

AGENDA

City Council Meeting



Tuesday, July 26, 2022 @ 6:30 PM

**Anna ISD Board Room
201 E. 7th Street
Anna, Texas 75409**

The City Council of the City of Anna will meet at 6:30 PM, on July 26, 2022, at the Anna ISD Board Room located at 201 E. 7th Street, Anna, Texas, 75409, to consider the following items.

Welcome to the City Council meeting. Please sign the Sign-In Sheet as a record of attendance. If you wish to speak on an Open Session agenda item, please fill out the Opinion/Speaker Registration Form and turn it in to the City Secretary before the meeting starts.

1. Call to Order, Roll Call, and Establishment of Quorum.

2. Invocation and Pledge of Allegiance.

3. Neighbor Comments.

At this time, any person may address the City Council regarding an item on this meeting Agenda that is not scheduled for public hearing. Also, at this time, any person may address the City Council regarding an item that is not on this meeting Agenda. Each person will be allowed up to three (3) minutes to speak. No discussion or action may be taken at this meeting on items not listed on this Agenda, other than to make statements of specific information in response to a citizen's inquiry or to recite existing policy in response to the inquiry.

4. Reports.

Receive reports from Staff or the City Council about items of community interest.

Items of community interest include: expressions of thanks, congratulations, or condolence; information regarding holiday schedules; an honorary or salutary recognition of a public official, public employee, or other citizen (but not including a change in status of a person's public office or public employment); a reminder about an upcoming event organized or sponsored by the governing body; information regarding a social, ceremonial, or community event organized or sponsored by an entity other than the governing body that was attended or is scheduled to be attended by a member of the governing body or an official or employee of the municipality; and announcements involving an imminent threat to the public health and safety of people in the municipality that has arisen after the posting of the Agenda.

- a. Update on the City of Anna Municipal Complex Construction. (Director of Public Works Greg Peters, P.E.)

- b. Update on drought conditions and the public water system. (Director of Public Works Greg Peters, P.E.)

5. **Work Session.**

- a. Discuss recommendations from the Planning and Zoning Commission and Capital Improvements Advisory Committee in regards to proposed changes to Roadway, Water, & Sanitary Sewer Impact Fees. (Director of Public Works Greg Peters, P.E.)
- b. Review and discuss concept plans for the Anna Community Library. (Director of Public Works Greg Peters, P.E., and Neighbor Services Director Marc Marchand)
- c. Discuss progress and options related to Bryant Park, Geer Park and the wheeled sports park project.
- d. Presentation by Centurion Development with regard to discussion on minor amendment to Council Approved development agreement for Hurricane Creek Project and its related elements

6. **Consent Items.**

These items consist of non-controversial or "housekeeping" items required by law. Items may be considered individually by any Council Member making such request prior to a motion and vote on the Consent Items.

- a. Approve City Council Meeting Minutes for July 12, 2022 and July 13, 2022. (City Secretary Carrie Land)
- b. Approve Minutes of the June 9, 2022, Joint City Council, Community Development Corporation and Economic Development Corporation Board Meetings. (Director of Economic Development Joey Grisham).
- c. Approve a Resolution approving a Downtown Anna Economic Development Incentive Policy. (Assistant Director of Economic Development Taylor Lough)
- d. Approve an Ordinance adopting the 2022 Annual Service Plan Update to the Service and Assessment Plan and Assessment Roll, including the collection for the 2022-2023 annual installments for the Hurricane Creek Public Improvement District (PID). (Director of Economic Development Joey Grisham)
- e. Approve an Ordinance adopting the 2022 Annual Service Plan Update to the Service and Assessment Plan and Assessment Roll, including the collection for the 2022-2023 annual installments for the Sherley Tract Public Improvement District (PID). (Director of Economic Development Joey Grisham)
- f. Review Monthly Financial Report for the Month Ending June 30, 2022.
- g. Approve the Quarterly Investment Report for the Period Ending June 30, 2022. (Finance Director Alan Guard)
- h. Approve Resolution approving Collin County Hazard Mitigation Action Plan (Fire Chief Ray Isom)

7. **Items For Individual Consideration.**

- a. Consider/Discuss/Action on a Resolution approving an Agreement regarding services including a plan for municipal services regarding 0.02± acre, the northwestern point of the property, generally located on the north side of Sam Rayburn Memorial Highway (S.H. 121), 2,070± feet west of E Farm to Market Road 455. (Director of Development Services Ross Altobelli)
- b. Conduct a Public Hearing/Consider/Discuss/Action on an Ordinance annexing

0.02± acre, the northwestern point of the property, generally located on the north side of Sam Rayburn Memorial Highway (S.H. 121), 2,070± feet west of E Farm to Market Road 455. (Director of Development Services Ross Altobelli)

- c. Conduct a Public Hearing/Consider/Discuss/Action on an Ordinance to rezone 3.0± acres on the north side of Sam Rayburn Highway (S.H. 121), 2,070± feet west of E Farm-to-Market Road 455 from SF-E Single-Family Residential – Large Lot to C-2 General Commercial. (Director of Development Services Ross Altobelli)
- d. Consider/Discuss/Action on a Resolution regarding Salida Del Sol, Block A, Lot 1 Development Agreement. (Director of Development Services Ross Altobelli)
- e. Conduct a Public Hearing/Consider/Discuss/Action on an Ordinance to rezone 0.4± acre located on the west side of N. Riggins Street, 670± north of Anthony Street from SF-1 Single-Family Residential District to Planned Development-SF-TH Townhome District with modified development standards. (Director of Development Services Ross Altobelli)
- f. Consider/Discuss/Action on a Resolution regarding Salida Del Sol, Block A, Lot 1, Concept Plan. (Director of Development Services Ross Altobelli)
- g. Consider/Discuss/Action on filling a vacancy to the Parks Advisory Board. (City Secretary Carrie Land)
- h. Discuss/Consider/Approve a resolution authorizing the City Manager to execute a payment not to exceed \$62,977 to DGNO Railroad, their subsidiaries, or partners, for the purchase of signal pre-emption equipment for the proposed traffic signal located at State Highway 5 and Finley Boulevard. (Director of Public Works, Greg Peters, P.E.)

8. **Closed Session (Exceptions).**

Under Tex. Gov't Code Chapter 551, the City Council may enter into Closed Session to discuss any items listed or referenced on this Agenda under the following exceptions:

- a. Consult with legal counsel regarding pending or contemplated litigation and/or on matters in which the duty of the attorney to the governmental body under the Texas Disciplinary Rules of Professional Conduct of the State Bar of Texas clearly conflicts with Chapter 551 of the Government Code (Tex. Gov't Code §551.071).
- b. Discuss or deliberate the purchase, exchange, lease, or value of real property (Tex. Gov't Code §551.072).
- c. Discuss or deliberate Economic Development Negotiations: (1) To discuss or deliberate regarding commercial or financial information that the City has received from a business prospect that the City seeks to have locate, stay, or expand in or near the territory of the City of Anna and with which the City is conducting economic development negotiations; or (2) To deliberate the offer of a financial or other incentive to a business prospect described by subdivision (1). (Tex. Gov't Code §551.087).
- d. Discuss or deliberate personnel matters (Tex. Gov't Code §551.074).

