during extreme weather events.	Education and Awareness	Dam Failure, Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$2,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Sunnyvale Emergency Manager	24 Months	Emergency Preparedness	Promotes public safety.

TOWN OF SUNNYVALE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
9	Protect critical infrastructure that is located in the floodplain.	Critical infrastructure in the floodplain	Reduce risk of damages and injuries.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$50,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Sunnyvale Development Services	12-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
10	Install lightning prediction systems during parks development to provide advanced warning to patrons in the event of lightning strikes.	Community facilities	Reduce loss of life.	Structure and Infrastructure	Lightning	Safety/Security	N/A	M	$50,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Sunnyvale Development Services, Public Works, Fire Department	24 Months	Emergency Management Plan	N/A

TOWN OF SUNNYVALE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
11	Implement water-wise program for the Town of Sunnyvale. This program will include purchasing water saving equipment and fixtures in future construction and remodeling of Town facilities.	Community-wide public facilities	Reduce water usage at public facilities. Water is an increasingly expensive resource especially during drought. Reducing water consumption is one of the easiest and most inexpensive ways of achieving cost savings.	Structure and Infrastructure	Drought	Safety/Security	Y	M	$200,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Sunnyvale Development Services	24 Months	N/A	N/A

TOWN OF SUNNYVALE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
12	Conduct stream bank erosion studies of identified hazard areas: conduct a study to identify vulnerability to stream bank erosion. Identify and implement cost effective actions.	Community-wide creeks and streams	Reduce losses related to flooding.	Structure and Infrastructure Nature Based Solutions	Flood	Safety/Security	Y	M	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Sunnyvale Public Works, Building and Code Departments	18-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
13	Harden/retrofit critical facilities to hazard-resistant levels.	Community-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Sunnyvale Public Works, Building and Code Departments	12-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

TOWN OF SUNNYVALE MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
14	Acquire and install generators with hard wired quick connections at all critical facilities.	Community-wide critical facilities	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	Town of Sunnyvale Public Works, Building and Code Departments	12-24 Months	Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

CITY OF UNIVERSITY PARK

CITY OF UNIVERSITY PARK MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Assess existing structures for retrofitting / hardening to hazard resistant levels.	City-wide public facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	M	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of University Park Public Works	24-36 Months	N/A	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
2	Develop and implement comprehensive education and outreach program utilizing media, social media, bulletins, pamphlets, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of University Park Emergency Management	12 Months	Emergency Management Plan	Promotes public safety.

CITY OF UNIVERSITY PARK MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Development of Storm Water Master Plan for Watersheds #3 and #5 including computer model of current system performance, identification of system deficiencies, and recommended improvements.	City-wide	Improve risk assessment; Inform effective drainage project decisions to reduce damages to structures and infrastructure.	Local Plans and Regulations	Flood	Safety/Security	N/A	M	$350,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of University Park Public Works, City Engineer	24 Months	Capital Improvement Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.
4	Construction of new storm sewer inlets, mains, and underground detention system to reduce flooding in Northeast portion of the city.	Northeast portion of the City	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.	Structure and Infrastructure	Flood	Safety/Security	Y	H	$13,200,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of University Park Public Works, City Engineer	18-36 Months	Floodplain Management Plan, Drainage Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF UNIVERSITY PARK MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Acquire and install generators with hard wired quick connections at all critical facilities.	City-wide critical facilities	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Dam Failure, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FE MA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of University Park Public Works, City Engineer	12-24 Months	Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

CITY OF WILMER

CITY OF WILMER MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
1	Develop and implement comprehensive education and outreach program utilizing media, social media, bulletins, pamphlets, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.	City-wide	Promote hazard awareness and protect citizens from potential injuries and damages.	Education and Awareness	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Communication	N/A	M	$50,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer City Administrator	24 Months	Emergency Management Plan	Promotes public safety.
2	Obtain certification in the National Weather Service StormReady Program.	City-wide critical facilities	Reduce risk to citizens by educating the public on how to prepare for hazards and disasters.	Education and Awareness	Flood, Hail, Thunderstorm Wind, Tornado	Communication	N/A	M	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer City Administrator	24 Months	Emergency Management Plan	Promotes public safety.

CITY OF WILMER MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
3	Adopt ordinance requiring tie-downs for mobile homes; Require manufactured housing be securely anchored to permanent foundations.	City-wide	Reduce damages to structures and infrastructure; Reduce risk of injuries or fatalities.	Local Plans and Regulations	Thunderstorm Wind, Tornado	Safety/Security	Y	M	$3,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer City Manager	24 Months	Local Building Codes / Ordinances	N/A
4	Strengthen building codes to mandate the use of steel connectors in new and existing construction.	City-wide	Reduce damages to structures and infrastructure; Reduce risk of injuries or fatalities.	Local Plans and Regulations	Thunderstorm Wind, Tornado	Safety/Security	Y	M	$3,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer City Manager	24 Months	Local Building Codes / Ordinances	N/A

CITY OF WILMER MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
5	Upgrade undersized stormwater drains and culverts.	City-wide drainage system	Reduce risk of flood damages through improved drainage capacity; Reduce risk of injuries to citizens; Reduce burden on emergency services during and after a flood event.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$3,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer Public Works	24 Months	Floodplain Management Plan; Drainage Plan	Protects communities and reduces risk of flooding.
6	Undertake a comprehensive study of flood risk and reduction alternatives, with the assistance of the US Army Corps of Engineers. Adopt or revise flood damage prevention ordinance to include flood risk areas identified in the study. This study will cover all incorporated and unincorporated areas of the county that currently have limited studies with no determined base flood elevations as well as unmapped areas.	City-wide flood prone areas	Improve risk assessment; reduce risk of damages or injuries through improved building standards; reduce risk of damages and injuries.	Local Plans and Regulations	Flood	Safety/Security	Y	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer Emergency Manager	12-36 Months	Drainage Plan, Flood Damage Prevention Ordinance	Protects communities and reduces risk of flooding.

CITY OF WILMER MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
7	Require "safe rooms" to be added when constructing new schools, daycares, rest homes and critical care facilities.	City-wide	Reduce risk to citizens by providing shelter in new critical facilities during extreme weather events.	Local Plans and Regulations	Thunderstorm Wind, Tornado	Safety/Security	N/A	M	$5,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer City Manager	24 Months	Local Building Codes / Ordinances	N/A
8	Adopt and implement a program for clearing debris from bridges, drains and culverts.	City-wide	Reduce damages caused by flooding by maintaining or restoring drainage capacity.	Structure and Infrastructure	Flood	Safety/Security	Y	M	$50,000 (annually)	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer City Manager	24 Months	Local Building Codes / Ordinances, Emergency Operations Plan	Protects communities and reduces risk of flooding.

CITY OF WILMER MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
9	Add thick vegetation to public lands along riverbanks.	City-wide	Reduce risk of erosion or scour due to flooding; Reduce damages to infrastructure including roadways, sidewalks, bridges, and culverts; Reduce demands on emergency response during high water events.	Natural Systems Protection	Flood	Safety/Security	Y	M	$20,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer Public Works	24 Months	Floodplain Management Plan	Protects communities and reduces risk of flooding.

CITY OF WILMER MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
10	Educate community on the dangers of low water crossings through the installation of warning signs and promotion of "Turn Around, Don't Drown" Program.	City-wide	Reduce risk of injuries, fatalities and damages through education and awareness.	Education and Awareness	Flood	Communication	N/A	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer Floodplain Administrator	12 Months	N/A	Promotes public safety.
11	Conduct public education program on fire risks and wildland fire mitigation, with the assistance of the Texas Forest Service.	City-wide	Reduce risk and spread of wildfires through education and awareness programs; Reduce risk of damages and injuries.	Education and Awareness	Wildfire	Communication	N/A	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer City Manager	12 Months	CWPP	N/A

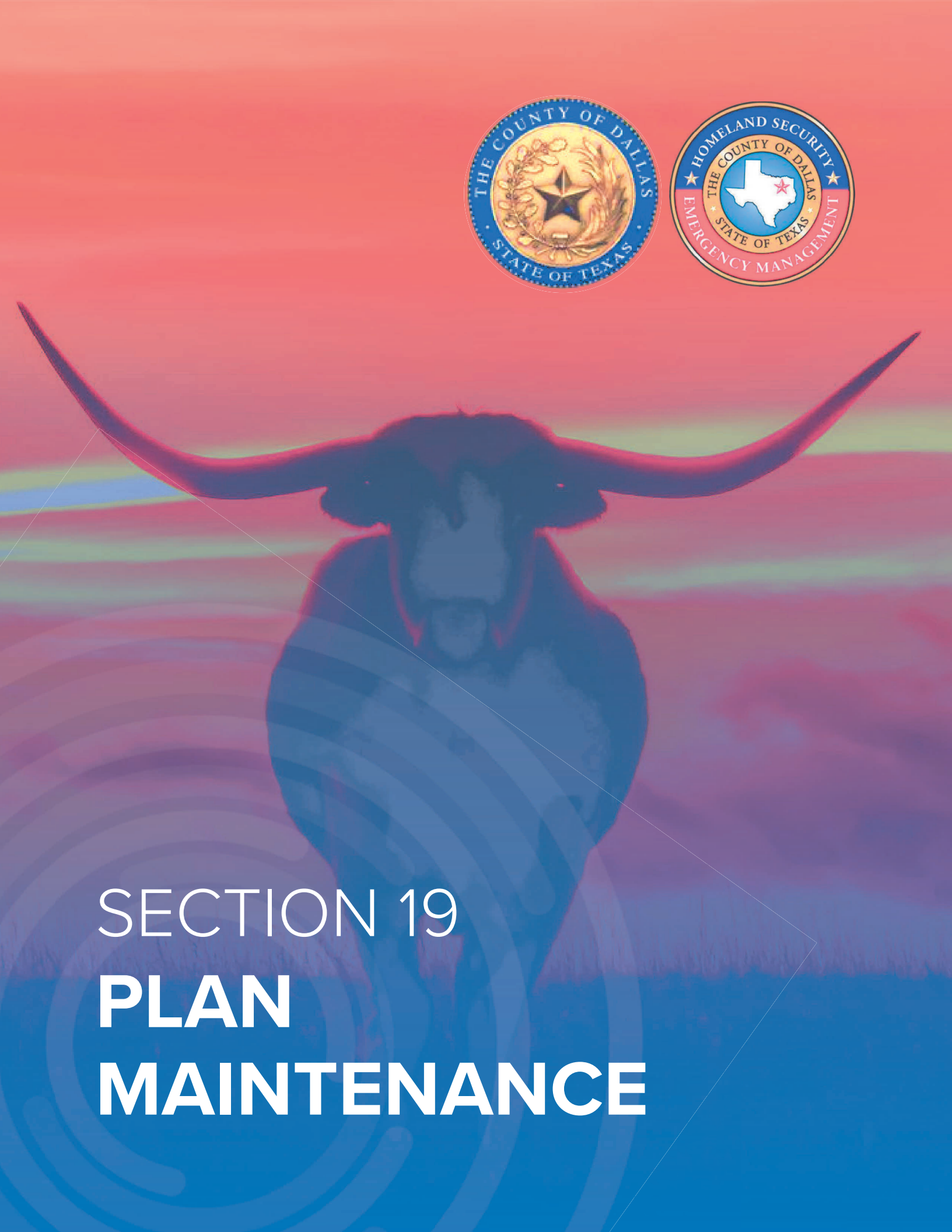
CITY OF WILMER MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
12	Install warning signs at hazardous bridges and roadways subject to ice.	City-wide	Reduce risk of damages and injuries on roadways and bridges during winter storm events through education and awareness programs; Reduce demand on emergency response during winter storms.	Education and Awareness	Winter Storm	Communication	N/A	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer Public Works	12 Months	N/A	N/A

CITY OF WILMER MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
13	Educate citizens on mitigation measures to prevent frozen pipes; Educate homeowners on carbon monoxide monitors/alarms.	City-wide	Reduce risk of damages and injuries through mitigation education and awareness.	Education and Awareness	Winter Storm	Communication	N/A	M	$5,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer City Manager	12-24 Months	N/A	N/A
14	Build safe room shelters throughout the jurisdiction so that residents can reach shelter in less than five minutes.	City-wide*	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety/Security	N/A	L	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer Public Works	36 Months	Emergency Management Plan; Capital Improvement Plan	N/A
	*Including manufactured home parks													

CITY OF WILMER MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
15	Develop and implement a safe room rebate program for individual safe rooms in single-family residences.	City-wide	Reduce risk to citizens by providing shelter in high risk areas during extreme weather events.	Structure and Infrastructure	Thunderstorm Wind, Tornado	Safety/Security	N/A	M	$5,000 per safe room	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer City Manager	12-24 Months	Emergency Management Plan	N/A
16	Work with Dallas County and other jurisdictions in Dallas County and participate in an earthquake study to help determine the levels of risk and mitigation strategies.	City-wide	Improve risk assessment; Reduce risk of damages or injuries through building code improvements; Reduce risk of damages and injuries.	Local Plans and Regulations	Earthquake	Safety/Security	Y	L	$100,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer Public Works	24-36 Months	Local Building Codes / Ordinances	N/A

CITY OF WILMER MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
17	Develop and implement a Weatherization Assistance Program (WAP) which provides assistance to income eligible households by weatherizing their homes, conserving energy, and reducing high utility cost in the process.	City-wide	Reduce risk to vulnerable populations during extreme weather events.	Structure and Infrastructure	Extreme Heat, Winter Storm	Safety/Security	N/A	M	$50,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer Code Enforcement and Health Services	24 Months	Local Building Codes / Ordinances	N/A
18	Harden/retrofit critical facilities to hazard-resistant levels.	City-wide critical facilities	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.	Structure and Infrastructure	Drought, Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	Y	H	$10,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FEMA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer Public Works	12-24 Months	Emergency Management Plan	Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF WILMER MITIGATION ACTIONS														
**Reduces risk to new and/or existing buildings and infrastructure*														
Action #	**Proposed Action**	**Site**	**Benefit**	**Action Type**	**Hazards**	**Community Lifeline**	**Infra.***	**Priority (High, Mod., Low)**	**Cost**	**Potential Funding Sources**	**Lead Agency**	**Timeline**	**Existing Plans**	**NFIP**
19	Acquire and install generators with hard wired quick connections at all critical facilities.	City-wide critical facilities	Provide power for critical facilities during power outages and ensure continuity of critical services.	Structure and Infrastructure	Earthquake, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm	Safety/Security	N/A	H	$1,000,000	Local Budget: State Grants (GLO, TAMFS, TDA, TDEM, TWDB, TXDOT); Federal Grants: (FE MA HMA Grants, CDBG, CDC, DOH, EDA, EPA, HUD, NFIP, NFWF, NOAA, NRCS, SBA, USACE, USDA, USFS, USFWS)	City of Wilmer Public Works	12-24 Months	Emergency Management Plan	Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.



SECTION 19
PLAN MAINTENANCE

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Process of Incorporation 1
Monitoring and Evaluation 8
Monitoring 9
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Updating 10
Plan Revisions 10
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PLAN MAINTENANCE PROCEDURES

The following is an explanation of how the participating jurisdictions within Dallas County, and the general public will be involved in implementing, evaluating, and enhancing the Plan over time. When the plan is discussed in all maintenance procedures it includes mitigation actions and hazard assessments. The sustained hazard mitigation planning process consists of four main parts:

- Incorporation
- Monitoring and Evaluation
- Updating
- Continued Public Involvement

INCORPORATION

Participating jurisdictions within Dallas County will be responsible for further development and implementation of mitigation actions. Each action has been assigned to a specific department within the participating jurisdictions. The following describes the process by which participating jurisdictions will incorporate elements of the mitigation plan into other planning mechanisms.

PROCESS OF INCORPORATION

Once the Plan Update is adopted, participating jurisdictions within Dallas County will implement actions based on priority and the availability of funding. The planning area currently implements policies and programs to reduce loss to life and property from hazards. The mitigation actions developed for this Plan Update enhance this ongoing effort and will be implemented through other program mechanisms where possible.

The potential funding sources listed for each identified action may be used when the jurisdiction seeks funds to implement actions. An implementation time period or a specific implementation date has been assigned to each action as an incentive for completing each task and gauging whether actions are implemented in a timely manner.

Participating jurisdictions within Dallas County will integrate implementation of their mitigation actions with other plans and policies such as construction standards and emergency management plans, and ensure that these actions, or proposed projects, are reflected in other planning efforts.

SECTION 19: PLAN MAINTENANCE

Coordinating and integrating components of other plans and policies into goals and objectives of the Plan Update will further maximize funding and provide possible cost-sharing of key projects, thereby reducing loss of lives and property and mitigating hazards affecting the area.

Upon formal adoption of the Plan Update, planning team members from each participating jurisdiction will work to integrate the hazard mitigation strategies into other plans and codes as they are developed. Participating team members will conduct periodic reviews of plans and policies, once per year at a minimum, and analyze the need for revisions in light of the approved Plan. The planning team will review all comprehensive land use plans (applicable jurisdictions only), capital improvement plans (applicable jurisdictions only), annual budget reviews, emergency operations or management plans (applicable jurisdictions only), and transportation plans (applicable jurisdictions only) to guide and control development. Participating jurisdictions will ensure that capital improvement planning (applicable jurisdictions only) in the future will also contribute to the goals of this hazard mitigation Plan Update to reduce the long-term risk to life and property from all hazards. Within one year of formal adoption of the hazard mitigation Plan Update, existing planning mechanisms will be reviewed by each jurisdiction.

Dallas County is committed to supporting the participating jurisdictions as they implement their mitigation actions. Planning team members will review and revise, as necessary, the long-range goals and objectives in strategic plan and budgets to ensure that they are consistent with this mitigation action plan. Additionally, the planning area will work to advance the goals of this hazard mitigation plan through its routine, ongoing, long-range planning, budgeting, and work processes.

Table 19-1 identifies types of planning mechanisms and examples of methods for incorporating the Plan Update into other planning efforts. The team members, listed in Table 19-2 below, will be responsible for the review of these planning mechanisms and their incorporation of the plan, with the exception of the Floodplain Management Plans; the jurisdictions who have a Floodplain Administrator on staff will be responsible for incorporating the plan when floodplain management plans are updated, or new plans are developed.

Table 19-1. Methods of Incorporation of the Plan

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
Annual Budget Review	**Dallas County –** Office of Homeland Security & Emergency Management: Department Manager and Chief of Emergency Services **Town of Addison –** Fire Department: Emergency Management Coordinator **City of Balch Springs –** Fire Department: Emergency Management Coordinator **City of Carrollton –** Emergency Management: Emergency Management Coordinator **City of Cedar Hill –** Emergency Management: Regional Emergency Management Operations Coordinator **City of Cockrell Hill –** Fire Department: Fire Marshal	Various departments and key personnel that participated in the planning process for participating jurisdictions within Dallas County will review the Plan and mitigation actions therein when conducting their annual budget review. Allowances will be made in accordance with grant applications sought, and mitigation actions that will be undertaken, according to the implementation schedule of the specific action.