The Council further reserves the right to enter into Executive Session at any time throughout any duly noticed meeting under any applicable exception to the Open Meetings Act.

- 9. Consider/Discuss/Action on any items listed on any agenda - work session, regular meeting, or closed session - that is duly posted by the City of Anna for any City Council meeting occurring on the same date as the meeting noticed in this agenda.

10. **Adjourn.**

This is to certify that I, Carrie L. Land, City Secretary, posted this Agenda on the City's website (www.annatexas.gov) and at a place readily accessible to the public at the Anna City Hall and on the City Hall bulletin board at or before 5:00 p.m. on July 22, 2022.

Carrie L. Land, City Secretary

1. The Council may vote and/or act upon each of the items listed in this agenda.
2. The Council reserves the right to retire into executive session concerning any of the items listed on this agenda, whenever it is considered necessary and legally justified under the Open Meeting Act.
3. Persons with a disability who want to attend this meeting who may need assistance should contact the City Secretary at 972 924-3325 two working days prior to the meeting so that appropriate arrangements can be made.



Item No. 4.a.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022
Staff Contact: Gregory Peters

AGENDA ITEM:

Update on the City of Anna Municipal Complex Construction. (Director of Public Works Greg Peters, P.E.)

SUMMARY:

Lee Lewis Construction is working on the final stages of construction on the Anna Municipal Complex. Staff will provide a brief update on the construction status to the City Council.

FINANCIAL IMPACT:

None.

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:
Goal 4: High Performing, Professional City

STAFF RECOMMENDATION:

N/A

ATTACHMENTS:

APPROVALS:

Gregory Peters, Director of Public Works
Jim Proce, City Manager

Created/Initiated - 7/20/2022
Final Approval - 7/21/2022



Item No. 4.b.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022

Staff Contact:

AGENDA ITEM:

Update on drought conditions and the public water system. (Director of Public Works Greg Peters, P.E.)

SUMMARY:

The City of Anna formally entered Stage 1 water restrictions in accordance with the Drought Contingency Plan on July 12, 2022. The Public Works Department is continuing to monitor weather conditions and water use data on a daily basis to determine if and when additional steps are required to address high water demand due to excessive heat and dry conditions. Staff will present an update on the status of the drought and water system for City Council discussion.

FINANCIAL IMPACT:

None.

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

Goal 4: High Performing, Professional City

STAFF RECOMMENDATION:

None at this time.

ATTACHMENTS:

APPROVALS:

Gregory Peters, Director of Public Works
Jim Proce, City Manager

Created/Initiated - 7/20/2022
Final Approval - 7/21/2022



Item No. 5.a.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022
Staff Contact: Gregory Peters

AGENDA ITEM:

Discuss recommendations from the Planning and Zoning Commission and Capital Improvements Advisory Committee in regards to proposed changes to Roadway, Water, & Sanitary Sewer Impact Fees. (Director of Public Works Greg Peters, P.E.)

SUMMARY:

Staff will present the findings of the Impact Fee Study completed by Kimley Horn and the recommendations received from the Capital Improvement Advisory Committee. We are seeking feedback on the final rates and % of maximum fee by land use, so that an Ordinance may be finalized for adoption in August.

FINANCIAL IMPACT:

Significant - Impact Fees determine available funding for capital improvements required to manage the impact of growth on the public roadway, water, and sanitary sewer systems.

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

Goal 2: Sustainable Anna Community Through Planned Managed Growth

STAFF RECOMMENDATION:

Staff recommends setting impact fees at rates to ensure cost recovery, to protect existing Anna Neighbors and ensure adequate infrastructure is constructed with new development. This item is to receive feedback needed to finalize the proposed Ordinance.

ATTACHMENTS:

1. Impact Fee Update - City Council

APPROVALS:

Gregory Peters, Director of Public Works
Jim Proce, City Manager

Created/Initiated - 7/20/2022
Final Approval - 7/21/2022



THE CITY OF
Anna

Impact Fee Discussion

Kimley»Horn

Outline

Impact Fee
Basics

Service Units

Service Area

Land Use
Assumptions

Next Steps

Impact Fee Basics

- What Are They?
 - One-time fee assessed to recover infrastructure costs required to serve new development
 - Governed by Chapter 395 of the Texas LGC
- Why impact fees?
 - Provides an additional funding tool for infrastructure systems
 - Provides for the orderly growth of the community
 - Allows for a balanced funding combination that recognizes the benefits of growth

Impact Fee Basics

- What Costs Are Recoverable?
 - Construction, Planning, Surveying, Legal Services, and Engineering
 - Land Acquisition and Associated Costs
 - Capital Improvement Planning and/or Financial Consulting
 - Projected Interest and Finance Costs
 - Local Share for State and Federal Roadways

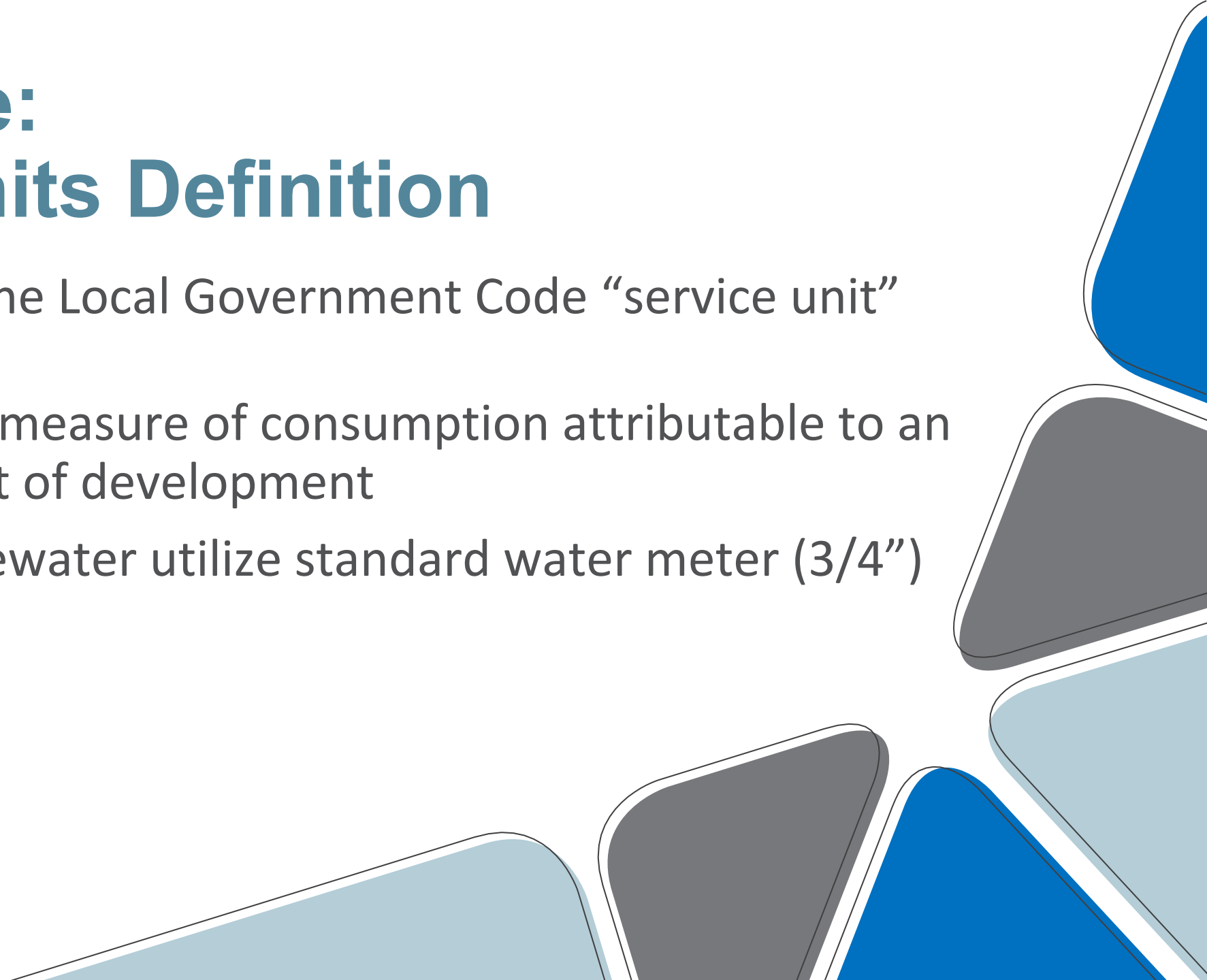
Impact Fee Basics

- What Costs Are Non-Recoverable?
 - Capital Improvements NOT Identified in the Project List
 - Operations and Maintenance Costs
 - Improvements to Remedy Existing Deficiencies
 - Administrative and Operational Costs of the City
 - Non-Project List Debt Service

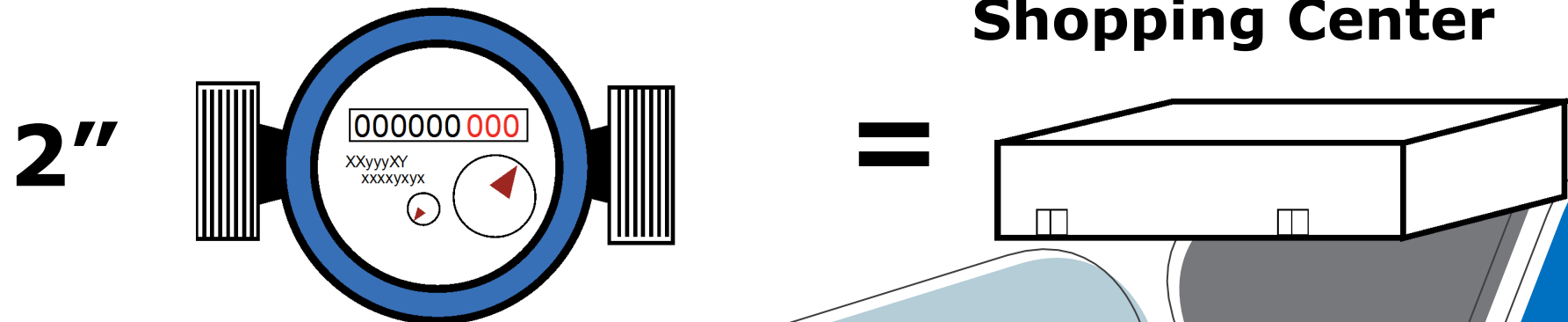
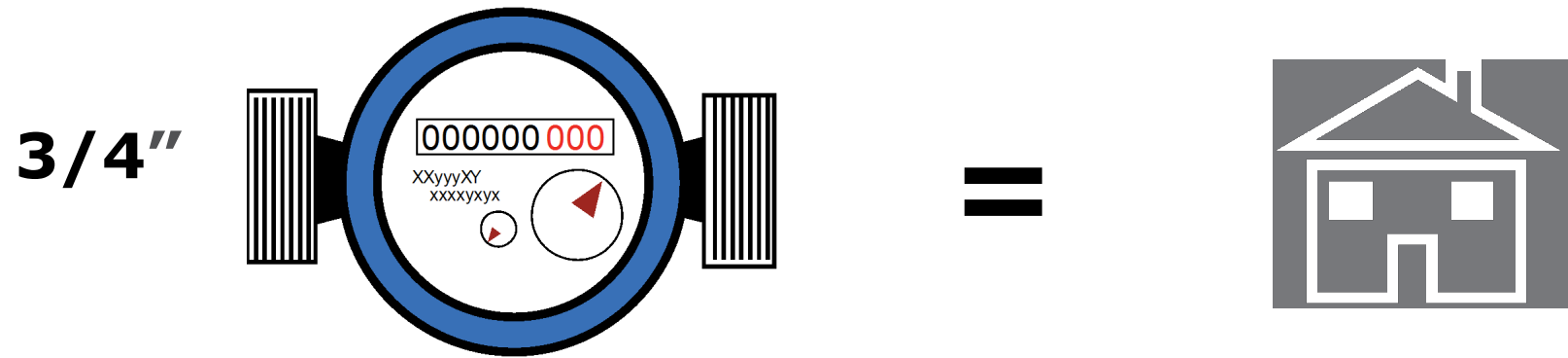


Impact Fee: Service Units Definition

- Chapter 395 of the Local Government Code “service unit” definition
 - Standardized measure of consumption attributable to an individual unit of development
- Water and wastewater utilize standard water meter (3/4”)

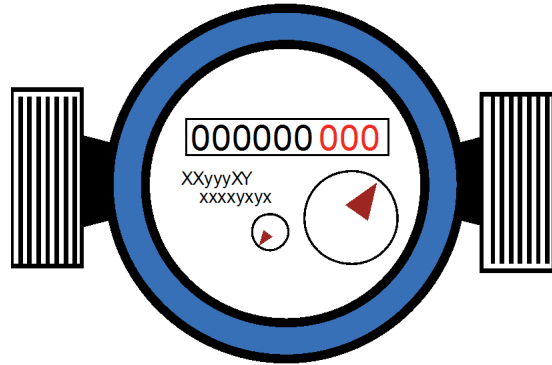


Water and Wastewater Service Units Breakdown



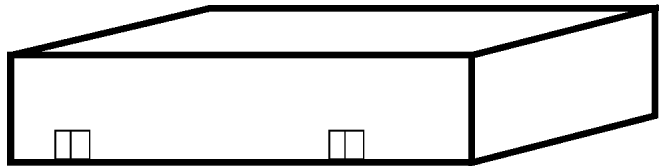
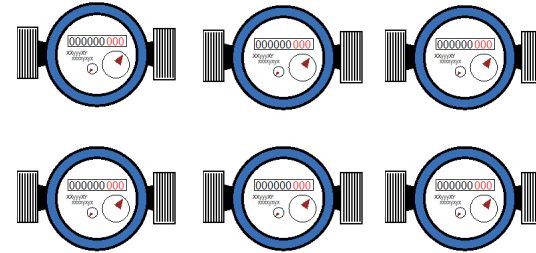
Water and Wastewater Service Units Breakdown