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
	City of Coppell - Emergency Management: Emergency Management Coordinator **City of DeSoto -** Emergency Management: Regional Emergency Management Operations Coordinator **City of Duncanville -** Emergency Management: Regional Emergency Management Operations Coordinator **City of Farmers Branch –** Fire Department: Emergency Management Coordinator **City of Glenn Heights –** Government: Deputy City Manager **Town of Highland Park –** Fire Department: Fire Marshal **City of Hutchins –** Fire Department: Fire Chief **City of Lancaster -** Emergency Management: Regional Emergency Management Operations Coordinator **City of Richardson –** Emergency Management: Response and Recovery Coordinator **City of Rowlett –** Fire Department: Emergency Management Coordinator **City of Sachse –** Fire Rescue: Emergency Management Specialist **City of Seagoville –** Fire Department: Fire Marshal **Town of Sunnyvale –** Fire Department: Fire Chief **City of University Park -** Fire Department: Fire Chief **City of Wilmer -** Fire Department: Fire Chief	
Capital Improvement Plans	**Dallas County –** Public Works: Director **Town of Addison –** Finance: Chief Financial Officer **City of Balch Springs –** Community Development: Director **City of Carrollton –** Planning and Zoning: Executive Director of Development Services **City of Cedar Hill –** Public Works: City Engineer **City of Cockrell Hill –** Administration: City Administrator **City of Coppell –** Public Works: Director	All participating jurisdictions within Dallas County have a Capital Improvement Plan (CIP) in place or under development. Prior to any revisions to the CIP, County, City, and Town departments will review the risk assessment and mitigation strategy sections of the HMAP, as limiting public spending in hazardous zones is one of the most effective long-term mitigation actions available to local governments.

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
	City of DeSoto – Development Services: Director **City of Duncanville –** Public Works: Director **City of Farmers Branch –** Government: City Manager **City of Glenn Heights –** Government: Deputy City Manager **Town of Highland Park –** Government: Town Administrator **City of Hutchins –** Fire Department: Fire Chief **City of Lancaster –** Finance: Director **City of Richardson –** Capital Projects/Engineering: Director **City of Rowlett –** Public Works: Director **City of Sachse –** Public Works: Director **City of Seagoville –** Government: City Manager **Town of Sunnyvale –** Fire Department: Fire Chief **City of University Park –** Finance: Director **City of Wilmer –** Administration: City Manager	
Community Wildfire Protection Plan	**Dallas County –** Fire Department: Fire Marshal **City of Carrollton –** Fire Department: Fire Chief **City of Cedar Hill –** Fire Department: Fire Chief **City of Cockrell Hill –** Fire Department: Fire Chief **City of Coppell -** Fire Department: Fire Chief **City of DeSoto -** Fire Department: Fire Chief **City of Duncanville -** Fire Department: Fire Marshal **City of Glenn Heights –** Fire Department: Fire Chief **City of Lancaster -** Fire Department: Fire Chief **City of Sachse –** Fire Rescue: Fire Chief **City of Seagoville –** Fire Department: Fire Chief **City of Wilmer -** Fire Department: Fire Chief	Currently, several participating jurisdictions within Dallas County have a Community Wildfire Protection Plan (CWPP). CWPPs include preventative and corrective actions to address a community's risk of damage from wildfire. Information found in Section 14 of this Plan Update discussing the people and property at risk to wildfire will be reviewed and revised when participating jurisdictions update their CWPP or develop new plans.
Comprehensive Plans	**Town of Addison –** Development Services: Director **City of Balch Springs –** Community Development: Director **City of Carrollton –** Planning and Zoning: Executive Director of Development Services	Several participating jurisdictions within Dallas County have a Comprehensive Land Use Plan in place. Since comprehensive plans involve developing a unified vision for a community, the mitigation vision

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
	City of Cedar Hill – Planning and Zoning: Director **City of Cockrell Hill –** Administration: City Administrator **City of Coppell –** Economic and Community Development: Coordinator **City of DeSoto –** Development Services /Planning and Zoning: Director **City of Duncanville –** Planning & Zoning: Director **City of Farmers Branch –** Planning & Zoning: Director **City of Glenn Heights –** Government: Deputy City Manager **Town of Highland Park –** Government: Town Administrator **City of Hutchins –** Government: City Administrator **City of Lancaster –** Development Services: Director **City of Richardson –** Development Services: Director **City of Rowlett –** Government: City Manager **City of Sachse –** Development Services: Director **City of Seagoville –** Government: City Manager **Town of Sunnyvale –** Government: Town Manager **City of University Park –** Administration: City Manager **City of Wilmer –** Administration: City Manager	and goals of the Plan will be reviewed in the development or revision of a Comprehensive Plan.
Floodplain Management Plans	**Dallas County –** Floodplain Administrator **Town of Addison –** Floodplain Administrator **City of Balch Springs –** Floodplain Administrator **City of Carrollton –** Floodplain Administrator **City of Cedar Hill –** Floodplain Administrator **City of Cockrell Hill –** Floodplain Administrator **City of Coppell -** Floodplain Administrator **City of DeSoto -** Floodplain Administrator **City of Duncanville -** Floodplain Administrator **City of Farmers Branch –** Floodplain Administrator	Floodplain management plans include preventative and corrective actions to address the flood hazard. Therefore, the actions for flooding and information found in Section 9 of this Plan Update discussing the people and property at risk to flood will be reviewed and revised when the county and participating cities within Dallas County update their management plans or develops new plans.

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
	City of Glenn Heights – Floodplain Administrator **Town of Highland Park –** Floodplain Administrator **City of Hutchins –** Floodplain Administrator **City of Lancaster -** Floodplain Administrator **City of Richardson –** Floodplain Administrator **City of Rowlett –** Floodplain Administrator **City of Sachse –** Floodplain Administrator **City of Seagoville –** Floodplain Administrator **Town of Sunnyvale –** Floodplain Administrator **City of University Park –** Floodplain Administrator **City of Wilmer –** Floodplain Administrator	
Grant Applications	**Dallas County –** Office of Homeland Security & Emergency Management: Department Manager and Chief of Emergency Services **Town of Addison –** Fire Department: Emergency Management Coordinator **City of Balch Springs –** Fire Department: Emergency Management Coordinator **City of Carrollton –** Emergency Management: Emergency Management Coordinator **City of Cedar Hill –** Emergency Management: Regional Emergency Management Operations Coordinator **City of Cockrell Hill –** Fire Department: Fire Marshal **City of Coppell -** Emergency Management: Emergency Management Coordinator **City of DeSoto -** Emergency Management: Regional Emergency Management Operations Coordinator **City of Duncanville -** Emergency Management: Regional Emergency Management Operations Coordinator **City of Farmers Branch –** Fire Department: Emergency Management Coordinator **City of Glenn Heights –** Government: Deputy City Manager **Town of Highland Park –** Fire Department: Fire Marshal **City of Hutchins –** Fire Department: Fire Chief	The HMAP will be evaluated by participating jurisdictions within Dallas County when grant funding is sought for mitigation projects. If a project is not in the Plan Update, a Plan Revision may be necessary to include the action in the Plan.

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
	City of Lancaster - Emergency Management: Regional Emergency Management Operations Coordinator **City of Richardson –** Emergency Management: Response and Recovery Coordinator **City of Rowlett –** Fire Department: Emergency Management Coordinator **City of Sachse –** Fire Rescue: Emergency Management Specialist **City of Seagoville –** Fire Department: Fire Marshal **Town of Sunnyvale –** Fire Department: Fire Chief **City of University Park -** Fire Department: Fire Chief **City of Wilmer -** Fire Department: Fire Chief	
Regulatory Plans	**Dallas County –** Office of Homeland Security & Emergency Management: Department Manager and Chief of Emergency Services **Town of Addison –** Fire Department: Emergency Management Coordinator **City of Balch Springs –** Fire Department: Emergency Management Coordinator **City of Carrollton –** Emergency Management: Emergency Management Coordinator **City of Cedar Hill –** Emergency Management: Regional Emergency Management Operations Coordinator **City of Cockrell Hill –** Fire Department: Fire Marshal **City of Coppell -** Emergency Management: Emergency Management Coordinator **City of DeSoto -** Emergency Management: Regional Emergency Management Operations Coordinator **City of Duncanville -** Emergency Management: Regional Emergency Management Operations Coordinator **City of Farmers Branch –** Fire Department: Emergency Management Coordinator **City of Glenn Heights –** Government: Deputy City Manager	Currently, several participating jurisdictions within Dallas County have regulatory plans in place, such as Emergency Operations Plans, Land Use Plans, and Evacuation Plans. The Plan Update will be consulted when County, City, and Town departments review or revise their current regulatory planning mechanisms, or in the development of regulatory plans that are not currently in place.

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
	Town of Highland Park – Fire Department: Fire Marshal **City of Hutchins –** Fire Department: Fire Chief **City of Lancaster -** Emergency Management: Regional Emergency Management Operations Coordinator **City of Richardson –** Emergency Management: Response and Recovery Coordinator **City of Rowlett –** Fire Department: Emergency Management Coordinator **City of Sachse –** Fire Rescue: Emergency Management Specialist **City of Seagoville –** Fire Department: Fire Marshal **Town of Sunnyvale –** Fire Department: Fire Chief **City of University Park -** Fire Department: Fire Chief **City of Wilmer -** Fire Department: Fire Chief	

MONITORING AND EVALUATION

Periodic revisions of the Plan are required to ensure that goals, objectives, and mitigation actions are kept current. When the plan is discussed in these sections it includes the risk assessment and mitigation actions as a part of the monitoring, evaluating, updating and review process. Revisions may be required to ensure the Plan is in compliance with federal and state statutes and regulations. This section outlines the procedures for completing Plan revisions, updates, and review. Table 19-2 indicates the department and title of the party responsible for Plan monitoring, evaluating, updating, and review of the Plan.

Table 19-2. Team Members Responsible for Plan Monitoring, Evaluating, Updating, and Review of the Plan

ORGANIZATION / DEPARTMENT	TITLE
Dallas County – Office of Homeland Security & Emergency Management	Department Manager and Chief of Emergency Services
Dallas County – Office of Homeland Security & Emergency Management	Division Chief - Preparedness
Dallas County – Office of Homeland Security & Emergency Management	Training & Exercise and Hazard Mitigation Coordinator
Town of Addison – Fire	Emergency Management Coordinator
City of Balch Springs – Fire	Emergency Management Coordinator

ORGANIZATION / DEPARTMENT	TITLE
City of Carrollton – Emergency Management	Emergency Management Coordinator
City of Cedar Hill – Emergency Management	Regional Emergency Management Operations Coordinator
City of Cockrell Hill – Fire	Fire Marshal
City of Coppell – Emergency Management	Emergency Management Coordinator
City of DeSoto – Emergency Management	Regional Emergency Management Operations Coordinator
City of Duncanville – Emergency Management	Regional Emergency Management Operations Coordinator
City of Farmers Branch – Fire	Emergency Management Coordinator
City of Glenn Heights – Government	Deputy City Manager
Town of Highland Park – Fire	Fire Marshal
City of Hutchins – Fire	Fire Chief
City of Lancaster – Emergency Management	Regional Emergency Management Operations Coordinator
City of Richardson – Emergency Management	Response and Recovery Coordinator
City of Rowlett – Fire	Emergency Management Coordinator
City of Sachse – Fire Rescue	Emergency Management Specialist
City of Seagoville – Fire	Fire Marshal
Town of Sunnyvale – Fire	Fire Chief
City of University Park – Fire	Fire Chief
City of Wilmer – Fire	Fire Chief

MONITORING

Designated Planning Team members are responsible for monitoring, evaluating, updating, and reviewing the Plan, as shown in Table 19-2. Individuals holding the title listed in Table 19-2 will be responsible for monitoring the Plan on an annual basis. Plan monitoring includes reviewing and incorporating into the Plan other existing planning mechanisms that relate or support goals and objectives of the Plan; monitoring the incorporation of the Plan into future updates of other existing planning mechanisms as appropriate; reviewing mitigation actions submitted and coordinating with various County, City, and Town departments to determine if mitigation actions need to be re-evaluated and updated; evaluating and updating the Plan as necessary; and monitoring plan maintenance to ensure that the process described is being followed, on an annual basis, throughout the planning process. The Planning Team will develop a brief report that identifies policies and actions in the plan that have been successfully implemented and any changes in the implementation process needed for continued success. A summary of meeting

notes will report the particulars involved in developing an action into a project. In addition to the annual monitoring, the Plan will be similarly reviewed immediately after extreme weather events including but not limited to state and federally declared disasters.

EVALUATION

As part of the evaluation process, the Planning Team will assess changes in risk; determine whether the implementation of mitigation actions is on schedule; determine whether there are any implementation problems, such as technical, political, legal, or coordination issues; and identify changes in land development or programs that affect mitigation priorities for each respective department or organization.

The Planning Team will meet on an annual basis to evaluate the Plan and identify any needed changes and assess the effectiveness of the plan in achieving its stated purpose and goals. The team will evaluate the number of mitigation actions implemented along with the loss-reduction associated with each action. Actions that have not been implemented will be evaluated to determine if any social, political, or financial barriers are impeding implementation and if any changes are necessary to improve the viability of an action. The team will evaluate changes in land development and/or programs that affect mitigation priorities in their respective jurisdictions. The annual evaluation process will help to determine if any changes are necessary. In addition, the Plan will be similarly evaluated immediately after extreme weather events including but not limited to state and federally declared disasters.

UPDATING

PLAN REVISIONS

At any time, minor technical changes may be made to update the Dallas County Hazard Mitigation Action Plan Update 2025. If a jurisdiction would like to add a new hazard mitigation project, the jurisdiction will communicate with the county to discuss the proposed project.

The jurisdiction will fill out the new hazard mitigation project paperwork and send it to the Dallas County Homeland Security and Emergency Management. The county will add the project to the plan and submit the additional project to Texas Department of Emergency Management and the Federal Emergency Management Agency. The county will notify all jurisdictions of the new project that has been added to the plan..

In determining whether to recommend approval or denial of a Plan Revision request, the following factors will be considered:

- Errors or omissions made in the identification of issues or needs during the preparation of the Plan Update;
- New issues or needs that were not adequately addressed in the Plan Update; and
- Changes in information, data, or assumptions from those on which the Plan Update was based.

FIVE (5) YEAR REVIEW

The Plan will be thoroughly reviewed by the Planning Team at the end of three years from the approval date, to determine whether there have been significant changes in the planning area that necessitate changes in the types of mitigation actions proposed. Factors that may affect the content of the Plan include new development in identified hazard areas, increased exposure to

hazards, disaster declarations, increase or decrease in capability to address hazards, and changes to federal or state legislation.

The Plan review process provides the participating jurisdictions within Dallas County an opportunity to evaluate mitigation actions that have been successful, identify losses avoided due to the implementation of specific mitigation measures, and address mitigation actions that may not have been successfully implemented as assigned.

It is recommended that the full Executive and Advisory Planning Team (Section 2, Tables 2-1 and 2-2) meet to review the Plan at the end of three years because grant funds may be necessary for the development of a five-year update. Reviewing planning grant options in advance of the five-year Plan update deadline is recommended considering the timelines for grant and planning cycles can be in excess of a year.

Following the Plan review, any revisions deemed necessary will be summarized and implemented according to the reporting procedures and Plan Revision process outlined herein. Upon completion of the review, update, and revision process the revised Plan will be submitted to TDEM for final review and approval in coordination with FEMA.

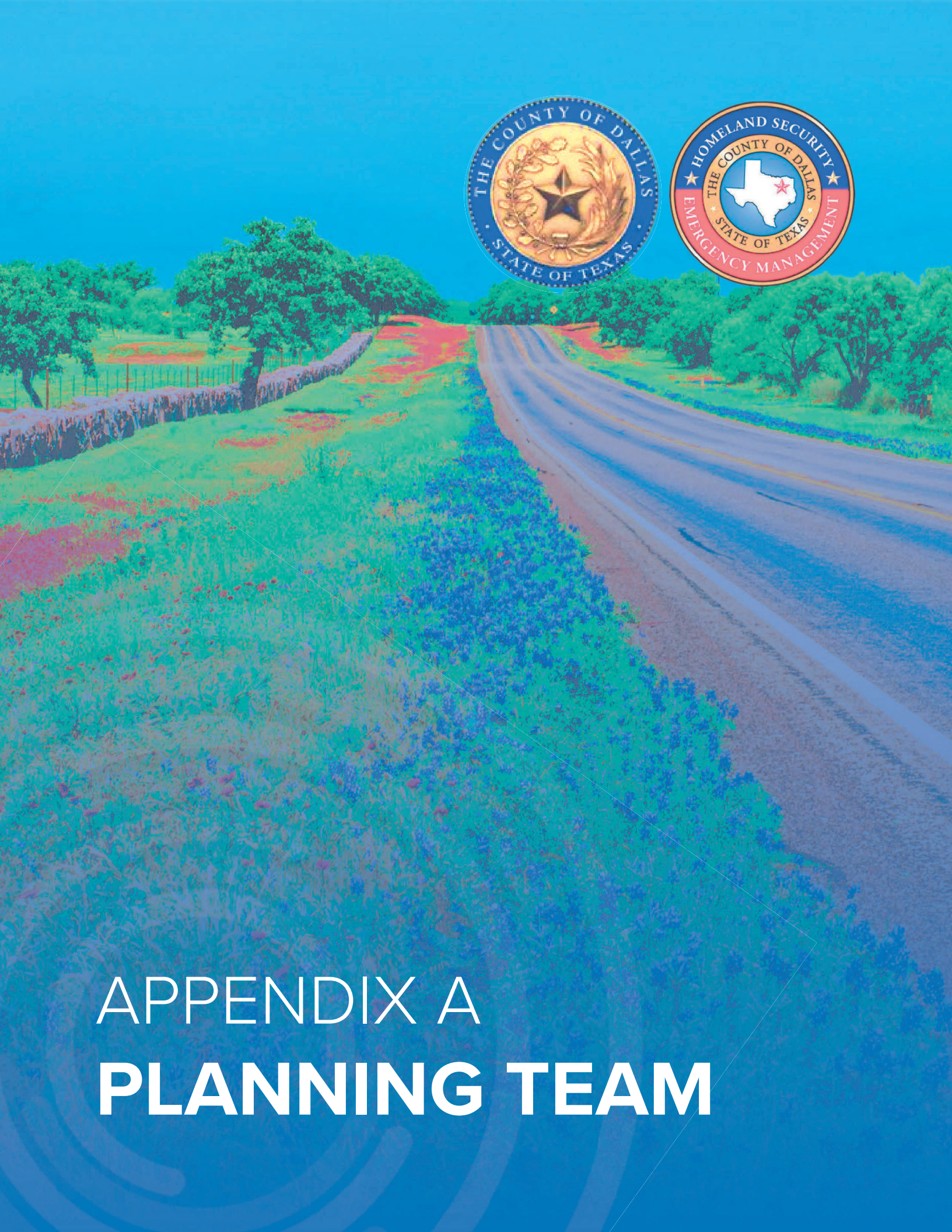
CONTINUED PUBLIC INVOLVEMENT

Public input was an integral part of the preparation of this Plan and will continue to be essential for Plan updates. The Public will be directly involved in the annual evaluation, monitoring, reviews, and cyclical updates. Changes or suggestions to improve or update the Plan will provide opportunities for additional public input.

The public can review the Plan on the participating jurisdictions' websites, where officials and the public are invited to provide ongoing feedback, via email.

The Planning Team may also designate voluntary citizens from the planning area or willing stakeholder members from the private sector businesses that were involved in the Plan's development to provide feedback on an annual basis. It is important that stakeholders and the immediate community maintain a vested interest in preserving the functionality of the planning area as it pertains to the overall goals of the mitigation plan. The Planning Team is responsible for notifying stakeholders and community members on an annual basis and maintaining the Plan.