2"



=

3/4"

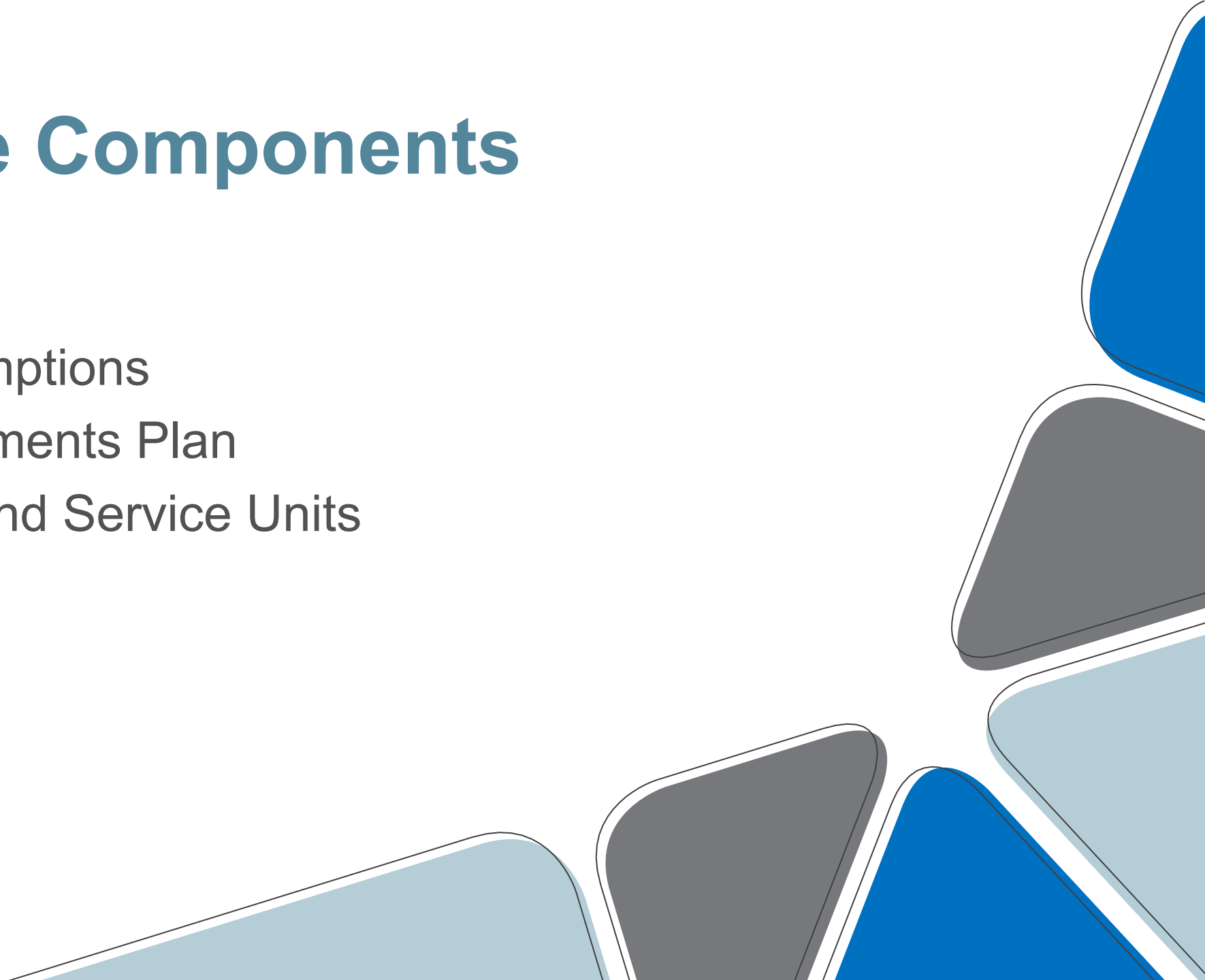


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Impact Fee Components

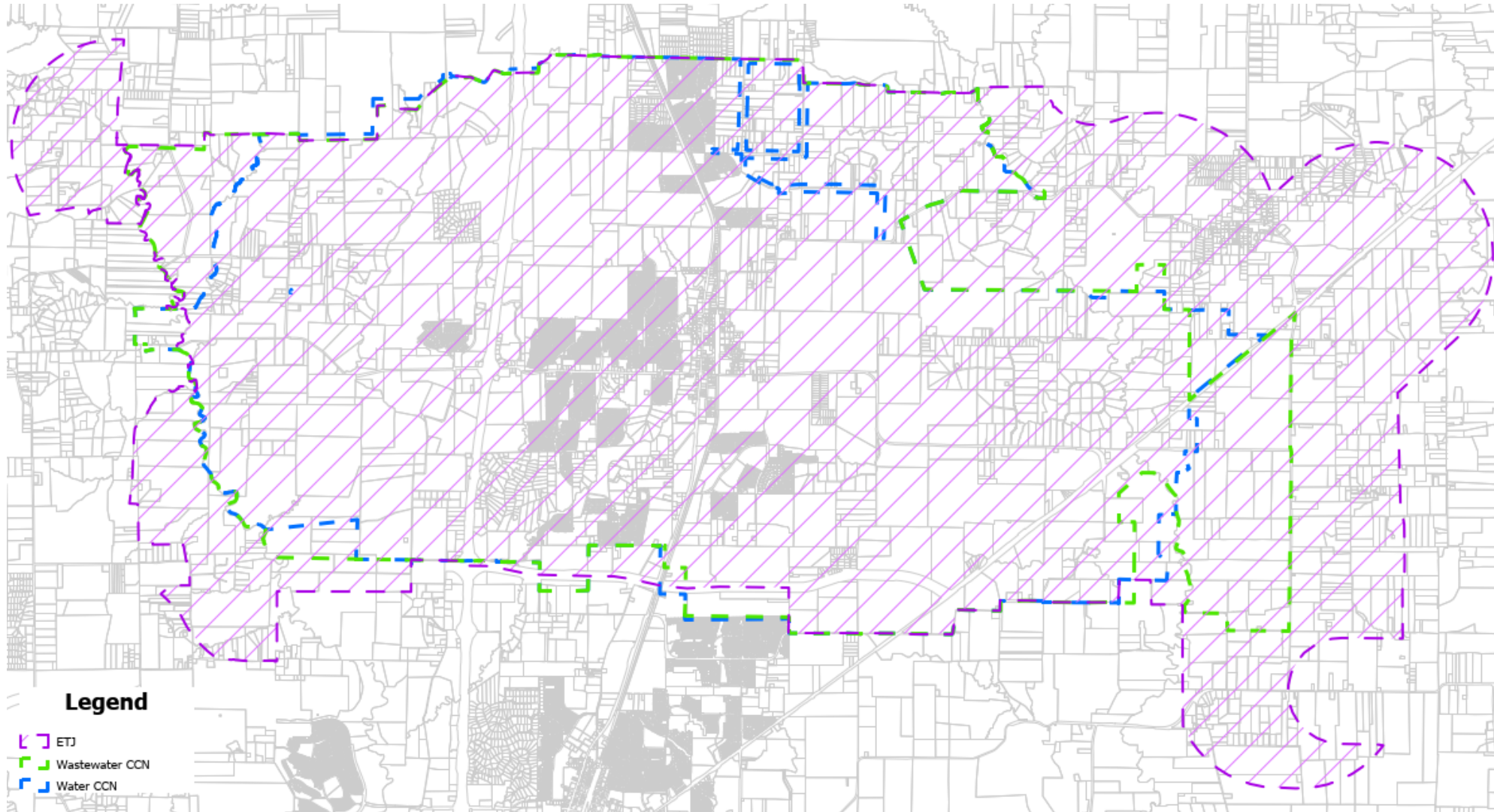
- Service Areas
- Land Use Assumptions
- Capital Improvements Plan
- Maximum Fee and Service Units
- Policy
- Implementation



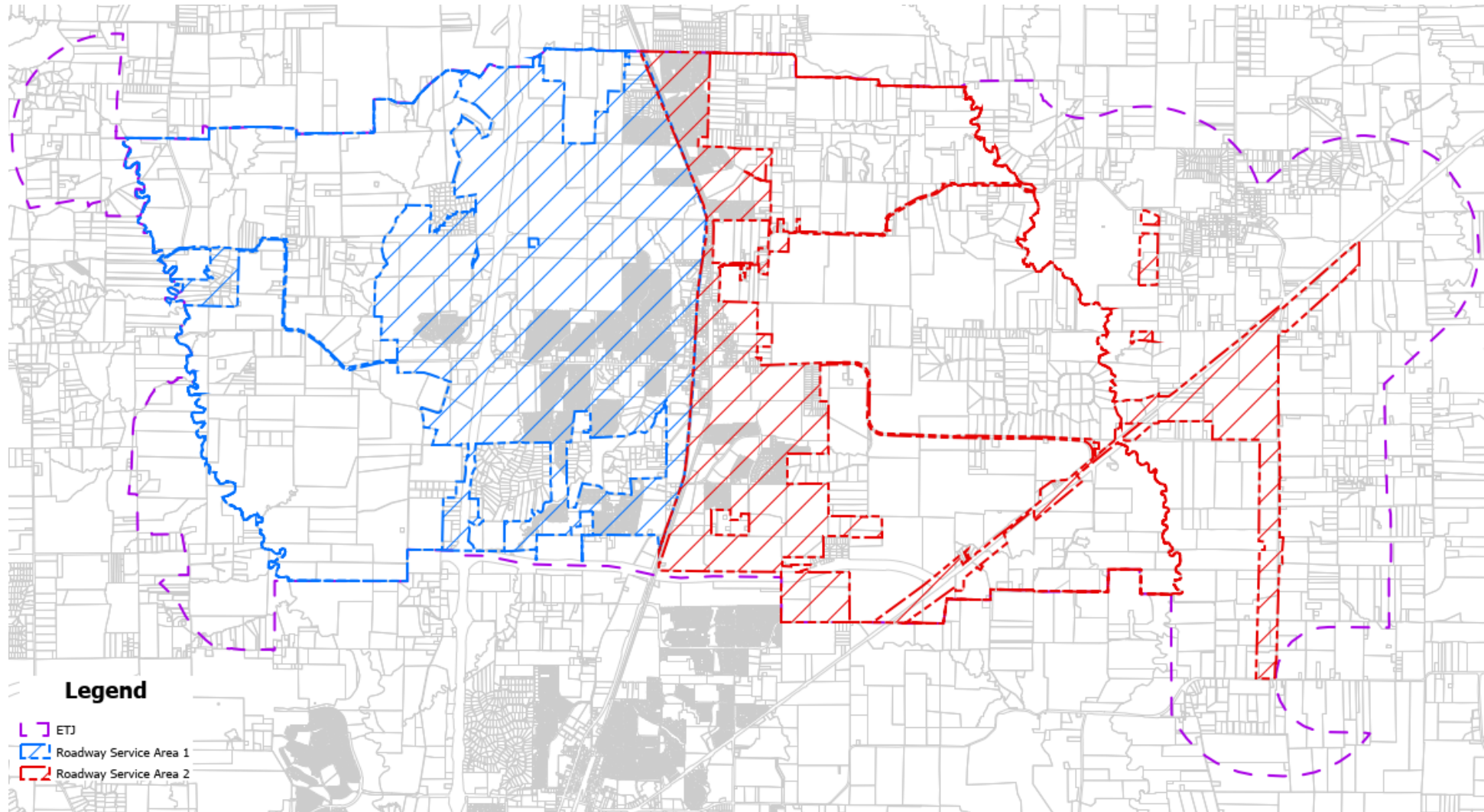
Service Areas

- Funds collected within a service area must be spent on projects within the same service area within 10 years
- Water and Wastewater
 - Generally, within current CCN
 - Expanded to include planning boundary set by the Comprehensive Plan
- Roadway – 6 mile trip length limit
 - Limited to City Limits for roadways, cannot include anything in ETJ

Water and Wastewater Service Area



Roadway Service Area



Roadway Land Use Assumptions

Roadway Residential and Non-Residential LUA Growth Projections (2022-2032)						
Service Area	Year	Residential Units		Non-Residential Square Feet		
		Single Family	Multi-Family	Basic	Service	Retail
1	2022	5502	24	380,205	445,328	1,932,203
	2032	8263	2,074	1,201,039	1,406,758	6,103,684
	<u>Growth</u>	<u>2761</u>	<u>2,050</u>	<u>820,834</u>	<u>961,430</u>	<u>4,171,481</u>
2	2022	1911	120	319,499	18,164	4,864,000
	2032	4,002	120	1,009,273	11,822,476	5,556,518
	<u>Growth</u>	<u>2,091</u>	<u>0</u>	<u>689,774</u>	<u>11,804,312</u>	<u>692,518</u>
Overall City Growth		4,852	2,050	1,510,608	12,765,742	4,864,000