Media, including local newspaper and radio stations, will be used to notify the public of any maintenance or periodic review activities during the implementation, monitoring, and evaluation phases. Additionally, local news media will be contacted to cover information regarding Plan updates, status of grant applications, and project implementation. Local and social media outlets, such as Facebook, Instagram, LinkedIn, NextDoor, and X (formerly known as Twitter), will keep the public and stakeholders apprised of potential opportunities to fund and implement mitigation projects identified in the Plan.



APPENDIX A
PLANNING TEAM

APPENDIX A: PLANNING TEAM

Planning Team Members 1
Stakeholders 9

PLANNING TEAM MEMBERS

The Dallas County Hazard Mitigation Action Plan Update 2025 was organized using a direct representative model. An Executive Planning Team from the participating jurisdictions, shown in Table A-1, was formed to coordinate planning efforts and request input and participation in the planning process. Table A-2 reflects the Advisory Planning Team, consisting of area organizations and departments that participated throughout the planning process. Table A-3 is comprised of stakeholders who were invited to provide Plan input. Public outreach efforts and meeting documentation is provided in Appendix E.

Table A-1. Executive Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Dallas County – Office of Homeland Security & Emergency Management	Department Manager and Chief of Emergency Services
Dallas County – Office of Homeland Security & Emergency Management	Division Chief - Preparedness
Dallas County – Office of Homeland Security & Emergency Management	Training & Exercise and Hazard Mitigation Coordinator
Town of Addison – Fire	Emergency Management Coordinator
City of Balch Springs – Fire	Emergency Management Coordinator
City of Carrollton – Emergency Management	Emergency Management Coordinator
City of Cedar Hill – Emergency Management	Regional Emergency Management Operations Coordinator
City of Cockrell Hill – Fire	Fire Marshal
City of Coppell – Emergency Management	Emergency Management Coordinator
City of DeSoto – Emergency Management	Regional Emergency Management Operations Coordinator
City of Duncanville – Emergency Management	Regional Emergency Management Operations Coordinator
City of Farmers Branch – Fire	Emergency Management Coordinator
City of Glenn Heights – Government	Deputy City Manager
Town of Highland Park – Fire	Fire Marshal
City of Hutchins – Fire	Fire Chief
City of Lancaster – Emergency Management	Regional Emergency Management Operations Coordinator
City of Richardson – Emergency Management	Response and Recovery Coordinator

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ORGANIZATION / DEPARTMENT	TITLE
City of Rowlett – Fire	Emergency Management Coordinator
City of Sachse – Fire Rescue	Emergency Management Specialist
City of Seagoville – Fire	Fire Marshal
Town of Sunnyvale – Fire	Fire Chief
City of University Park – Fire	Fire Chief
City of Wilmer – Fire	Fire Chief

Table A-2. Advisory Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Dallas County – Facilities Management	Director
Dallas County – Fire Marshal's Office	Fire Marshal
Dallas County – Government	District 1 Commissioner
Dallas County – Government	District 2 Commissioner
Dallas County – Government	District 3 Commissioner
Dallas County – Government	District 4 Commissioner
Dallas County – Government	County Judge
Dallas County – Health and Human Services	Director
Dallas County – Office of Homeland Security & Emergency Management	Administrative Analyst
Dallas County – Office of Homeland Security & Emergency Management	Division Chief - Logistics and Critical Infrastructure
Dallas County – Office of Homeland Security & Emergency Management	Division Chief - Operations
Dallas County – Office of Homeland Security & Emergency Management	Emergency Planning & Volunteer Coordinator
Dallas County – Office of Homeland Security & Emergency Management	HazMat and Technology Manager
Dallas County – Public Works	Director
Dallas County – Public Works	Senior Bridge Engineer and Floodplain Manager
Dallas County – Sheriff's Office	Captain - Freeway Management Division
Dallas County – Sheriff's Office	Chief Deputy - General Services

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ORGANIZATION / DEPARTMENT	TITLE
Dallas County – Sheriff's Office	Chief Deputy - Special Services:
Dallas County – Sheriff's Office	Sheriff
Town of Addison – Administration	City Manager
Town of Addison – Administration	City Secretary
Town of Addison – Administration	Mayor
Town of Addison – Fire	Fire Chief
Town of Addison – Police	Chief of Police
Town of Addison – Public Works and Engineering	Director
City of Balch Springs – Administration	City Manager
City of Balch Springs – Administration	City Secretary
City of Balch Springs – Administration	Mayor
City of Balch Springs – Fire	Assistant Fire Chief
City of Balch Springs – Police	Chief of Police
City of Balch Springs – Public Services	Director of Public Works
City of Carrollton – Emergency Management	Emergency Management Specialist
City of Carrollton – Emergency Management	Emergency Preparedness Program Assistant II
City of Carrollton – Fire	Fire Marshal
City of Carrollton – Government	City Manager
City of Carrollton – Government	City Secretary
City of Carrollton – Government	Mayor
City of Carrollton – Planning and Zoning	Executive Director of Development Services
City of Carrollton – Planning and Zoning	Senior Planner
City of Carrollton – Police	Chief of Police
City of Carrollton – Public Works	Director
City of Cedar Hill – Administration	City Manager
City of Cedar Hill – Administration	City Secretary

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ORGANIZATION / DEPARTMENT	TITLE
City of Cedar Hill – Administration	Mayor
City of Cedar Hill – Environmental Services	Environmental Manager
City of Cedar Hill – Fire	Fire Chief
City of Cedar Hill – Planning	Director
City of Cedar Hill – Police	Chief of Police
City of Cedar Hill – Public Works	City Engineer
City of Cedar Hill – Public Works	Project Manager
City of Cockrell Hill – Administration	City Administrator
City of Cockrell Hill – Administration	City Secretary
City of Cockrell Hill – Administration	Mayor
City of Cockrell Hill – Fire	Fire Chief
City of Cockrell Hill – Police	Chief of Police
City of Cockrell Hill – Public Works	Director
City of Coppell – Government	City Manager
City of Coppell – Government	City Secretary
City of Coppell – Government	Mayor
City of Coppell – Economic and Community Development	Coordinator
City of Coppell – Police	Chief of Police
City of Coppell – Public Works	Director
City of Coppell – Public Works	Assistant Director - Engineering
City of Coppell – Public Works	Assistant Director - Operations
City of DeSoto – Fire	Fire Chief
City of DeSoto – Development Services	Director
City of DeSoto – Government	City Manager
City of DeSoto – Government	City Secretary
City of DeSoto – Government	Mayor
City of DeSoto – Police	Chief of Police

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ORGANIZATION / DEPARTMENT	TITLE
City of Duncanville – Administration	City Manager
City of Duncanville – Administration	City Secretary
City of Duncanville – Emergency Management	Emergency Management Specialist
City of Duncanville – Fire	Fire Marshal
City of Duncanville – Planning and Zoning	Director
City of Duncanville – Police	Chief of Police
City of Duncanville – Public Works	Director
City of Farmers Branch – Community Services	Director
City of Farmers Branch – Economic Development, Planning, and Tourism	Director
City of Farmers Branch – Government	City Manager
City of Farmers Branch – Government	Director of Administrative Services
City of Farmers Branch – Government	Mayor
City of Farmers Branch – Police	Chief of Police
City of Farmers Branch – Public Works	Director
City of Glenn Heights – Fire	Fire Chief
City of Glenn Heights – Government	City Manager
City of Glenn Heights – Government	City Secretary
City of Glenn Heights – Government	Mayor
City of Glenn Heights – Planning and Development Services	Director
City of Glenn Heights – Police	Chief of Police
City of Glenn Heights – Public Works	Director
Town of Highland Park – Development Services	Director
Town of Highland Park – Engineering	Assistant Director
Town of Highland Park – Engineering	Director
Town of Highland Park – Engineering	Project Manager
Town of Highland Park – Government	Town Administrator

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ORGANIZATION / DEPARTMENT	TITLE
Town of Highland Park – Government	Town Secretary
Town of Highland Park – Government	Mayor
Town of Highland Park – Public Safety	Deputy Fire Chief
Town of Highland Park – Public Safety	Deputy Police Chief
Town of Highland Park – Public Safety	Director
City of Hutchins – Code Compliance	Building Official
City of Hutchins – Community Services and Parks	Director
City of Hutchins – Economic Development Corporation	Director
City of Hutchins – Government	City Administrator
City of Hutchins – Government	City Secretary
City of Hutchins – Government	Mayor
City of Hutchins – Police	Chief of Police
City of Hutchins – Public Works	Director
City of Lancaster – Administration	Assistant City Manager
City of Lancaster – Administration	City Manager
City of Lancaster – Administration	City Secretary
City of Lancaster – Administration	Deputy City Manager
City of Lancaster – Development Services	Director
City of Lancaster – Fire	Assistant Fire Chief
City of Lancaster – Fire	Fire Chief
City of Lancaster – Government	Deputy Mayor Pro Tem, District 2
City of Lancaster – Government	Mayor
City of Lancaster – Police	Chief of Police
City of Lancaster – Public Works	Director
City of Richardson – Emergency Management	Director
City of Richardson – Emergency Management	Emergency Management Coordinator

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ORGANIZATION / DEPARTMENT	TITLE
City of Richardson – Emergency Management	Preparedness and Resiliency Coordinator
City of Richardson – Government	City Manager
City of Richardson – Government	Mayor
City of Richardson – Fire	Fire Chief
City of Richardson – Police	Chief of Police
City of Rowlett – Community Development	Director
City of Rowlett – Community Development	Neighborhood Services Manager
City of Rowlett – Fire	Administrative Services Manager
City of Rowlett – Fire	Assistant Emergency Management Coordinator
City of Rowlett – Fire	Fire Chief
City of Rowlett – Engineering	City Engineer
City of Rowlett – Government	City Manager
City of Rowlett – Government	City Secretary
City of Rowlett – Government	Mayor
City of Rowlett – Police	Chief of Police
City of Rowlett – Public Works	Director (Interim)
City of Sachse – Development Services	Director
City of Sachse – Fire Rescue	Fire Chief
City of Sachse – Government	City Manager
City of Sachse – Government	City Secretary
City of Sachse – Government	Mayor
City of Sachse – Neighborhood Services	Senior Neighborhood Services Specialist
City of Sachse – Police	Chief of Police
City of Sachse – Public Works	Director
City of Seagoville – Community Development	Director
City of Seagoville – Fire	Fire Chief

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ORGANIZATION / DEPARTMENT	TITLE
City of Seagoville – Government	City Manager
City of Seagoville – Government	City Secretary
City of Seagoville – Government	Mayor
City of Seagoville – Keep Seagoville Beautiful	Liaison
City of Seagoville – Police	Assistant Chief
City of Seagoville – Police	Chief of Police
Town of Sunnyvale – Code Compliance	Code Enforcement Officer
Town of Sunnyvale – Engineering	Assistant Town Engineer
Town of Sunnyvale – Government	Mayor
Town of Sunnyvale – Government	Town Manager
Town of Sunnyvale – Government	Town Secretary
Town of Sunnyvale – Planning and Development	Director
Town of Sunnyvale – Police	Chief of Police
Town of Sunnyvale – Public Works	Director
City of University Park – Administration	City Manager
City of University Park – Administration	City Secretary
City of University Park – Community Development	Director
City of University Park – Engineering	Director
City of University Park – Police	Chief of Police
City of University Park – Public Works	Director
City of Wilmer – Administration	City Manager
City of Wilmer – Administration	City Secretary
City of Wilmer – Administration	Mayor
City of Wilmer – Planning and Development	Senior Planner
City of Wilmer – Police	Chief of Police
City of Wilmer – Public Works	Director

STAKEHOLDERS

The following groups listed in Table A-3 represent a list of organizations invited to stakeholder meetings, public meetings, and workshops throughout the planning process and include members of community groups, non-profit organizations, private businesses, utility providers, neighboring counties, school and universities, state and federal agencies, and legislators. The public were also invited to participate via e-mail throughout the planning process. Many of the invited organizations and stakeholders participated and were integral to providing comments and data for the Plan. For a list of attendees at meetings, please see Appendix E[1].

Table A-3. Stakeholders

AGENCY	TITLE	STAKEHOLDER TYPE
Addison Fire Department	Fire Chief	Community Organization
American Red Cross	Metro East DPM	Community Organization
American Red Cross	Regional Chief Executive Director	Community Organization
Balch Springs Fire Department	Fire Chief	Community Organization
Baylor Scott & White Medical Center	Vice President of Emergency Management	Healthcare Agency
Carrollton Fire Department	Fire Chief	Community Organization
Carrollton-Farmers Branch ISD	Superintendent	Academia
Catholic Charities of Dallas	Chief Operations Officer	Community Organization / Vulnerable Populations
Cedar Hill Fire Department	Fire Chief	Community Organization
Cedar Hill ISD	Assistant Superintendent of Student Services and Administration	Academia
Cedar Valley College	Assistant Director of Operations	Academia
City of Dallas	Senior Emergency Management Specialist	Neighboring Community
Cockrell Hill Fire Department	Fire Chief	Community Organization
Collin County	Emergency Management Coordinator	Neighboring Community
Combine Water Supply Corporation	Operation	Utility Provider
Coppell Fire Department	Fire Chief	Community Organization

[1] Information contained in Appendix E is exempt from public release under the Freedom of Information Act (FOIA).

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AGENCY	TITLE	STAKEHOLDER TYPE
Coppell ISD	Superintendent	Academia
Crescent Regional Hospital	CEO	Healthcare Agency
Crescent Regional Hospital	CFO	Healthcare Agency
Crisis Ministries	Manager	Community Organization / Vulnerable Populations
Dallas Behavioral Health Care Hospital	CEO	Healthcare Agency
Dallas Behavioral Health Care Hospital	CFO	Healthcare Agency
Dallas Behavioral Health Care Hospital	Representative	Healthcare Agency
Dallas County 211	211 Point of Contact	Community Organization
Dallas County Child Advocacy Center	Lancaster Point of Contact	Community Organization
Dallas County Animal Services	Director	Community Organization
Dallas County Fire Rescue	Fire Chief	Community Organization
Dallas ISD	Superintendent	Academia
Denton County	Emergency Management Coordinator	Neighboring Community
DeSoto Area Chamber of Commerce	President / CEO	Community Organization
DeSoto Fire Department	Fire Chief	Community Organization
DeSoto ISD	Chief of Maintenance and Operations	Academia
DeSoto Public Library	Library Director	Community Organization
DeSoto Senior Center	Director	Community Organization / Vulnerable Populations
DFW Airport Public Safety	Fire Chief	Community Organization
Duncanville Fire Department	Fire Chief	Community Organization
Duncanville ISD	Chief of Operations	Academia
Duncanville Public Library	Library Director	Community Organization
Ellis County	Emergency Management Coordinator	Neighboring Community
Environmental Protection Agency (EPA), Region 6	Deputy Regional Administrator	Federal Agency

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AGENCY	TITLE	STAKEHOLDER TYPE
Environmental Protection Agency (EPA), Region 6	Director of Superfund an Emergency Management Division	Federal Agency
Environmental Protection Agency (EPA), Region 6	Regional Administrator	Federal Agency
Farmers Branch Fire Department	Fire Chief	Community Organization
Garland Fire Department	Fire Chief	Community Organization
Garland ISD	Executive Director of Facilities and Maintenance	Academia
Garland ISD	Superintendent	Academia
Glenn Heights Fire Department	Fire Chief	Community Organization
Grand Prairie Fire Department	Fire Chief	Community Organization
Grand Prairie ISD	Chief of Security and Emergency Preparedness	Academia
Green Careers Dallas	Representative	Community Organization
Highland Fire Department	Fire Chief	Community Organization
Highland Park ISD	Director of Facility Services	Academia
Highland Public Library	Town Librarian	Community Organization
Hutchins Fire Rescue	Fire Chief	Community Organization
Irving Cares	CEO	Community Organization / Vulnerable Populations
Irving Fire Department	Fire Chief	Community Organization
Irving ISD	Chief of Schools	Academia
Irving ISD	Deputy Superintendent	Academia
Irving Public Library	Library Administrator	Community Organization
Kaufman County	Emergency Management Coordinator	Neighboring Community
Lancaster Fire Department	Fire Chief	Community Organization
Lancaster ISD	Executive Director of Maintenance, Operations, and Transportation	Academia
Lancaster Veterans Memorial Library	Library Manager	Community Organization

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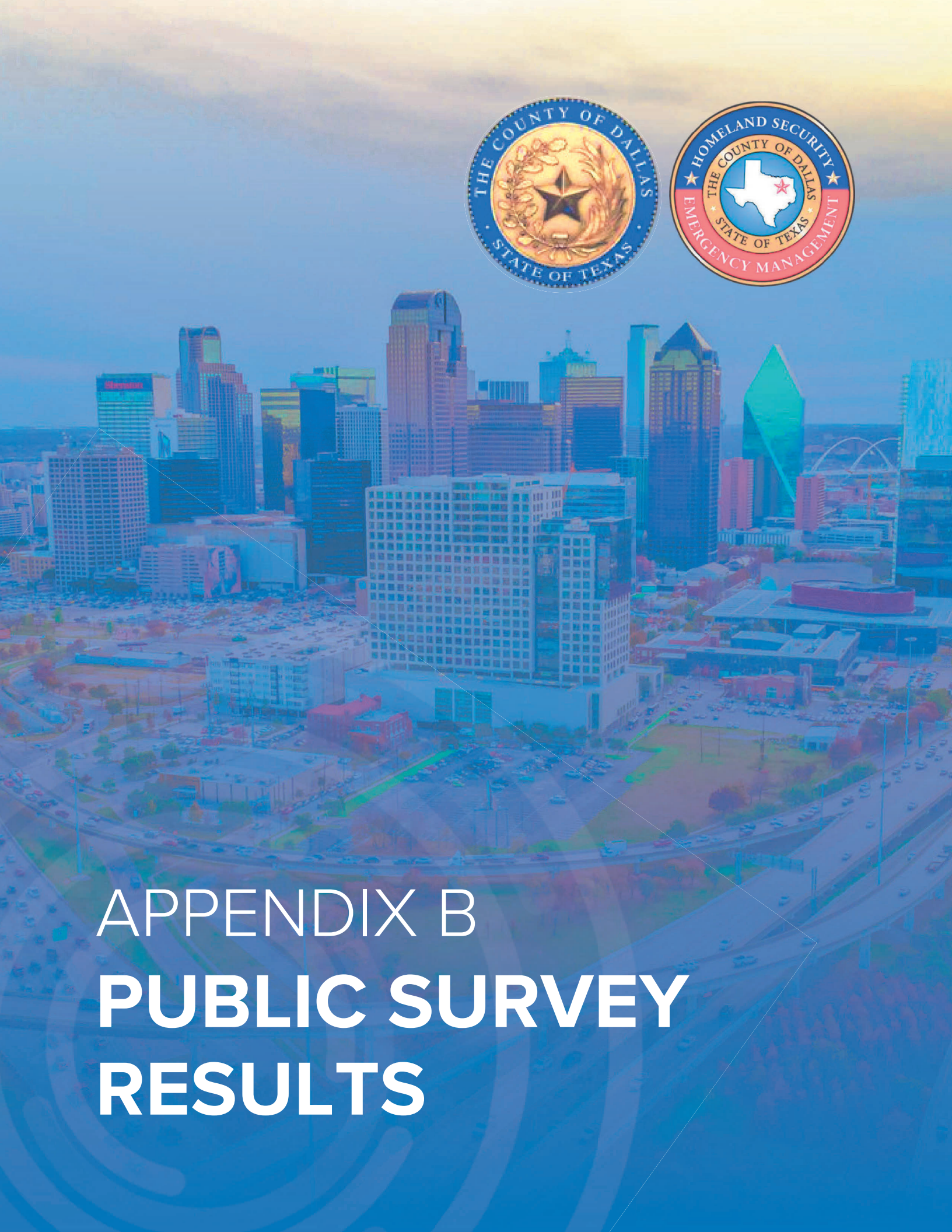
AGENCY	TITLE	STAKEHOLDER TYPE
Life Schools	Chief Operations Office	Academia
Life Schools	Safety Coordinator	Academia
Meals on Wheels	Community Engagement Supervisor	Community Organization / Vulnerable Populations
Mesquite Fire Department	Fire Chief	Community Organization
Mesquite ISD	Superintendent	Academia
Methodist Charlton Medical Center	CEO	Healthcare Agency
Mountain View College	Vice Chancellor of Student Success / Interim President	Academia
NOAA	Chief of Policy, Planning and Communications	Federal Agency
NWS	Fort Worth / Dallas Regional Contact	Federal Agency
Richardson Fire Department	Fire Chief	Community Organization
Richardson ISD	Assistant Superintendent of District Operations	Academia
Richardson ISD	Superintendent	Academia
Richardson Public Library	Library Director	Community Organization
Rockwall County	Emergency Management Coordinator	Neighboring Community
Rowlett Fire Rescue	Fire Chief	Community Organization
Sachse Fire Department	Fire Chief	Community Organization
Salvation Army	Senior Director of Community Relations	Community Organization / Vulnerable Populations
Seagoville Fire Department	Fire Chief	Community Organization
Seagoville Public Library	Library Director	Community Organization
Seagoville Senior Citizens Center	Senior Citizens Director	Community Organization / Vulnerable Populations
Serving with a Purpose	President / Founder	Community Organization / Vulnerable Populations
Sunnyvale Fire Department	Fire Chief	Community Organization
Tarrant County	Emergency Management Coordinator	Neighboring Community
Texas A&M AgriLife Extension	County Representative	State Agency