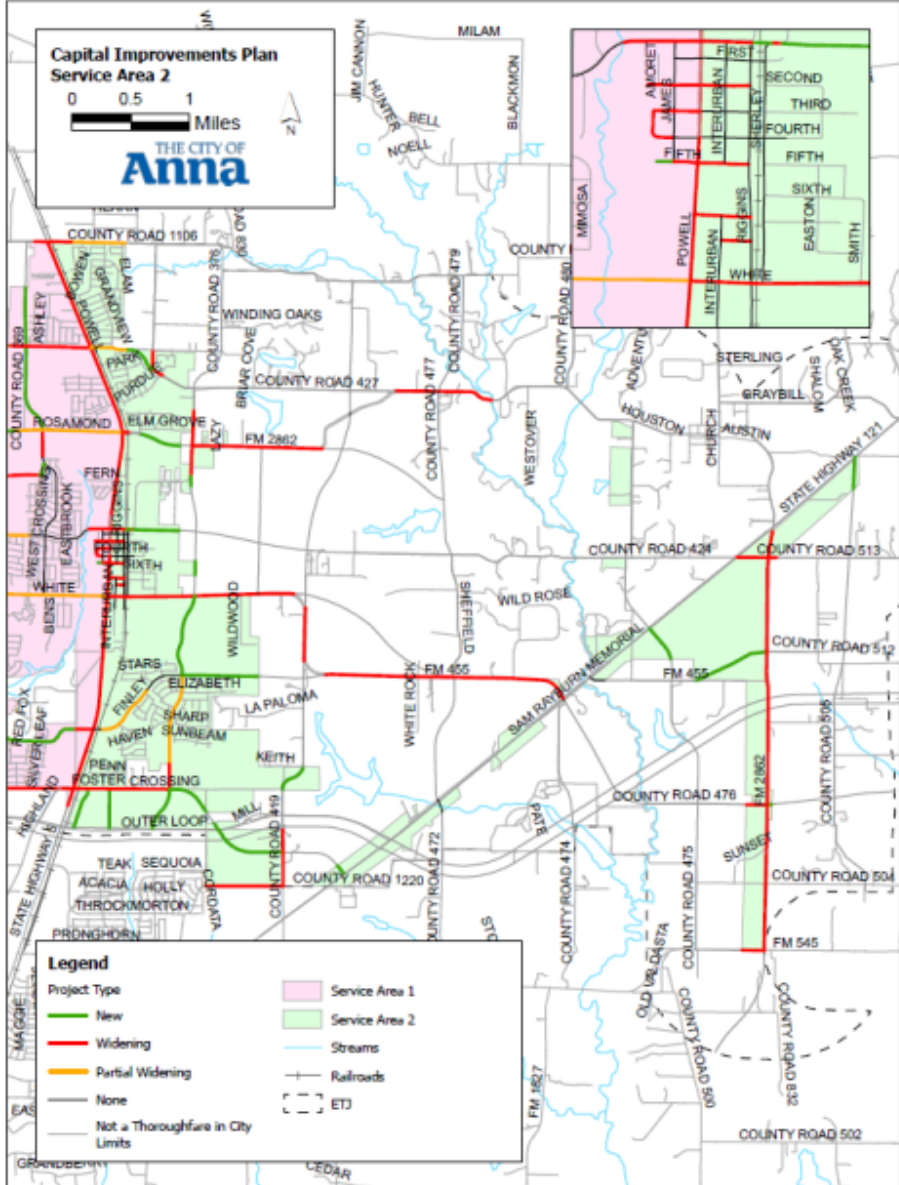
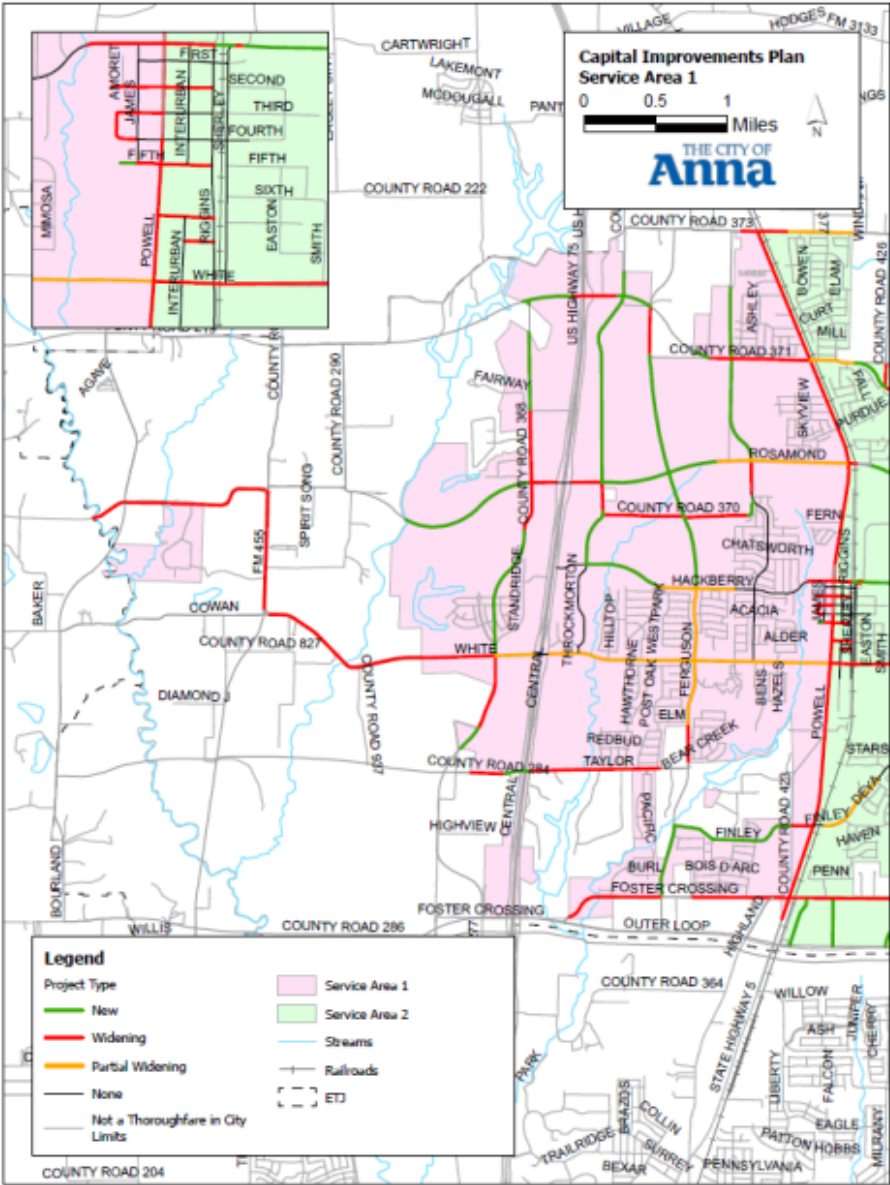
Water Land Use Assumptions

Water Land Use Assumptions		
Year	Residential Connections	Non-residential Connections
2022	8,385	269
2032	15,984	499
Growth	7,599	230

Wastewater Land Use Assumptions

Wastewater Land Use Assumptions		
Year	Residential Connections	Non-residential Connections
2022	8,029	257
2032	15,305	477
Growth	7,276	220