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AGENCY	TITLE	STAKEHOLDER TYPE
Texas A&M Forest Service	Representative	State Agency
Texas A&M Forest Service	Urban and Community Forestry	State Agency
Texas Commission of Environmental Quality (TCEQ), Region 4	Executive Assistant	State Agency
Texas Commission of Environmental Quality (TCEQ), Region 4	Regional Director	State Agency
Texas Commission of Environmental Quality (TCEQ), Region 4	Solid Waste Work Lead	State Agency
Texas Department of Health and Human Services (HHS), Region 3	Regional Director	State Agency
Texas Department of Homeland Security	Media Representative	State Agency
Texas Department of Housing and Community Affairs (TDCHA)	Director of Single-Family and Homeless Program	State Agency
Texas Department of Housing and Community Affairs (TDCHA)	Manager of Single-Family Program	State Agency
Texas Department of Transportation (TXDOT)	District Engineer	State Agency
Texas Division of Emergency Management (TDEM), Region 2	District Chief	State Agency
Texas Legislature	District 100	State Agency
Texas Legislature	District 102	State Agency
Texas Legislature	District 103	State Agency
Texas Legislature	District 104	State Agency
Texas Legislature	District 105	State Agency
Texas Legislature	District 107	State Agency
Texas Legislature	District 108	State Agency
Texas Legislature	District 109	State Agency
Texas Legislature	District 110	State Agency

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AGENCY	TITLE	STAKEHOLDER TYPE
Texas Legislature	District 111	State Agency
Texas Legislature	District 112	State Agency
Texas Legislature	District 113	State Agency
Texas Legislature	District 114	State Agency
Texas Legislature	District 115	State Agency
Texas Senate	District 2	State Agency
Texas Senate	District 12	State Agency
Texas Senate	District 6	State Agency
Texas Senate	District 23	State Agency
Texas State Soil and Water Conservation Board	Program Supervisor for Dublin Regional Office	State Agency
Texas Water Development Board (TWDB)	Representative	State Agency
Texas Windstorm Insurance Association	Representative	State Agency
Tri-City Animal Shelter	Shelter Manager	Community Organization
Under 1 Rood	Executive Director	Community Organization / Vulnerable Populations
University Park Fire Department	Fire Chief	Community Organization
U.S. Fish and Wildlife	Southwest Regional Representative	Federal Agency
U.S. Army Corps of Engineers	Southwest Regional Representative	Federal Agency
West Dallas Family Service Center	Food Program Supervisor	Community Organization / Vulnerable Populations
Wilmer Fire Department	Fire Chief	Community Organization
Wilmer Senior Citizens Services	Service Coordinator	Community Organization / Vulnerable Populations
Zula B. Wylie Public Library	Library Services Director	Community Organization



APPENDIX B
PUBLIC SURVEY RESULTS

APPENDIX B: PUBLIC SURVEY RESULTS

Overview 1
Public Survey Results 2

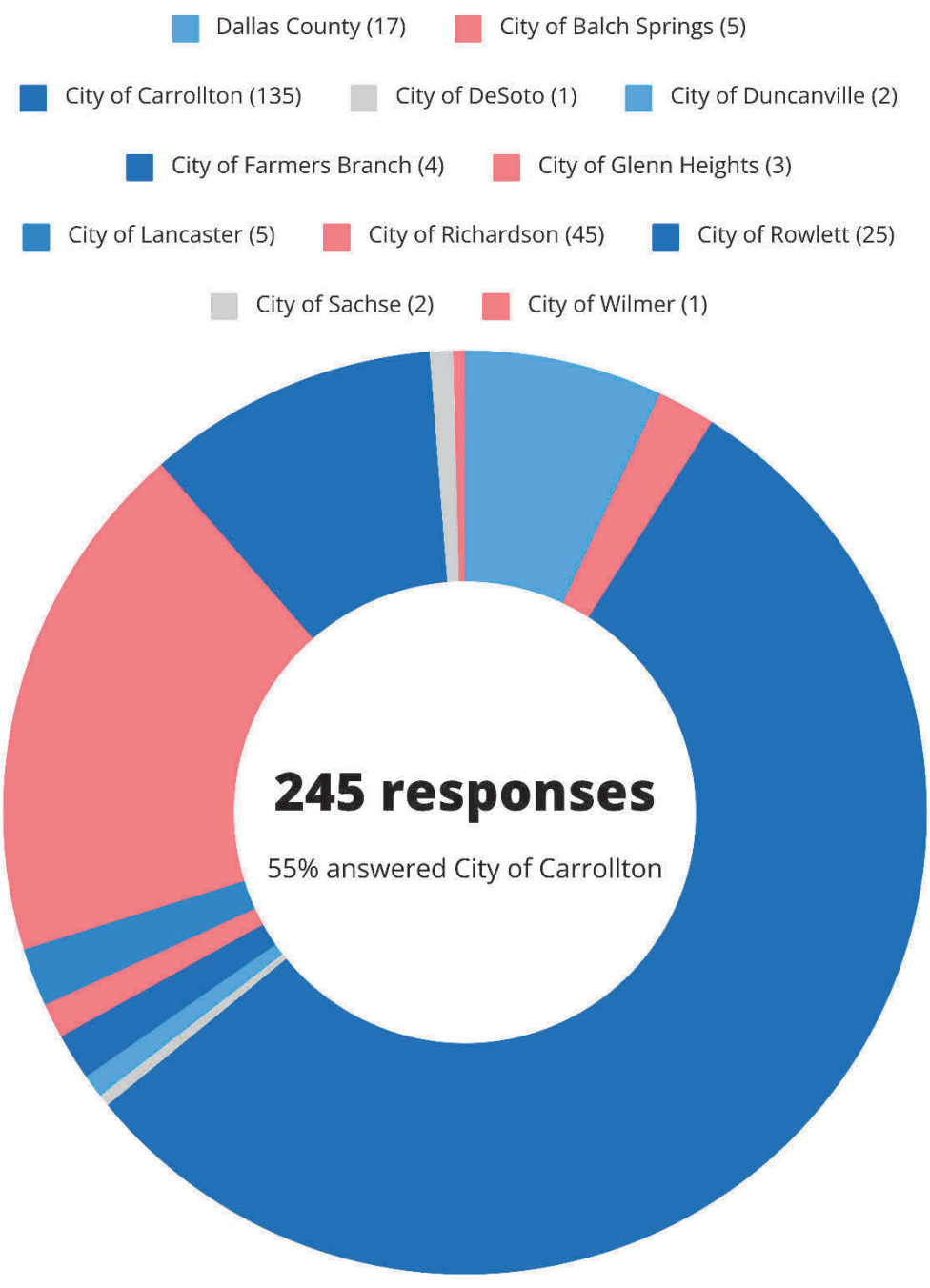
OVERVIEW

Dallas County prepared a public survey that requested public opinion on a wide range of questions relating to natural hazards. The survey was made available via the participating jurisdictions' websites. This survey link was also distributed at public meetings and stakeholder events throughout the planning process.

A total of 245 surveys were collected, the results of which are analyzed in Appendix B. The purpose of the survey was twofold: 1) to solicit public input during the planning process, and 2) to help the jurisdictions identify any potential actions or problem areas.

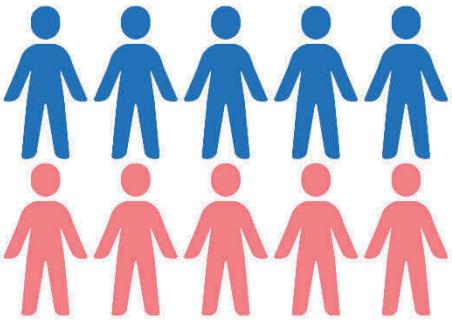
All public survey results were discussed and shared with the Planning Team during the Mitigation Strategy Workshop. These results are also provided below. The survey results provide information regarding the public's experience with natural hazards, their perceived hazards of concern, recommended mitigation actions, and additional valuable insights. Overall, this survey enhances the mitigation planning process by ensuring the plan properly represents the community, is informed through local knowledge, and by promoting equity.

PUBLIC SURVEY RESULTS



Survey responses were not provided from the other participating jurisdictions

Have you ever experienced or been impacted by a disaster?



48% Responded 'Yes'

Personal experiences shared in survey responses included:

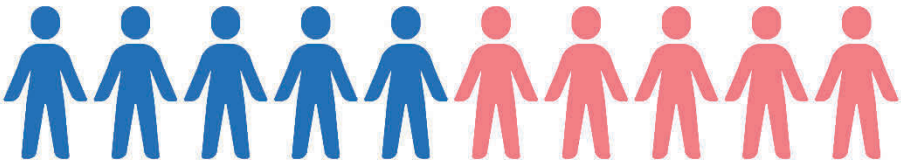
"December 26, 2015 tornado. Our home was not hit but almost an entire neighborhood directly across the lake from us was destroyed, and power lines were down so that our home was without electricity for three and a half days, in winter temperatures in the 20s F."

"In the late eighties a truck wrecked and had toxic chemicals in it and they had to evacuate local schools and neighborhood. This did happen in Balch Springs."

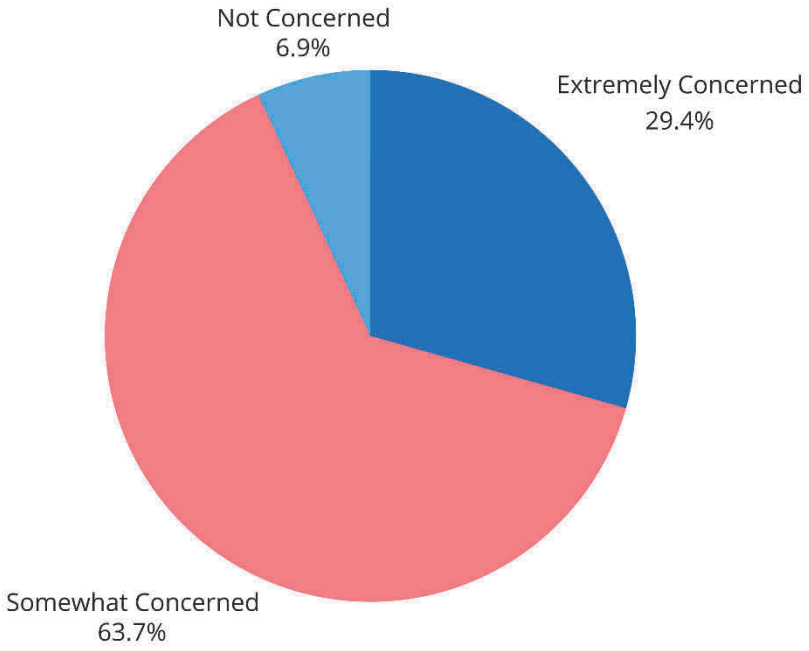
"No power for 2 weeks during winter storm winter 2021. The transformer box died./fried and the lines to the houses on our street did too. All had to be replaced. The issue or extent of the problem went undetected until the city all had power and services back and we still did not."

"Years ago, due to developments in the area where I lived, the brook behind my house flooded and the house became an island. We were out that day and had to be brought to the house in a row boat. End of May this year, we had hurricane strength winds pass through much of Dallas County, causing broken branches and other tree damage as well as a huge tree falling on top of a neighbor's house.."

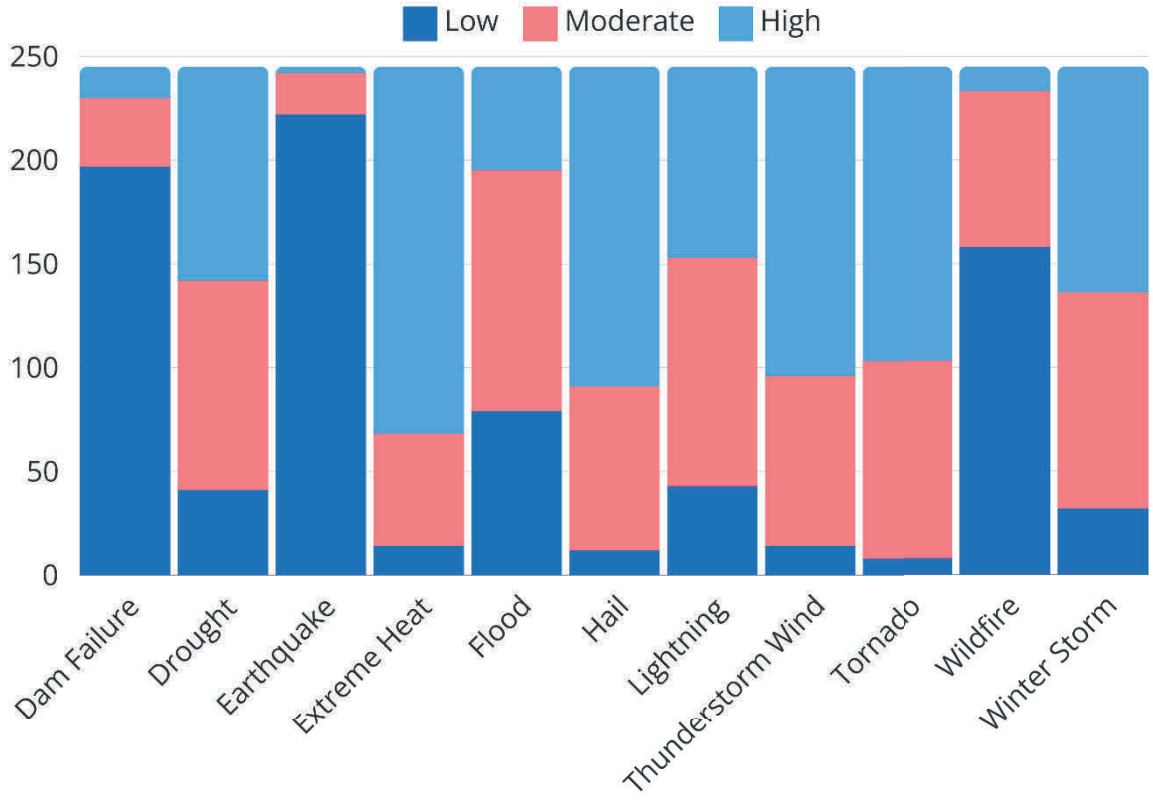
56% of those who have been impacted by a disaster mentioned tornado(s) and thunderstorm wind in their explanations.



Concern level for the possibility of their community being impacted by a disaster.



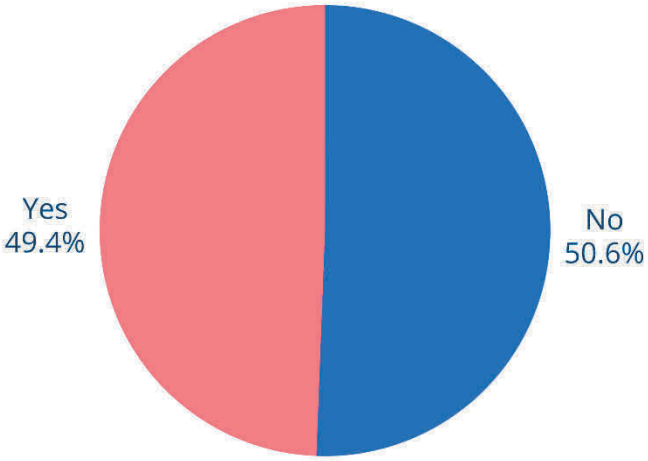
With the consideration of frequency of occurrence and potential impact severity, please indicate your concern level for each of the following hazards:



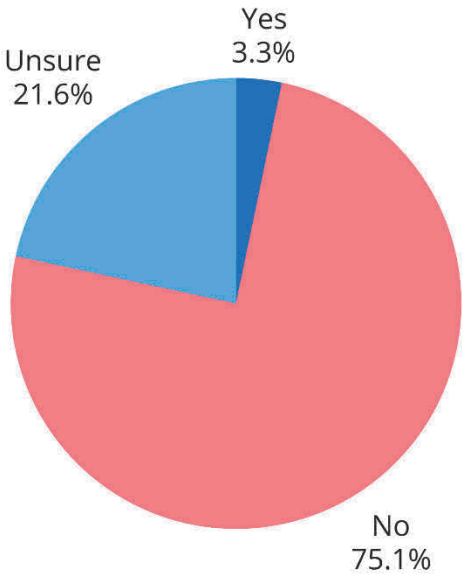
Is there another hazard not listed above that you think is a wide-scale threat to your neighborhood?

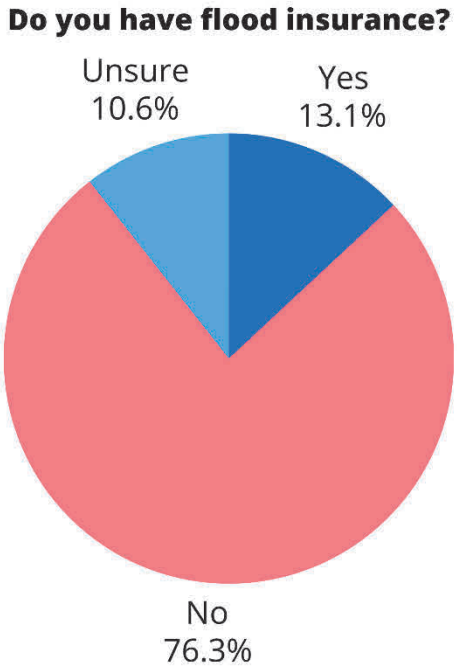


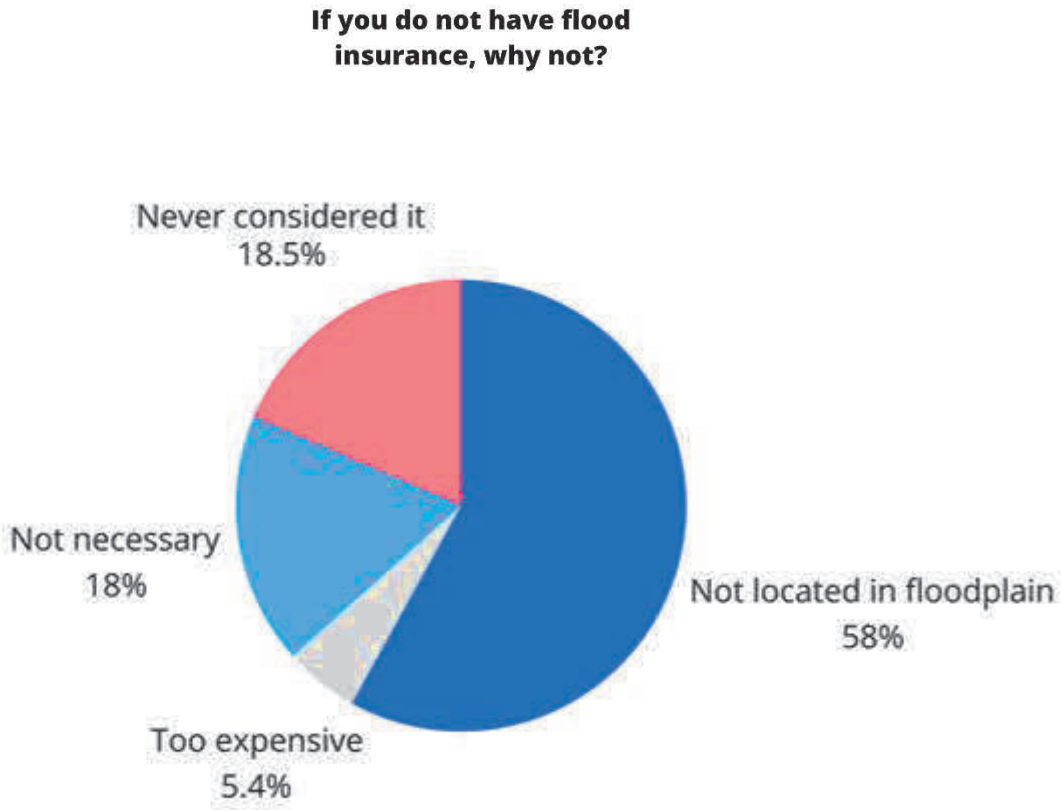
When you moved into your home, did you consider your risk for natural disasters?



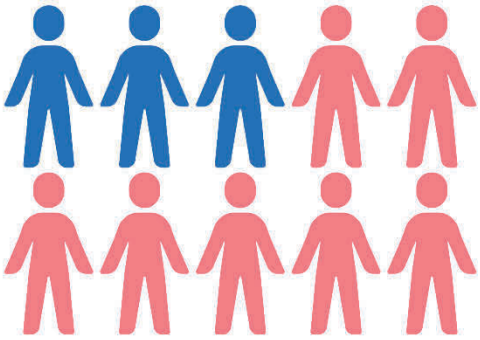
Is your home located in a floodplain?




Do you have flood insurance?
Unsure
10.6%
Yes
13.1%
No
76.3%

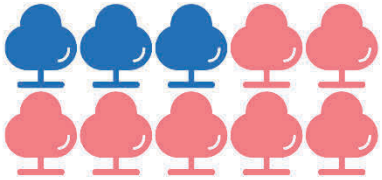

If you do not have flood insurance, why not?
Never considered it
18.5%
Not necessary
18%
Not located in floodplain
58%
Too expensive
5.4%

Have you taken any actions to make your home or neighborhood more resistant to hazards?

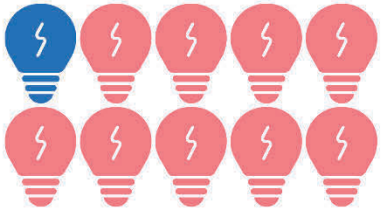


35% Responded 'Yes'

25% of those who have taken action through tree removal/fuel reduction



14% of those have a secondary source of power



85% of survey responders are interested in making their homes or neighborhoods more resistant to hazards.



Actions taken included:

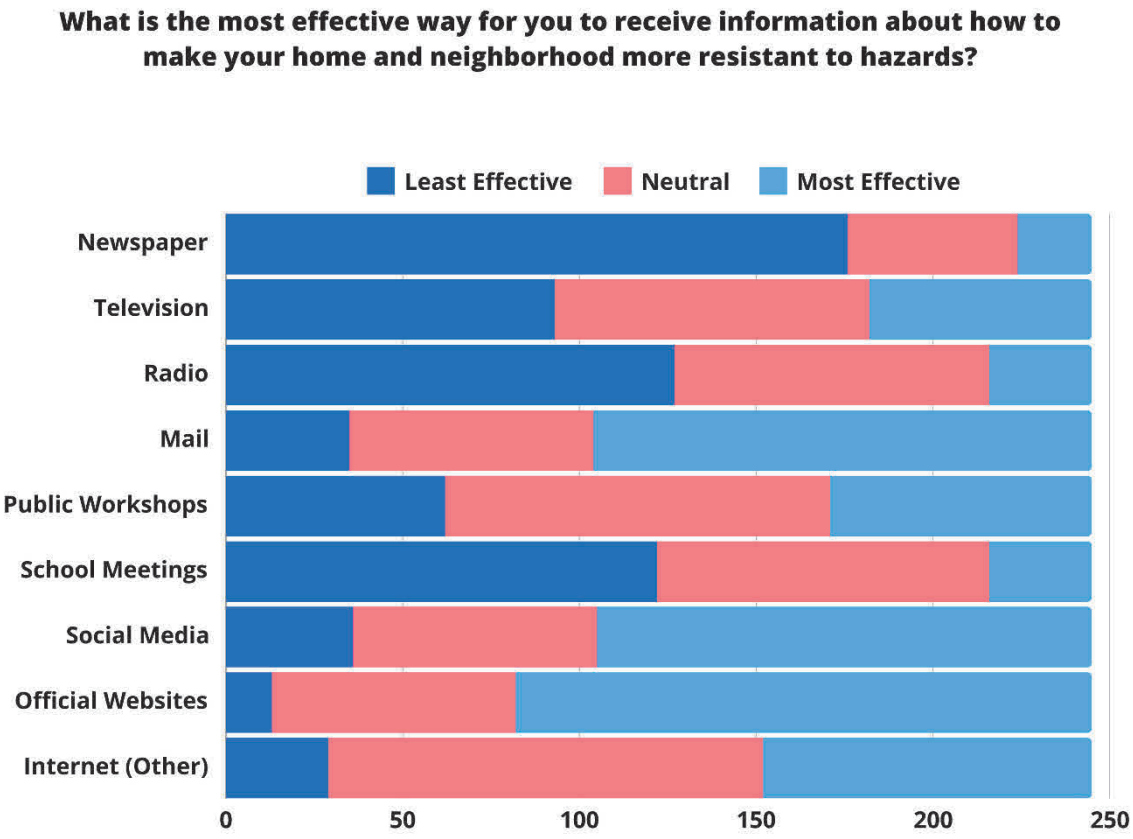
"Reinforced safe room to protect from tornados, whole house generator to provide power in case of storm, winter weather that takes out power lines."

"I keep my trees trimmed to mitigate large branches falling on my roof and I keep my lawn from getting too dry in the Summer."

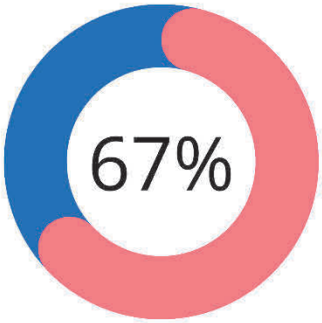
"New roof with heavier covering and fastening. Joined and have been a member of CERT for 19 years."

"Currently looking into a foundation irrigation system due to the drought in summers."

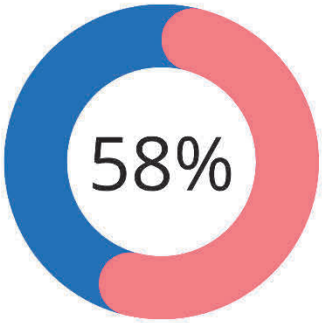
"I plant native and water wise plants, I have installed drip irrigation, and I conserve as much water as possible. I plant evergreen trees on the north side of my house, and deciduous trees on the south and west sides of my home."


What is the most effective way for you to receive information about how to make your home and neighborhood more resistant to hazards?
Least Effective
Neutral
Most Effective
Newspaper
Television
Radio
Mail
Public Workshops
School Meetings
Social Media
Official Websites
Internet (Other)
0
50
100
150
200
250

Effectiveness of communication methods for receiving information about how to make your home and neighborhood more resistant to hazards



Official Websites



Mail

Additional communication methods recommended:



Texts / Alerts

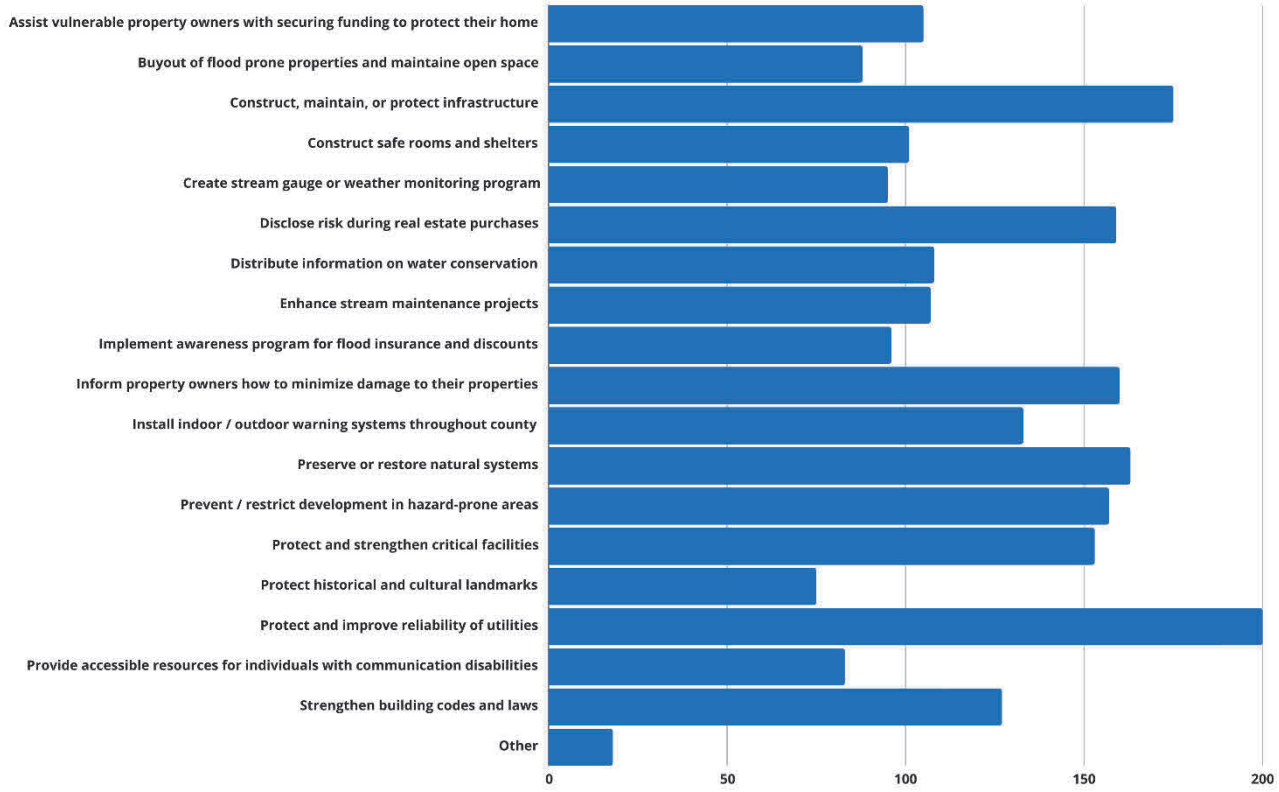


Email



Door Flyers

In your opinion, please select steps your local government should prioritize to reduce or eliminate the risk of future hazard damages in your neighborhood.



Is there anything else regarding hazard mitigation that you would like to note?



Some answers included:

"Aggressively reduce greenhouse gas emissions."

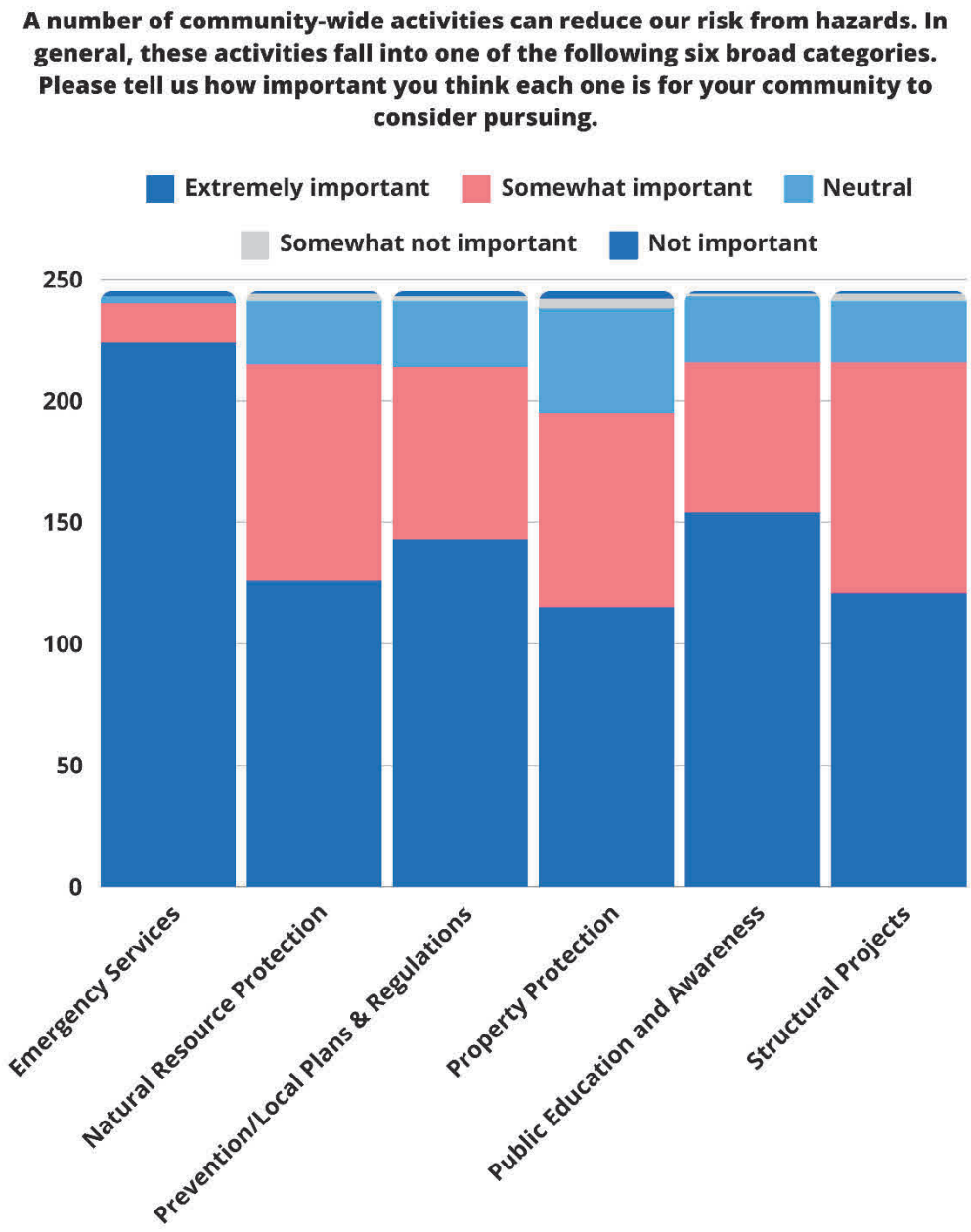
"Stronger building codes and assisting homeowners to update/retrofit their homes should be a priority along with preserving the land and natural resources to prevent erosion and pollution."

"Demand that all apartments recycle. The trash produced is affected during storms and covers the parking lots."

"Evacuation services, shelters and pop up processing centers with trained personnel employed by city, state or federal agencies would be an impactful investment as migration patterns intensify, affordable housing declines and more populous areas become mired in delays that impede mobility, stability and security."

"Do more to prevent mosquitoes, west nile virus. Clear out the storm drains and viaducts where heavy weed and tree growth is occurring."

"Teach CPR and other First Aid Courses for free for those who want to help the Carrollton Emergency Services in a disaster."



Emergency Services - Actions that protect people and property during and immediately after a hazard event. Examples include warning systems, evacuation planning, emergency response training, and protection of critical facilities or systems.

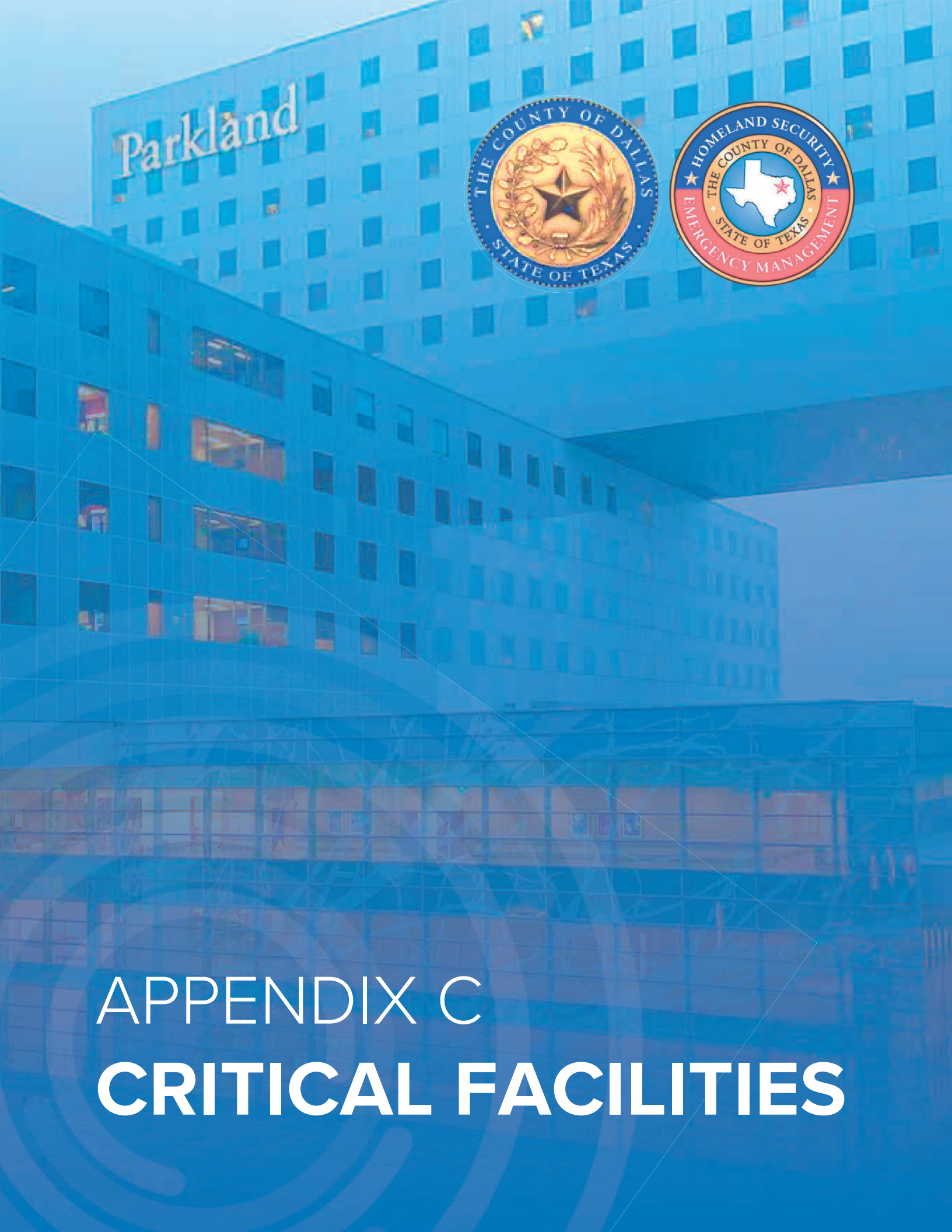
Natural Resource Protection - Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. Examples include floodplain protection, habitat preservation, slope stabilization, riparian buffers, and forest management.