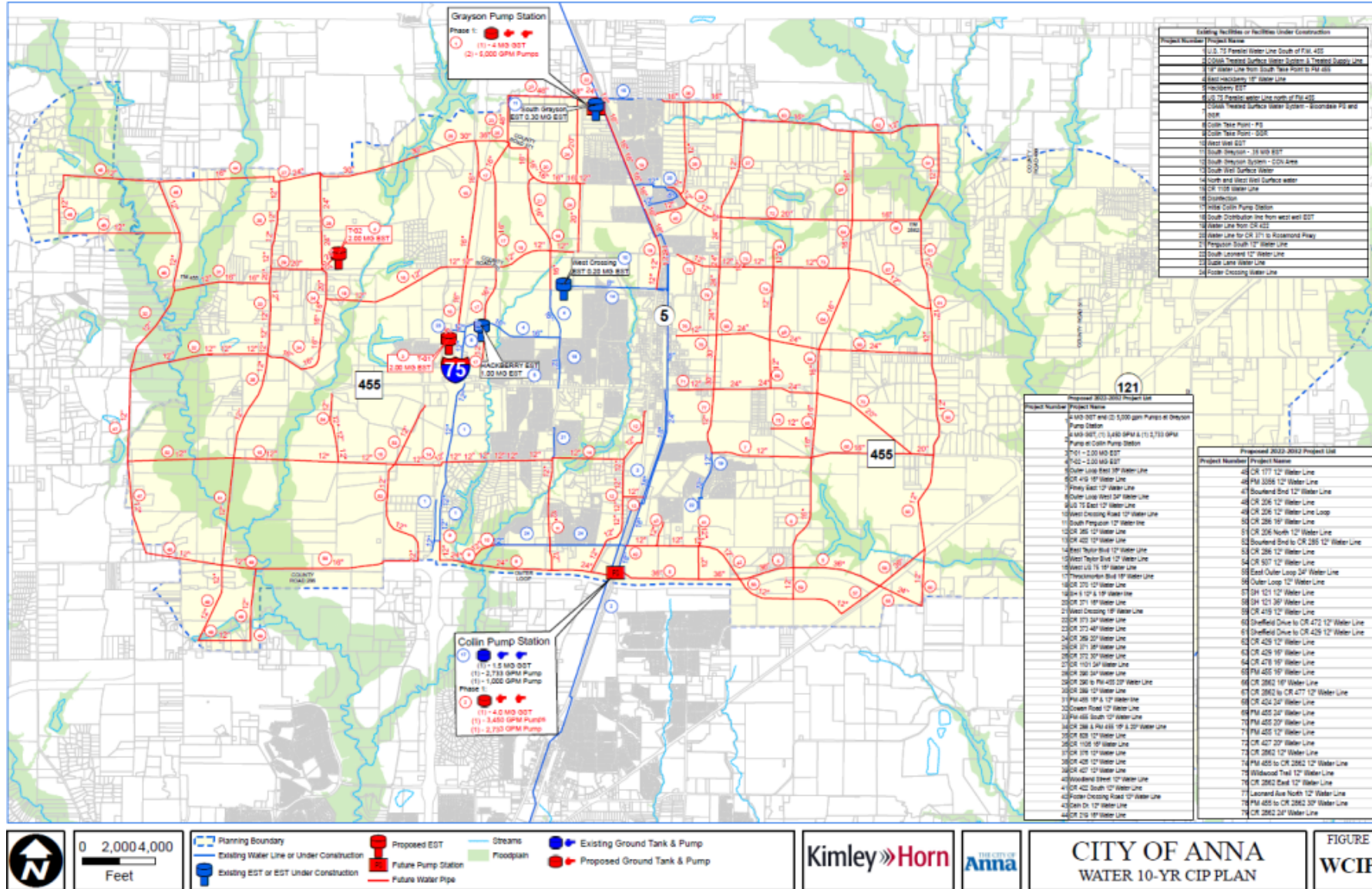
Roadway 10-Year CIP



Roadway 10-Year Recoverable Costs

SERVICE AREA:		SA 1
1	TOTAL VEH-MI OF CAPACITY ADDED BY THE PROJECT PLAN (FROM PROJECT PLAN UNITS OF SUPPLY, APPENDIX B)	21,853
2	TOTAL VEH-MI OF EXISTING DEMAND (FROM PROJECT PLAN UNITS OF SUPPLY, APPENDIX B)	2,067
3	TOTAL VEH-MI OF EXISTING DEFICIENCIES (FROM EXISTING FACILITIES INVENTORY, APPENDIX C)	57
4	NET AMOUNT OF VEH-MI OF CAPACITY ADDED (LINE 1 - LINE 2 - LINE 3)	19,729
5	TOTAL COST OF THE PROJECT PLAN WITHIN SERVICE AREA (FROM TABLE 2.7)	\$ 248,055,382
6	COST OF NET CAPACITY SUPPLIED (LINE 4 / LINE 1) * (LINE 5)	\$ 223,945,666
7	COST TO MEET EXISTING NEEDS AND USAGE (LINE 5 - LINE 6)	\$ 24,109,716
8	TOTAL VEH-MI OF NEW DEMAND OVER TEN YEARS (FROM TABLE 2.11 AND Land Use Assumptions)	9,000
9	PERCENT OF CAPACITY ADDED ATTRIBUTABLE TO GROWTH (LINE 8 / LINE 4)	45.6%
10	IF LINE 8 > LINE 4, REDUCE LINE 9 TO 100%, OTHERWISE NO CHANGE	45.6%
11	COST OF CAPACITY ADDED ATTRIBUTABLE TO GROWTH (LINE 6 * LINE 10)	\$ 102,119,224
12	PRE-CREDIT MAX FEE PER SERVICE UNIT (\$ PER VEH-MI) (LINE 11 / LINE 8)	\$ 11,346
13	CREDIT CALCULATION (50% OF LINE 11)	\$ (51,059,612)
14	RECOVERABLE COST OF IMPACT FEE PROJECT PLAN (LINE 11 + LINE 13)	\$ 51,059,612
15	MAX ASSESSABLE FEE PER SERVICE UNIT (\$ PER VEH-MI) (LINE 14 / LINE 8)	\$ 5,673

Water 10-Year CIP



Water 10-Year Recoverable Costs

Recoverable Impact Fee CIP Costs	\$186,045,781
Debt Service*	\$46,511,445
Pre-Credit Recoverable Cost for Impact Fee	\$232,557,226
Credit for Utility Revenues	\$116,278,613
Maximum Recoverable Cost for Impact Fee	\$116,278,613