Prevention / Local Plans & Regulations - Administrative or regulatory actions that influence the way land is developed and buildings are built. Examples include planning and zoning, building codes, open space preservation, and floodplain regulations.

Property Protection - Actions that involve the modification of existing buildings to protect them from a hazard or removal from the hazard area. Examples include acquisition, relocation, elevation, structural retrofits, and storm shutters.

Public Education and Awareness - Actions to inform citizens about hazards and techniques they can use to protect themselves and their property. Examples include outreach projects, school education programs, library materials, and demonstration events.

Structural Projects - Actions intended to lessen the impact of a hazard by modifying the natural progression of the hazard. Examples include dams, levees, seawalls detention / retention basins, channel modification, retaining walls, and storm sewers.



APPENDIX C
CRITICAL FACILITIES

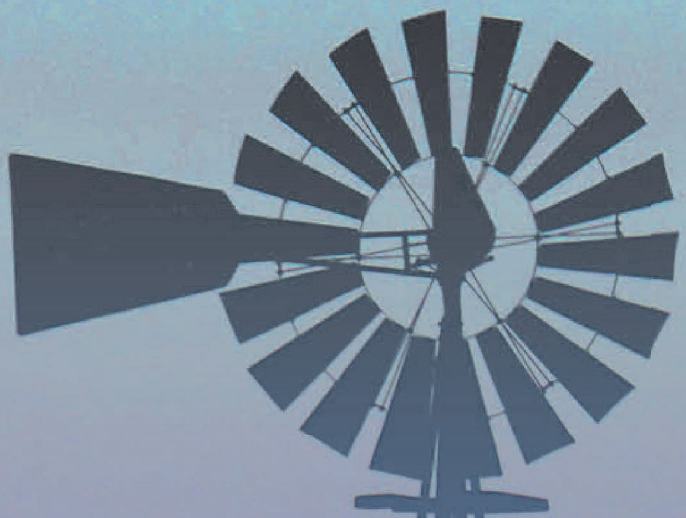
APPENDIX C: CRITICAL FACILITIES

Appendix C is For **Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).

APPENDIX D
DAM LOCATIONS

APPENDIX D: DAM LOCATIONS

Appendix D is **For Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).



APPENDIX E
MEETING DOCUMENTATION

APPENDIX E: MEETING DOCUMENTATION

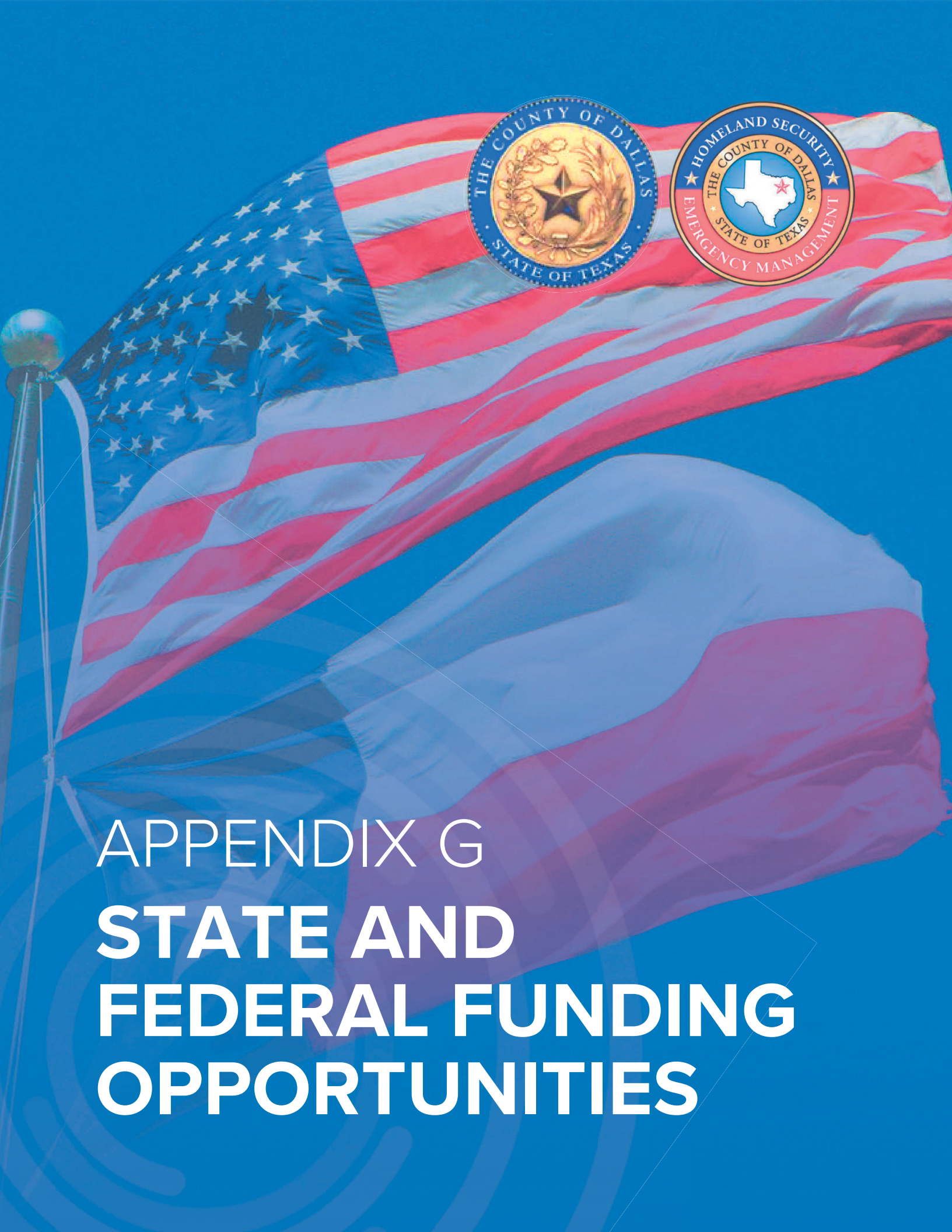
Appendix E is **For Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).



APPENDIX F
CAPABILITY ASSESSMENT

APPENDIX F: CAPABILITY ASSESSMENT

Appendix F is **For Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).



APPENDIX G

STATE AND FEDERAL FUNDING OPPORTUNITIES

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

Overview 1

OVERVIEW

Texas utilizes state funds to improve statewide hazard mitigation capabilities and advance their hazard mitigation goals to help identify, understand, and manage various risks associated with natural hazards. State funds also provide funding for state facility and infrastructure upgrades, hazard mapping, mitigation planning, and other mitigation programmatic activities. Table G-1 describes a variety of loan and grant programs offered by state agencies for which mitigation activities may be eligible.

Table G-1. Summary of State Funded Mitigation Programs

AGENCY	FUNDING PROGRAM
Texas A&M Forest Service (TAMFS)	• Community Fire Protection Program • Community Wildfire Defense Grant • Fire-Adapted Communities Program (FAC) • Firewise USA Program • Forest Land Enhancement Program • Forest Legacy Program • Mitigation Project Support Fund Prescribed Fire Grants • Resilient Landscapes Program • Rural Fire Assistance Grant • State Fire Assistance for Mitigation (SFAM) - Mechanical Fuels Grants • State Fire Assistance for Mitigation (SFAM) - Vegetative Fuel Break Grant • Texas Longleaf Conservation Assistance Program • Urban Tree Canopy Project (UTC)
Texas Commission on Environmental Quality (TCEQ)	• Clean Water Act Section 319 Grants • High Hazard Potential Dam Program (HHPD) • Nonpoint Source Grant Program • U.S.-Mexico Border Water Infrastructure Program
Texas Department of Agriculture (TDA)	• Agricultural Management Assistance (AMA) • Agricultural Water Enhancement Program (AWEP) • Community Development Block Grant • Community Development Block Grant for Rural Texas • Conservation Innovation Grants (CIG) • Environmental Quality Incentives Program (EQUIP)
Texas Department of Housing and Community Affairs (TDHCA)	• Texas HOME Disaster Relief
Texas Department of State Health Services (TXDSHS)	• Hospital Preparedness Program (HPP) Cooperative Agreement • Public Health Emergency Preparedness (PHEP) Cooperative Agreement

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

AGENCY	FUNDING PROGRAM
Texas Department of Transportation (TXDOT)	• Bridge Preventative Maintenance Program • Emergency Relief (ER) Program • Highway Bridge Replacement and Rehabilitation Program • Safe Rest Stops Program • Transportation Enhancement Program
Texas Division of Emergency Management (TDEM)	• Building Resilient Infrastructure & Communities (BRIC) • Emergency Management Performance Grant (EMPG) • Fire Management Assistance Grants (FMAG) • Hazard Mitigation Planning Grants Program (HMGP) • Homeland Security Grant Program (HSGP) • Individual Assistance (IA) • National Earthquake Hazard Reduction Program (NEHRP) • Public Assistance (PA) Section 406 Funds
Texas Economic Development & Tourism (EDT)	• Economic Development Administration Grants and Investments
Texas General Land Office (TXGLO)	• Beach Grants • Beach Maintenance Reimbursement Fund • Coastal Erosion Planning and Response Act (CEPRA) • Coastal and Estuarine Land Conservation Program (CELCP) • Coastal Management Program (CMP) • Community Development Block Grant – Disaster Recovery (CDBG-DR) • Community Development Block Grant – Mitigation (CDBG-MIT) • Gulf of Mexico Energy Security Act (GOMESA) • Hazard Mitigation Grant Program Supplemental -LHMPP
Texas Parks and Wildlife Department (TPWD)	• Nation Resources Damage Assessment (NRDA) • National Wildlife Wetland Refuge System • North American Wetland Conservation Fund • Partners for Fish and Wildlife • Texas Farm and Ranch Lands Conservation Program (TFRLCP) • Wildlife Habitat Incentive Program (WHIP)
Texas State Soil and Water Conservation Board (TSSWCB)	• Clean Water Act Section 319 Grants • Nonpoint Source Grant Program
Texas Water Development Board (TWDB)	• Agricultural Water Conservation Grants • Agricultural Water Conservation Loans • Clean Water State Revolving Fund (SWSRF) • Community Assistance Program (CAP) • Drinking Water State Revolving Fund (DWSRF) • Economically Distressed Areas Program • Emergency Community Water Assistance Grants • Flood Infrastructure Fund (FIF) • Flood Mitigation Assistance (FMA) Program

AGENCY	FUNDING PROGRAM
TWDB (continued)	• Flood Mitigation Assistance (FMA) Swift Program • Flood Protection Planning Program • Groundwater Conservation District Loan Program • Planning Assistance to States • Regional Facility Planning Grant Program • Regional Water Planning Group Grants • Research and Planning Fund and Fund Development Program • Risk MAP Program • Rural Development Grants • Rural Water Assistance Fund • Silver Jackets • Small Flood Control Projects (USACE Section 205) • State Participation Program – Regional Water and Wastewater Facilities • State Water Implementation Fund for Texas (SWIFT) • State Water Resources Research Act Program • Texas Infrastructure Resiliency Fund (TIRF) • Texas Water Development Fund (DFund) • Water Research Grant Program • Water SMART - Drought Response Program

In addition to State funded programs, many local jurisdictions benefit from federal mitigation funding opportunities. FEMA'S Hazard Mitigation Assistance is a primary source for the implementation of mitigation projects throughout the Nation. Table G-2 described additional Federal, State, Local, and Non-Profit mitigation funding sources specifically within the State of Texas.

Table G-2. Federal, State, Local and Non-Profit Mitigation Funding Sources in Texas

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Agricultural Management Assistance (AMA)	Federal	USDA, NRCS	TDA	Provides financial and technical assistance to agricultural producers to voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation methods into their farming operations.
Agricultural Water Enhancement Program (AWEP)	Federal	USDA, NRCS	TDA	Voluntary conservation initiative that provides financial and technical assistance to agricultural producers to implement water enhancement activities on agricultural land to conserve surface and ground water and improve water quality.

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Agricultural Water Conservation Grants	State	TWDB	TWDB	Provided to state agencies and political subdivisions for projects that support the implementation of conservation of water management strategies identified in state and regional water plans. Yearly applications. Up to $1.2 million available annually. Grant categories vary from year to year.
Agricultural Water Conservation Loans	State	TWDB	TWDB	Agricultural water conservation loans to use either for improvements on facilities or as loan to individuals. Low-interest, fixed rates. Up to 10-year repayment terms. U.S. Iron and Steel requirements apply to certain projects. Eligible Loan applicants include political subdivisions.
AmeriCorps - Corporation for National & Community Service (CNCS)	Federal	AmeriCorps	N/A	Provides funding for volunteers to serve communities, including disaster prevention. AmeriCorps/Vista has assisted local communities with wildfire mitigation projects.
American Recovery and Reinvestment Act (ARRA)	Federal	DOT Federal Transit Administration	TDA	Nicknamed the Recovery Act was a stimulus package enacted by the 111th U.S. Congress and signed into law by President Barack Obama in February 2009. Developed in response to the Great Recession, the primary objective of this federal statute was to save existing jobs and create new ones as soon as possible. Other objectives were to provide temporary relief programs for those most affected by the recession and invest in infrastructure, education, health, and renewable energy.
Assistance to Firefighters program - Fire Prevention & Safety (FP&S) **Grants**	Federal	FEMA, AFG		Fire Prevention & Safety (FP&S) Grants support projects that enhance the safety of the public and firefighters from fire and related hazards.
Beach Grants	Federal	EPA	TXGLO	EPA awards grants under authority of the BEACH Act to eligible states, territories, and tribes with beaches on ocean and Great Lakes coasts to develop and implement programs to monitor their beaches and notify the public when it is not safe to swim.

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Beach Maintenance Reimbursement Fund	State	GLO	TXGLO	Allocates approximately $750,000 per year to help communities keep their beaches maintained. Applications are distributed to eligible participants in early fall and are due within a specified amount of time, no less than 30 days. Contracts are renewable annually.
Bridge Preventative Maintenance Program	State	TXDOT	TXDOT	A planned, cost-effective treatment that preserves, improves, or delays future deterioration of the condition of a bridge. To be eligible for the BMIP a bridge must have a condition rating of 5 or 6 for at least one of the following: deck, superstructure, substructure, culvert, or channel. Safety and improvement to the physical conditions of the State's on-system bridges are TxDOT's main goals in the prioritization of the bridges using BMIP funds. The Bridge Division develops an initial list each FY of eligible bridges in each district and distribute to the districts for the annual program call.
Building Resilient Infrastructure & Communities (BRIC)	Federal	FEMA	TDEM	Pre-disaster/annual cycle addressing all natural hazards, emphasis on infrastructure & lifelines.
Clean Water Act Section 319 Grants	Federal	EPA	TCEQ and TSSWCB	Provides grants for a wide variety of activities related to non-point source pollution runoff mitigation.
Clean Water State Revolving Fund (CWSRF)	Federal	EPA	TWDB	Providing low-cost financing for a wide range of wastewater, stormwater, reuse, and other pollution control projects.
Coastal Erosion Planning and Response Act (CEPRA)	State	GLO	TXGLO	Since 2000, the Texas General Land Office's Coastal Erosion Planning and Response Program has received more than $62 million in state funding and more than $62 million in matching funds, completing more than 200 coastal erosion projects and studies. The application process for non-emergency project funding requests opens every even year in February and closes in early June of that same year.

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Coastal and Estuarine Land Conservation Program (CELCP)	Federal	NOAA	TXGLO	When NOAA provides funding for CELCP, the GLO provides coastal communities an opportunity to apply for up to three projects per year, with federal grants for any single project not to exceed $3 million.
Coastal Management Program (CMP)	Federal	NOAA	TXGLO	Texas receives approximately $2 million annually in grants from National Oceanic and Atmospheric Administration (NOAA) and 90% of the funds are passed through to local governments and entities to address environmental needs and promote sustainable economic development along the coast. Projects must improve the management of the state's coastal resources and ensure long-term ecological and economic productivity. Section 306 administrative funds can be used for non- construction, coastal planning and education, and research. Section 306A improvement funds can be utilized for construction and land acquisition projects and preservation and restoration. CMP funding categories include Coastal Natural Hazards Response, Critical Areas Enhancement, Public Access, Water/Sediment Quantity and Quality Improvements, Waterfront Revitalization and Ecotourism Development, Permit Streamlining/ Assistance, Governmental Coordination and Local Government Planning Assistance.
Community Assistance Program (CAP)	Federal	FEMA, NFIP	TWDB	Product-oriented financial assistance program directly related to the flood loss reduction objectives of the NFIP.
Community Development Block Grant (CDBG)	Federal	HUD	TDA	The primary objective is to develop viable communities by providing decent housing and suitable living environments and expanding economic opportunities principally for persons of low- to moderate- income. Eligible applicants are non-entitlement cities under 50,000 in population and non-entitlement counties that have a non-metropolitan population under 200,000 and are not eligible for direct CDBG funding from HUD may apply for funding through any of the Texas CDBG programs.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Community Development Block Grant for Rural Texas	State	TDA	TDA	TDA administers the Community Development Block Grant for Rural Texas. The primary objective of the CDBG is to develop viable communities by providing decent housing and suitable living environments and expanding economic opportunities principally for persons of low- to moderate-income. Eligible applicants are non-entitlement cities under 50,000 in population and non-entitlement counties that have a non-metropolitan population under 200,000 and are not eligible for direct CDBG funding from HUD may apply for funding through any of the Texas CDBG programs.
Community Development Block Grant – Disaster Recovery (CDBG-DR)	Federal	HUD	TXGLO	Often following a disaster, the state may receive a CDBG-DR Supplement intended for mitigation and disaster recovery projects in the affected areas. Funding can be used to acquire properties in hazard prone areas. Since CDBG funds lose their federal identify they can also be used to supplement state or local match requirements on other funds such as FEMA HMA grants. Funding also supports public facilities including water and wastewater.
Community Development Block Grant – Mitigation (CDBG-MIT)	Federal	HUD	TXGLO	Eligible grantees to use this assistance in areas impacted by recent disasters to carry out strategic and high-impact activities to mitigate disaster risks and reduce future losses. In February of 2018, Congress appropriated $12 billion dollars in Community Development Block Grant (CDBG) funds specifically for mitigation activities for qualifying disasters in 2015, 2016, and 2017. HUD was able to allocate an additional $3.9 billion, bringing the amount available for mitigation to nearly $16 billion.
Community Fire Protection Program	Federal	USDA	TAMFS	Mitigation delivered via USDA Forest Service and Private Forestry Coop Fire Program.
Community Wildfire Defense Grant	Federal	USFS	TAMFS	Offers financial assistance to at-risk local communities with planning for and mitigating against the risk of catastrophic wildfire. This program is authorized in Public Law 117-58, the Infrastructure Investment and Jobs Act. Two primary objectives: The development and revision of Community Wildfire Protection Plans

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Community Wildfire Defense Grant (continued)				(CWPP), and the implementation of projects described in a CWPP that is less than ten years old. Prioritizes at-risk communities that are in an area identified as having high or very high wildfire hazard potential, are low-income, and/or have been impacted by a severe disaster. No minimum federal funding limit for projects.
Conservation Innovation Grants (CIG)	Federal	USDA, NRCS	TDA	Voluntary program intended to stimulate the development and adoption of innovative conservation approaches and technologies while leveraging federal investment in environmental enhancement and protection, in conjunction with agricultural production.
Drinking Water State Revolving Fund (DWSRF)	Federal	EPA	TWDB	Makes funds available to drinking water systems to finance infrastructure improvements. The program also emphasizes providing funds to small and disadvantaged communities and to programs that encourage pollution prevention as a tool for ensuring safe drinking water.
Economic Development Administration Grants and Investments	Federal	U.S. DOC, EDA	EDT	Invests and provides grants for community construction projects, including mitigation activities.
Economically Distressed Areas Program **Economically Distressed Areas Program** (continued)	State	TWDB	TWDB	Provides financial assistance for projects serving economically distressed areas where water or sewer services do not exist, or systems do not meet minimum state standards. Eligible EDAP applicants include cities, counties, water districts, nonprofit water supply corporations, and all other political subdivisions. The city or county where the project is located must adopt and enforce Model Subdivision Rules for the regulation of subdivisions prior to application for financial assistance. Projects must also be in an economically distressed area where the median household income is not greater than 75 percent of the median state household income.
Emergency Community Water Assistance Grants	Federal	USDA	TWDB	$150,000 to $500,000 available to rural communities with populations over 10,000 people with a median household income less than $65,900. Aids communities who have experienced a decline in quantity or quality of drinking water as a result of an emergency including drought.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Emergency Management Performance Grant (EMPG)	Federal	FEMA	TDEM	The EMPG program provides a yearly allocation of funding to support state and local emergency management programs. This has included providing some funding for local mitigation plans, mitigation-oriented studies, and related activities.
Emergency Relief (ER) **Program**	Federal	US DOT - FHWA	TXDOT	Provides funds for roads and bridges on Federal-aid highways that are damaged as a direct result of a natural disaster or catastrophic failure from an external cause.
Emergency Watershed Protection (EWP)	Federal	USDA, NRCS	TWDB	Provides funding and technical assistance for emergency measures such as floodplain easements in impaired watersheds. Funding available through the Simplified Acquisition Procedures (SAP) ranges from $25K to $100K. Funded through contracts between project sponsors and the NRCS. There are no grants. The NRCS pays 75% of the costs.
Environmental Quality Incentives Program (EQUIP)	Federal	USDA, NRCS	TDA	Provides funding and technical assistance to farmers and ranchers to promote agricultural production and environmental quality as compatible goals.
Fire-Adapted Communities Program (FAC)	Federal	FEMA, USFA	TAMFS	Collaborates to identify its wildfire risk and works collectively on actionable steps to reduce its risk of loss. This work protects property and increases the safety of firefighters and residents.
Fire Management Assistance Grants (FMAG)	Federal	FEMA	TDEM	Provides fire suppression support to states when loss of life and property are imminent. Wildfire mitigation is also eligible under emergency protection if life is in imminent danger.
Firewise USA Program	Federal	USDA, DOI, NASFF, NFPA	TAMFS	The national Firewise USA® recognition program provides a collaborative framework to help neighbors in a geographic area get organized, find direction, and take action to increase the ignition resistance of their homes and community and to reduce wildfire risks at the local level.
Flood Infrastructure Fund (FIF)	State	TWDB	TWDB	Enacted through Senate Bill 7 to address needs identified following the flood disasters of 2015, 2016, and 2017. Senate Bill 500 appropriated $793 million. The purpose is to provide loans and grants for flood activities and projects. Once the State Flood Plan is adopted, the account may only be used for projects included in the plan. The SWIFT Advisory Committee is the oversight entity.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Flood Mitigation Assistance Program (FMA)	Federal	FEMA	TWDB	Repetitive flood loss property reduction and projects that mitigate losses to NFIP insured properties.
Flood Protection Planning Program	State	TWDB	TWDB	Developed to evaluate solutions to flooding problems in the state of Texas. Planning activities eligible for this program may include:
Forest Land Enhancement Program	Federal	USDA, NRCS	TAMFS	Provides educational, technical, and financial assistance to help landowners implement sustainable forestry management objectives.
Forest Legacy Program	Federal	USFS	TAMFS	Program providing funding to protect private forest lands that are environmentally, economically, and socially critical. This program reduces development in the wildland-urban interface.
Hazard Mitigation Grant Program (HMGP)	Federal	FEMA	TDEM	Post-disaster multi-hazard mitigation funding for federally declared disasters. HMGP Post Fire funds are available for FMAG declarations.
Hazard Mitigation Grant Program Supplemental – Local Hazard Mitigation Plan Program (LHMPP)	Federal	FEMA	TXGLO	Local Hazard Mitigation Plan Program (LHMPP) assists eligible entities by providing grants to develop or update local hazard mitigation plans, or to provide cost share for hazard mitigation planning activities funded through other federal sources. Community Development Block Grant Mitigation (CDBG-MIT) funds allocated by the United States Department of Housing and Urban Development (HUD) and administered by the Texas General Land Office (GLO) fund these planning activities, and the Hazard Mitigation Plan development and approval oversight is administered by the Federal Emergency Management Agency (FEMA) and administered by the Texas Division of Emergency Management (TDEM Grant awards will range from $20,000 – $100,000.
High Hazard Potential Dam Program (HHPD)	Federal	FEMA	TCEQ	Pre-disaster/annual cycle, for non-federal high hazard dams rated Unsatisfactory. Local match is 35% for each of the four grant periods.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Highway Bridge Replacement and Rehabilitation Program	Federal	FHWA	TXDOT	Provides funding to enable states to improve the condition of highway bridges through replacement, rehabilitation, and systematic preventive maintenance. Also includes the National Historic Covered Bridge Preservation Program.
Homeland Security Grant Program (HSGP)	Federal	DHS	TDEM	Homeland security activities identified in the state and local strategic plans. Funding supports threat & hazard and risk identification for natural, technological, and human-caused hazards. Some prevention activities may be considered mitigation.
Hospital Preparedness Program (HPP) **Cooperative Agreement**	Federal	HHS	TXDSHS	HPP is the primary source of federal funding for health care system preparedness and response and, in collaboration with public health, prepares health care delivery systems to save lives through the development of health care coalitions (HCCs). Under the direction of the HPP providers, the HCCs develop plans and provide training, and coordinate regional exercises.
Hydrologic Research Grants	Federal	NOAA		Up to $125,000 to conduct joint research and development on pressing surface water hydrology issues common to national, regional, local operational offices. Eligible applicants are federally recognized agencies of state or local governments, quasi-public institutions such as water supply or power companies, hydrologic consultants and companies involved in using and developing hydrologic forecasts.
Groundwater Conservation District Loan Program	State	TWDB	TWDB	Provides short-term loans to finance the start-up costs of Groundwater Conservation Districts. Funding is available for any Groundwater District or Authority with the authority to regulate the spacing of water wells, the production from water wells, or both. The program is authorized under Texas Water Code Chap. 36, Subchapter. L, and governed by TWDB rules in 31 Tex. Admin. Code Chap. 363, Subchapter. H.
Gulf of Mexico Energy Security Act (GOMESA)	Federal	DOI	TXGLO	GOMESA significantly enhances oil and gas leasing activities and creates revenue sharing provisions for the oil- and gas-producing states of Alabama, Louisiana, Mississippi, and Texas, and their coastal political subdivisions (CPSs).

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
GOMESA (continued)				GOMESA funds are used for coastal conservation, restoration, and hurricane protection. The second phase of GOMESA revenue sharing began in Fiscal Year 2017 and expands the definition of qualified Outer Continental Shelf revenues to include receipts from Gulf of Mexico leases subject to withdrawal or moratoria restrictions. A revenue-sharing cap of $500 million per year for the four Gulf producing states, their CPSs and the Land and Water Conservation Fund applies from fiscal years 2016 through 2055.
Individual Assistance (IA)	Federal	FEMA	TDEM	Following a disaster, funds can be used to mitigate hazards when repairing individual and family homes.
In-Lieu Fee Program Mitigation Projects	Federal	USACE	Community Applicants	Restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements for Department of the Army permits.
Mitigation Banks	Federal	USACE	Community Applicants	Mitigation Banks are sites approved by the Corps to sell compensatory mitigation credits for projects resulting in unavoidable impacts to waters of the U.S. When a permit is issued that requires compensatory mitigation, the permit will specify how many credits are required to be purchased at an approved mitigation bank.
National Earthquake Hazards Reduction Program (NEHRP)	Federal	FEMA	TDEM	Provides money to support enhanced earthquake risk assessments in local hazard mitigation plans and other earthquake hazard mitigation and preparedness activities.
Natural Resources Damage Assessment (NRDA)	Federal	EPA	TPWD	ERAs evaluate the likelihood that adverse ecological effects are occurring or may occur as a result of exposure to physical stressors (e.g., cleanup activities) or chemical stressors (e.g., release of hazardous substances) at a site.
National Weather Service (NWS)	Federal	NOAA - NWS		NWS offers storm spotter training, along with weather and flooding safety guides. They can also sometimes provide funding to support severe weather signage in parks or other public places.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
National Wildlife Wetland Refuge System	Federal	USFWS	TPWD	Provides funding for the acquisition of lands into the federal wildlife refuge system.
Nonpoint Source Grant Program	Federal	EPA	TCEQ, TSSWCB	The federal Clean Water Act (CWA) requires States to develop a program to protect the quality of water resources from the adverse effects of nonpoint source (NPS) water pollution. TCEQ and TSSWCB administer federal grants for activities that prevent or reduce nonpoint source pollution (NPS).
North American Wetland Conservation Fund	Federal	USFWS	TPWD	Provides funding for wetland conservation projects.
NRCS Conservation Programs	Federal	USDA, NRCS	Community Applicants	Provides funding through several programs for the conservation of natural resources.
Partners for Fish and Wildlife	Federal	USFWS	TPWD	Provides financial and technical assistance to landowners for wetland restoration projects in "Focus Areas" of the state.
Planning Assistance to States	Federal	USACE	TWDB	Aids states in planning for the development, utilization, and conservation of water and related land resources.
Pre-Disaster Mitigation Loan Program	Federal	SBA		Provides low-interest loans to small businesses for mitigation projects.
Prescribed Fire Grants	State	TAMFS	TAMFS	TAMFS's Mitigation & Prevention Department annually implements four prescribed fire grants intended to protect local communities and restore ecosystems. (1) SFAM Plains Prescribed Fire Grant – aids communities that have been or may be threatened by wildland fire by funding prescribed burning to reduce hazardous fuels in or around communities. Treatment areas will be located adjacent to priority communities in Texas that are at the highest risk for loss during a Southern Plains Wildfire Outbreak event. (2) The Community Protection Program Grant aids reducing the hazard of high-risk fuels on private lands through the use of prescribed burning. The treatment area will be within 10 miles of a

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Prescribed Fire Grants (continued)				National Forest boundary. The grant's goal is to protect high-risk communities and associated forest resources by reducing the risk of catastrophic wildfire on private and public lands. (3) The State Fire Assistance for Mitigation Central & East Texas Grant provides assistance to communities that have been or may be threatened by wildfire by funding prescribed burning to reduce hazardous fuels in and around communities. Treatment areas will be private property in the 43 Counties in Central and East Texas that have a Community Wildfire Protection Plan within the county. The goal is to protect high-risk communities and aid in ecosystem restoration by utilizing prescribed fire to consume excess vegetation before it contributes to catastrophic wildfire. Priority will be given to treatments sites that are within a CWPP, located near a Firewise community, located near homes based on Texas Wildfire Risk Assessment Portal and contain ecosystems that will benefit from prescribed fire. (4) Neches River and Cypress Basin Watershed Restoration Program - Prescribed Fire Grant provides assistance to landowners in utilizing prescribed fire for ecological improvement to the Neches River and Cypress Basin watersheds. This program will benefit the public and natural resources through improvement of water quality and quantity, control of invasive species and enhancement of wildlife habitat. Treatment areas will be private property in the Neches River and Cypress Basin Watersheds. Priority will be given to prescribed burn treatments that promote native ecosystem restoration, are in priority watershed protection zones and near public land.
Public Assistance (PA) **Section 406 Funds**	Federal	FEMA	TDEM	Following a disaster, funds can be used to mitigate hazards when repairing damages to a public structure or infrastructure. Wildfire mitigation is also eligible under emergency protection if life is in imminent danger.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Public Health Emergency Preparedness (PHEP) **Cooperative Agreement**	Federal	CDC	TXDSHS	Helps health departments build and strengthen their abilities to effectively respond to a range of public health threats, including infectious diseases, natural disasters, and biological, chemical, nuclear, and radiological events. Preparedness activities funded by the PHEP cooperative agreement specifically target the development of emergency-ready public health departments that are flexible and adaptable.
Regional Facility Planning Grant Program	State	TWDB	TWDB	TWDB grants to political subdivisions of the State of Texas for studies and analyses to evaluate and determine the most feasible alternatives to meet regional water supply and wastewater facility needs, estimate the costs associated with implementing feasible regional water supply and wastewater facility alternatives, and identify institutional arrangements to provide regional water supply and wastewater services for areas in Texas.
Regional Water Planning Group Grants	State	TWDB	TWDB	Developed to guide and support planning of the state's water resources by administering and assisting in the development of the regional and state water plans. The department strives to improve the planning process each cycle by developing clear guidance for the program's stakeholders and utilizing best-available data, methodologies, and technical innovations.
Research and Planning Fund and Fund Development Program	State	TWDB	TWDB	Offers grants to eligible applicants for the development or revision of regional water plans. The proposed planning must be a plan, an amendment to an approved regional water plan developed by the regional water planning group for a regional water planning area pursuant to the Texas Water Code, §16.053 and Chapter 357, or other special studies approved by the TWDB which will enhance water planning efforts in the region. Activities eligible for funding are those related to the development, revision, or improvement of regional water plans including public meetings, hearings, and special studies.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Resilient Landscapes Program	Federal	USDA, USFS	TAMFS	The USFS is working with partners to restore healthy, resilient, fire-adapted ecosystems. Restoring ecosystems includes thinning crowded forests and using prescribed fire on two to three million acres each year, which can help prevent the buildup of flammable vegetation that feeds extreme wildfires.
Risk MAP Program	Federal	FEMA, NFIP	TWDB	Establishes or updates floodplain mapping and multi-hazard risk products.
Rural Development Grants	Federal	USDA-Rural Development	TWDB	Provides grants and loans for infrastructure and public safety development and enhancement in rural areas. Provides $100,000 or 75% of the total project, whichever is less.
Rural Fire Assistance Grant	Federal	NIFC	TAMFS	Funds fire mitigation activities in rural communities.
Rural Utilities Service (RUS)	Federal	USDA-Rural Development		RUS administers programs that provide much-needed infrastructure or infrastructure improvements to rural communities. These include water and waste treatment, electric power, and telecommunications services.
Rural Water Assistance Fund	State	TWDB	TWDB	Designed to assist small rural utilities to obtain low-cost financing for water and wastewater projects. The RWAF offers tax-exempt equivalent interest rate loans with long-term finance options.
Safe Rest Stops Program	State	TXDOT	TXDOT	Texas has 21 major highways that serve as long distance travel corridors. Along each of these roadways, rest areas are an essential safety feature to reduce accidents caused by driver fatigue. These facilities give travelers a break from driving, and then return them to the road rested, refreshed and alert.
State Fire Assistance for Mitigation (SFAM) **- Mechanical Fuels Grants**	State	TAMFS	TAMFS	Provides financial assistance to reduce the hazard of high-risk fuels on private lands using hazardous fuel reduction. The grant's goal is protected high risk communities within the 32 high risk counties in Central Texas identified by Texas A&M Forest Service Mitigation and Prevention Department. Priority will be given to landowners that live with in the 32 high risk counties, are in a county or city that has an active Community Wildfire Protection plan or live with in a Firewise USA Site.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
State Fire Assistance for Mitigation (SFAM) **- Vegetative Fuel Break Grant**	State	TAMFS	TAMFS	Provides financial assistance for the creation of vegetative fuel breaks on private lands in Texas. Vegetative fuel breaks are trees and shrubs systematically planted adjacent to fields, homesteads, or feedlots to reduce or redirect the wind. Projects will be in the Texas High Plains. The goal of the grant is to protect high-risk communities by reducing the risk of catastrophic wildfire on private and public lands. Grant recipients will be reimbursed up to $2,500 for actual costs associated with creating a green, vegetative fuel break, consisting of a minimum of 3 rows of trees and 400 feet in length.
Silver Jackets	Federal	USACE	TWDB	Can provide funding for flood related studies, public awareness, risk analysis, and flood response plans. Construction of small flood control projects.
Small Flood Control Projects (USACE Section 205)	Federal	USACE	TWDB	Authorizes use of USACE to do feasibility and construction of small flood control projects.
State Participation Program – Regional Water and Wastewater Facilities	State	TWDB	TWDB	The State Participation Program enables the TWDB to provide funding and assume a temporary ownership interest in a regional water, wastewater, or flood control project when the local sponsors are unable to assume debt for an optimally sized facility. The program is intended to encourage the optimum regional development of projects by funding excess capacity for future use where the benefits can be documented, and where such development is unaffordable without state participation. The goal is to allow for the "right sizing" of projects in consideration of future needs.
State Water Implementation Fund for Texas (SWIFT)	State	TWDB	TWDB	Passed by the Legislature and approved by Texas voters through a constitutional amendment, the SWIFT program helps communities develop and optimize water supplies at cost-effective rates. The program provides low-interest loans, extended repayment terms, deferral of loan repayments, and incremental repurchase terms for projects with state ownership aspects.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
State Water Resources Research Act Program	Federal	USGS	TWDB	USGS in cooperation with the National Institutes for Water Resources supports an annual call for proposals to focus on water problems and issues that are of a regional or interstate nature or relate to a specific program priority identified by the Secretary of the Interior and the Institutes.
Texas Farm and Ranch Lands Conservation Program (TFRLCP)	State	TPWD	TPWD	Maintains and enhances the ecological and agricultural productivity of these lands through Agricultural Conservation Easements. The TFRLCP supports responsible stewardship and conservation of working lands, water, fish and wildlife, and agricultural production through: • Generating interest and awareness in easement programs and other options for conserving working lands. • Leveraging available monies to fund as many high-quality projects as possible. Highlighting the ecological and economic value of working lands and the opportunities to conserve working lands for the future.
Texas HOME Disaster Relief	Federal	TDHCA	TDHCA	The Texas HOME Disaster Relief Program is a long-term housing program designed to help eligible organizations serve income eligible households impacted by disasters. Funds are available to assist with federal or state declared disasters, or other natural or man-made disasters that may occur. The Department's practice is to maintain a HOME Disaster Relief Fund balance of $1 million whenever possible. These funds can be accessed to support impacted households not located in communities that receive HOME funds directly from the U.S. Department of Housing and Urban Development (HUD).
Texas Longleaf Conservation Assistance Program	Federal	National Fish and Wildlife Foundation (NFWF)	TAMFS	Provides eligible landowners with financial and technical assistance for establishing, enhancing, and managing longleaf pine. Landowners with property within ten East Texas counties which include Angelina, Hardin, Jasper, Nacogdoches, Newton, Polk, San Augustine, Sabine, San Jacinto, Trinity, and Tyler are eligible to apply. Approved participants may receive up to 50% payment not to exceed a standard cap rate for implementing approved conservation practices. Approved conservation practices include prescribed burning, reforestation, site preparation, and forest stand improvement.

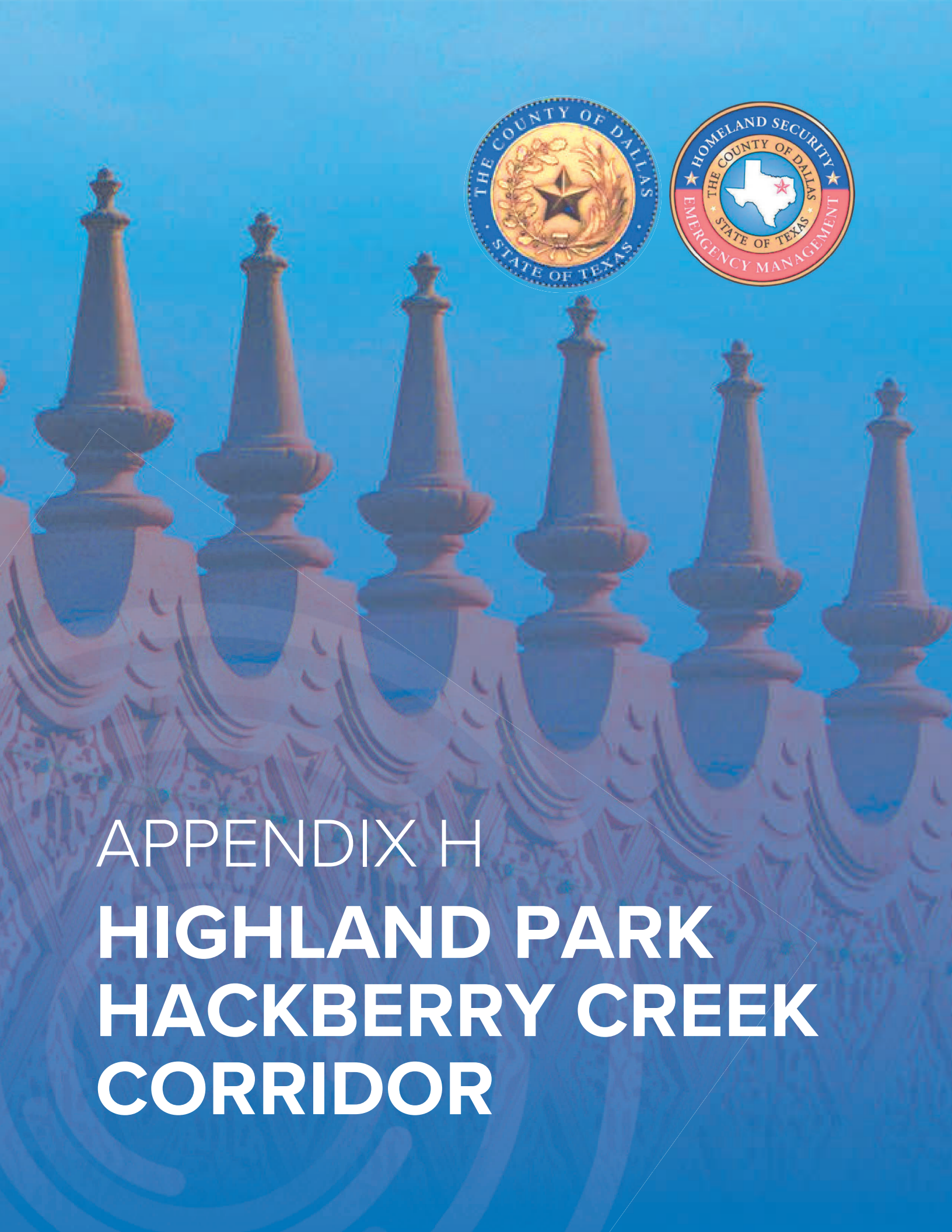
APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
Texas Infrastructure Resiliency Fund (TIRF)	State	TWDB	TWDB	Enacted through Senate Bill 7 to address needs identified following the flood disasters of 2015, 2016, and 2017. Senate Bill 500 appropriated $685 million. Purpose is to provide loans, grants, and matching funds for flood projects through four separate accounts. Each account has different purposes. The oversight entity is the TIRF Advisory Board (SWIFT Advisory Committee and TDEM Director as non-voting member).
Texas Water Development Fund (DFund)	State	TWDB	TWDB	State funded loan program The DFund enables the Board to fund multiple eligible components in one loan to our borrowers, e.g., an application for funding of water and wastewater components can be processed in a single loan. Provide financial assistance for water supply projects, wastewater projects, and flood control projects (including structural and nonstructural flood protection improvements).
Transportation Enhancement Program	Federal	FHWA	TXDOT	Provides opportunities for non-traditional transportation related activities. Projects should go above and beyond standard transportation activities and be integrated into the surrounding environment in a sensitive and creative manner that contributes to the livelihood of the communities, promotes the quality of our environment, and enhances the aesthetics of our roadways. Projects undertaken with enhancement funds are eligible for reimbursement of up to 80 percent of allowable costs.
United States Geological Survey (USGS)	Federal	USGS		USGS issues competitive grants and cooperative agreements to support research in earthquake hazards, the physics of earthquakes, earthquake occurrence, and earthquake safety policy.
Urban Tree Canopy Project (UTC)	Federal	USDA, USFS	TAMFS	Urban tree canopy (UTC) is the layer of leaves, branches, and stems of trees that cover the ground when viewed from above. In urban areas, the UTC provides an important stormwater management function by intercepting rainfall that would otherwise run off of paved surfaces and be transported into local waters though the storm drainage system, picking up various pollutants along the way. UTC also reduces the urban heat

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
UTC (continued)				island effect, reduces heating/cooling costs, lowers air temperatures, reduces air pollution, increases property values, provides wildlife habitat, and provides aesthetic and community benefits such as improved quality of life.
U.S.-Mexico Border Water Infrastructure Program	Federal	EPA	TCEQ	Provides grant assistance to U.S. and Mexican communities located within 60 miles of the border for the development and construction of high-priority drinking water and wastewater facilities. The program furthers EPA's mission of protecting human health and the environment by providing critical resources for what is often an area's first drinking water and basic sanitation services.
Water Research Grant Program Water Research Grant Program (continued)	State	TWDB	TWDB	TWDB funds a variety of water planning and water research studies and projects intended to assist and support regional water planning efforts or to answer regional water planning questions.
Water Conservation Field Services Program	Federal	HUD	Texas A&M AgriLife	Provides several grants related to safe housing initiatives.
Water2025 Challenge Grant Program for Western States	Federal	Bureau of Reclamation	TWDB	Up to $25,000 for projects that improve water use efficiency and improve water management practices.
Watershed Processes and Water Resources	Federal	Bureau of Reclamation	TWDB	Up to $250,000 for projects that can be completed within 24 months and that reduce conflicts through water conservation, efficiency, and markets.
Watershed Processes and Water Resources – National Research Initiative Standard Research (Part T)	Federal	USDA	TWDB	$100,000 available. Sponsors research that addresses two areas: (1) understanding fundamental watershed processes; and (2) developing appropriate technology and management practices for improving the effective use of water (consumptive and non-consumptive) and protecting or improving water quality for agriculture and forestry production.

APPENDIX G: STATE AND FEDERAL FUNDING OPPORTUNITIES

NAME	LEVEL	SOURCE AGENCY	MANAGING STATE AGENCY	PURPOSE OF FUNDING
WaterSMART – Drought Response Program	Federal	USDA	TWDB	$500,000 available. Innovative research in understanding fundamental processes that affect the quality and quantity of water resources at diverse spatial and temporal scales, ways on improving water resource management in agriculture, forested, and rangeland watersheds, and developing appropriate technology to reach those goals.
Wildlife Habitat Incentive Program (WHIP)	Federal	USDA, NRCS	TPWD	Voluntary program for conservation-minded landowners who want to develop and improve wildlife habitat on agricultural land, nonindustrial private forest land, and tribal land.



APPENDIX H

HIGHLAND PARK HACKBERRY CREEK CORRIDOR

APPENDIX H: HIGHLAND PARK HACKBERRY CREEK CORRIDOR

Overview..... 1

OVERVIEW

Appendix H is **For Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).



APPENDIX I
RICHARDSON DRAINAGE PROJECTS

APPENDIX I: RICHARDSON DRAINAGE PROJECTS

Overview 1
Drainage Projects 1

OVERVIEW

Appendix I is **For Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).

DRAINAGE PROJECTS

Table I-1. List of Drainage Projects in City of Richardson

DRAINAGE (FLOOD PREVENTION)	
Laguna Drive Drainage Improvements (604/606)	$250,000
UTD Regional Detention West Fork Cottonwood Creek	$6,221,012
UTD Regional Detention Pond Cottonwood Creek	$4,501,577
Lawnmeadow Drainage Improvements (Shady Creek to Cap Rock)	$900,000
Chippewa Drainage Improvements (Coit to Cottonwood)	$1,134,350
Summit Drive Drainage Improvements	$1,283,606
North Greenville Ave Storm Sewer Improvements	$1,731,376
South Greenville Drainage Improvements	$1,791,078
Lois Channel Drainage Improvements (Spring Valley to Frances Way)	$11,940,523
Texas Channel Drainage Improvements (Phillips to Jackson)	$3,582,157
Custer Rd and Tyler Loop Storm Sewer Improvements (South of Arapaho)	$5,373,235
La Salle, Lois and Dorothy Drainage Improvements	$1,743,316
Woodland/ Westshore Storm Drainage Upgrade	$336,723
Polk Street Drainage Improvements Texas to Abrams	$859,718
Spring Valley Drainage Improvements (Oak St to Lois Channel)	$1,032,855
West Lookout Drainage Improvements - Vista Cliff to Prairie Creek	$115,226
Northlake Drainage Improvements Phase II (St. Lukes and Waterview Storm Drains)	$238,810
Opal and Kirby Drainage Improvements	$167,167

APPENDIX I: RICHARDSON DRAINAGE PROJECTS

DRAINAGE (FLOOD PREVENTION)	
Canyon Creek Drive Drainage Improvements Phase II	$238,810
Floyd Branch Drainage Improvements Greer to Jackson at US75 Frontage Rd	$1,671,673
Sherman Storm Sewer Improvements	$1,014,944
Tyler Street Drainage Improvements (Texas Channel East to Tyler St)	$620,907
Floyd Road Drainage Improvements (Nottingham South to US75 FR)	$835,837
Abrams Road Drainage Improvements (Centennial to Highland)	$1,791,078
Mimosa at Arapaho Flood Prevention	$692,550
Custer Road Flood Prevention	$3,050,804
Mimosa Drive Drainage Improvements	$632,848
Glenville Beltline Storm Sewer	$1,498,536
Floyd Branch Storm Sewer Trunk Capacity Improvement	$4,776,209
1900 Nantucket Drive Drainage Improvements	$65,673
DRAINAGE (EROSION REPAIR)	
Erosion Repair at Breckinridge Park Area A Channel	$698,521
Hunt Branch at Spring Valley Erosion Repair H.1	$83,584
Mimosa Branch at Mimosa Drive Erosion Repair MB.3	$41,792
1112 North Floyd Road Erosion Repair NB.1 NB.2 & NB.3	$208,959
2305 Custer Parkway Erosion Repair PR.21	$388,067
333-335 Ridgebriar & 2704 Canyon Valley Erosion Repair N.T.9	$161,197
3329 Hayley Ct Erosion Repair RB.1	$119,405
Waterview Drive North of Cullum St Erosion Repair W.CTN.29	$113,435
2505 N. Plano Rd at Spring Creek Erosion Repair SP.2	$1,134,350
97 GO Stream Bank Stabilization Medium Sites	$2,029,889
101 Renner Road Erosion Repair SP.8	$372,544
1704 Woodoak Erosion Repair WC.4	$89,554
1312 Larkspur Drive Erosion Repair HH.2	$99,106
1428-1432 Cheyenne Drive Erosion Repair W.CTN.19A	$149,257

APPENDIX I: RICHARDSON DRAINAGE PROJECTS

DRAINAGE (EROSION REPAIR)	
Prairie Creek Dr. West at North Trib Erosion Repair N.T.18	$29,851
304 Canyon Ridge Drive Erosion Repair N.T.3	$131,346
320-322 Canyon Ridge Drive Erosion Repair N.T.8	$119,405
900 S. Waterview Dr. New Orleans Apts. L.CTN.2	$310,454
Beck Branch Trail and Storm Drain Outfall Erosion Repair BB.5	$202,989
Spring Branch Drive Erosion Repair 3500 Block BB.1	$29,851
1700 Woodoak Erosion Repair WC.3	$95,524
2106 Champion Ct - 2207 Oakwood Ct Erosion Repair SP.11	$716,431
2115 Brandeis Drive Erosion Repair M.1	$119,405
Hunt Branch Storm Drain Outfall Erosion Repair H.7	$71,643
1401 Wisteria Way Erosion Repair E.CTN.19	$53,732
201 Crooked Creek Erosion Repair PR.2	$47,762
1512 Cheyenne Erosion Repair W.CTN.23	$83,584
300-308 Centennial Erosion Repair F.4	$137,316
1409 Waterview Erosion Repair W.CTN.21	$41,792
140 Centennial Blvd Erosion Repair F.5	$11,941
1104 Dearborn Circle L.CTN.3	$143,286
1110 West Shore Erosion Repair E.CTN.13	$59,703
1409 Waterview Erosion Repair W.CTN.19	$89,554
1604 West Shore Dr. Erosion Repair E.CTN.22	$119,405
Yale Boulevard at Huffhines Branch Erosion Repair HH.1	$167,167
905 Waterfall Way Erosion Repair H.3	$29,851
909 Creekdale Drive Erosion Repair W.CTN.6	$113,435
917-919 Creekdale Drive Erosion Repair W.CTN.7	$137,316
2708 Prairie Creek Erosion Repair PR.5	$101,494
1304 Lamp Post Lane Erosion Repair H.9	$47,762
1100 Block Rockingham Erosion Repair NB.5	$157,615
140 Centennial Blvd Erosion Repair F.2	$23,881

APPENDIX I: RICHARDSON DRAINAGE PROJECTS

DRAINAGE (EROSION REPAIR)	
314-318 Canyon Ridge Drive Erosion Repair N.T.7	$263,886
419 Valley Cove Erosion Repair N.T.19	$71,643
1707 Campbell Trail Erosion Repair M.2	$89,554
1400 Cheyenne Drive Erosion Repair MB.1	$65,673
1917 Deep Valley Place Erosion Repair E.CTN.23	$119,405
Prairie Creek Dr. West Bridge Erosion Repair PR.8	$65,673
Owen's Farm Erosion Repair SP.1	$483,591
Jupiter at Spring Creek Erosion Repair SP.10	$41,792
725 Vinecrest Lane	$191,048
34 Balmoral Drive Erosion Repair BC.1	$107,465
Spring Creek at DART Railway Erosion Repair SP.6	$59,703
1214-1216 Glen Cove Drive MB.2	$131,346
802 St. Lukes Erosion Repair W.CTN.26	$83,584
311 Ridgebriar Drive Erosion Repair N.T.2	$101,494
Canyon Valley Drive Culvert Erosion Repair N.T.10	$59,703
Yale Blvd Culvert Erosion Repair	$256,721
Glenville Drive Culvert at Huffhines Branch Erosion Repair HH.5	$77,613
1606 Cheyenne Drive Erosion Repair W.CTN.28	$59,703
1434-1436 Cheyenne Drive Erosion Repair W.CTN.20	$47,762
Lakeside on Spring Valley Apts. L.CTN.1	$107,465
103-105 Thompson Dr. Erosion Repair E.CTN.2	$179,108
417 Fall Creek Drive Erosion Repair PR.13	$143,286
313-315 Ridgebriar Drive Erosion Repair N.T.4	$178,031
801 Waterview Drive Erosion Repair W.CTN.10	$178,031
1517-1519 Waterview Erosion Repair W.CTN.24	$178,031
200 Spring Valley Erosion Repair F.6	$178,031
2-3 Shadywood Place E.CTN.1	$202,989
Hunt Branch Power Substation Erosion Repair H.2	$65,673

APPENDIX I: RICHARDSON DRAINAGE PROJECTS

DRAINAGE (EROSION REPAIR)	
Floyd Branch at Buckingham Erosion Repair F.1	$41,792
1504-1506 Cheyenne Drive Erosion Repair W.CTN.22	$23,881
415 Valley Cove Dr. Erosion Repair N.T.16	$59,703
206 Hyde Park Drive L.CTN.11A	$173,138
4 & 5 Shenandoah Place Erosion Repair W.CTN.5	$161,197
906-908 St. Lukes Erosion Repair W.CTN.14	$71,643
1905 Waterview Erosion Repair W.CTN.25	$77,613
304-306 West Shore Erosion Repair E.CTN.9	$77,613
741-743 Pinehurst Dr. Erosion Repair E.CTN.14 & 15	$286,573
1117-1123 Wisteria Way Erosion Repair E.CTN.16	$119,405
First Korean United Methodist Erosion Rep E.CTN.17	$65,673
1313-1315 Wisteria Way Erosion Repair E.CTN.18	$89,554
116 West Shore Dr. Erosion Repair E.CTN.6	$35,822
404-406 West Shore Dr. Erosion Repair E.CTN.11	$226,870
1308 Lamp Post Lane Erosion Repair H.10	$178,031
608-632 Bruton Bends Dr. Erosion Repair F.7	$178,031
3308 Canyon Creek Drive Erosion Repair UPR.3	$149,257
1418 Cheyenne Erosion Repair W.CTN.18	$83,584
1415-1417 Wisteria Way Erosion Repair E.CTN.21	$113,435
307-309 Ridgebriar Drive Erosion Repair N.T.1	$96,718
140 Centennial Blvd Erosion Repair F.3	$41,792
3217&3219 Tam O'Shanter Erosion Repair UPR.1	$191,048
2929 N. Central Expy. Erosion Repair PR.1	$59,703
Glenbrook Erosion Repair 4100 Block BB.0	$250,751
DRAINAGE (BRIDGE & CULVERT)	
Belt Line at Hunt Branch Culvert Improvement	$955,242
Arapaho Road at Cottonwood Creek Bridge Improvement	$1,480,625
Arapaho Road at West Fork Bridge Improvement	$1,349,279

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DRAINAGE (BRIDGE & CULVERT)	
N. Waterview Pkwy at West Fork Culvert Improvement	$238,810
Regal at Hunt Branch Culvert Improvement	$388,067
N. Waterview Parkway at West Fork Culvert Improvements	$173,138
Abrams at Lois Branch Erosion Repair L.1	$41,792
Dublin Culvert at Hunt Branch Erosion Repair H.6	$417,918
Plano Rd Culvert at Duck Creek	$87,166
Buckingham Culvert at Floyd Branch	$89,554
Plano Road Culvert Improvements at 2C7	$1,300,000
Cambridge Culvert Replacement	$350,000