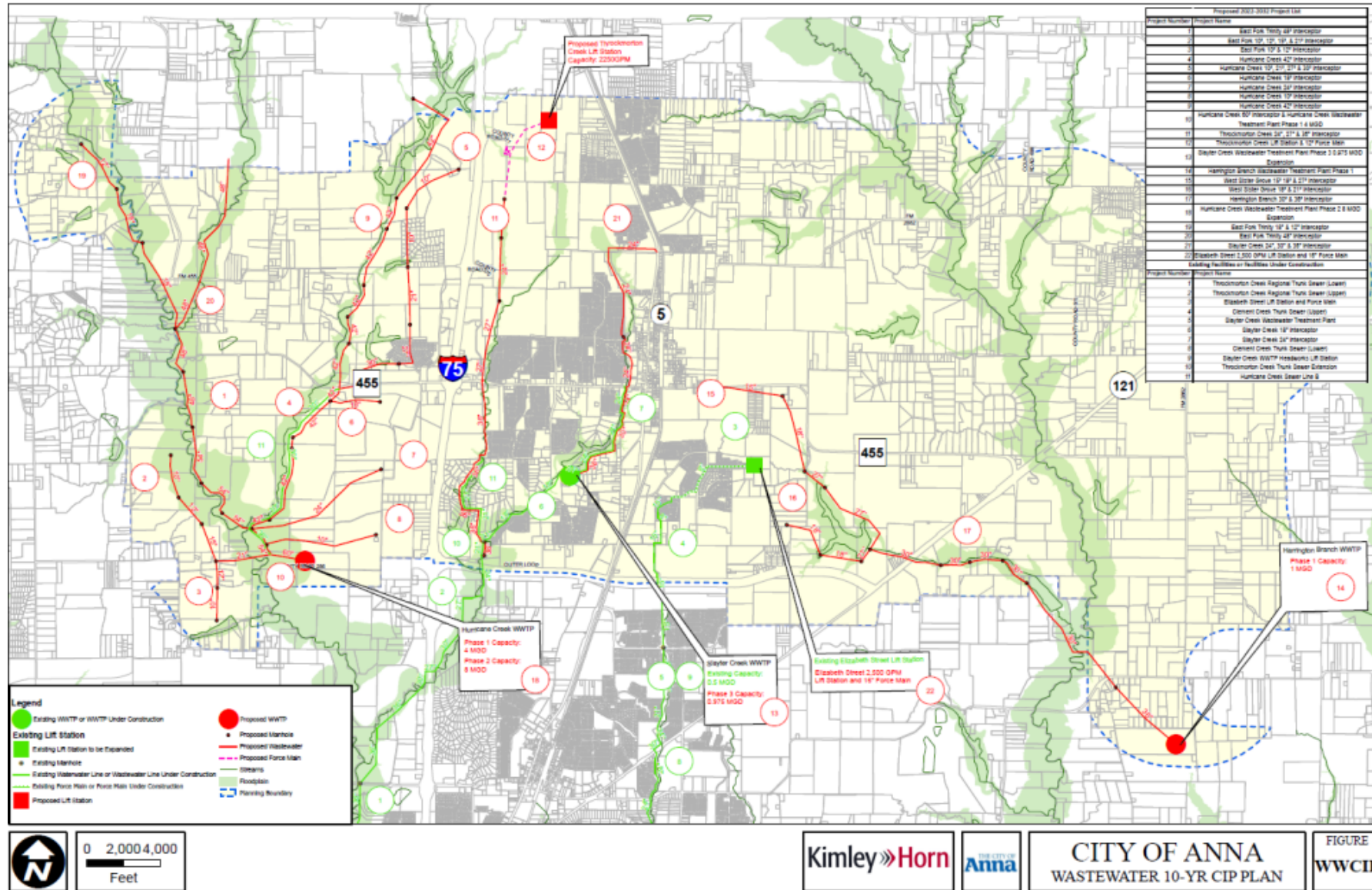
*Represents the interest costs associated with debt financing the new impact fee project costs

$$\text{Impact fee per SFE} = \frac{\text{10 - year recoverable costs}}{\text{10 - year additional SFEs}}$$

$$\text{Impact fee per SFE} = \frac{\$116,278,613}{11,672}$$

$$\text{Impact fee per SFE} = \$9,962$$

WW 10-Year CIP



WW 10-Year Recoverable Costs

Recoverable Impact Fee CIP Costs	\$ 278,033,732
Debt Service*	\$ 69,508,433
Pre-Credit Recoverable Cost for Impact Fee	\$ 347,542,165
Credit for Utility Revenues	\$ 173,771,082
Maximum Recoverable Cost for Impact Fee	\$ 173,771,082

*Represents the interest costs associated with debt financing the new impact fee project costs

$$\text{Impact fee per SFE} = \frac{\text{10 year recoverable costs}}{\text{10 year additional SFEs}}$$

$$\text{Impact fee per SFE} = \frac{\$173,771,082}{11,672}$$

$$\text{Impact fee per SFE} = \$14,888$$

Roadway, Water and Wastewater Combined Impact Fee Comparison: Service Unit

City	Roadway	Water	Sewer	Total
Anna - Current	\$ 2,715.00	\$ 4,510.00	\$ 4,079.00	\$ 11,304.00
Anna – Maximum Allowed	\$ 5,673.00	\$ 9,962.00	\$ 14,888.00	\$ 30,523.00
Allen	\$ 1,350.00	\$ 2,840.03	\$ 1,644.09	\$ 5,834.12
Celina	\$ 5,500.00	\$ 4,400.00	\$ 5,200.00	\$ 15,100.00
Frisco	\$ 4,257.00	\$ 2,120.00	\$ 2,344.00	\$ 8,721.00
Melissa	\$ 2,286.00	\$ 1,446.67	\$ 398.67	\$ 4,131.34
McKinney	\$ 4,484.00	\$ 1,754.00	\$ 1,643.00	\$ 7,881.00
Prosper	\$ 6,053.00	\$ 1,528.00	\$ 1,129.00	\$ 8,710.00
Sachse	\$ 2,450.42	\$ 2,521.69	\$ 1,857.68	\$ 6,829.79
Wylie	\$ 3,995.87	\$ 4,137.06	\$ 876.35	\$ 9,009.28

Potential Maximum Allowable Impact Fee (Road, Water, & WW)

\$30,523

- The Study Calculates the Maximum Rates allowed
- The City Council Sets the Rates by Ordinance, based on feedback from the CIAC.

Impact Fee Considerations

- Arguments for high fees:
 - Ensures new development pays their “fair share”
 - Ensures funding for infrastructure expansion which is necessitated by growth
 - Cost recovery for impacts to the City’s infrastructure
- Arguments against high fees:
 - Make us less competitive with neighboring communities
 - May slow down development
 - Can discourage high fee developments (commercial/retail/restaurant)

Staff Recommendations

- Roadway
 - \$2,715 → \$5,500
 - Water
 - \$4,510 → \$4,750
 - Wastewater
 - \$4,079 → \$4,750
-
- \$11,304 → \$15,000*

****Proposed total is \$100 less than Celina***

Staff Recommendations

- It is common to set the percentage of the maximum roadway impact fees by land use. This can incentivize uses which are community needs, and fully account for the impact of less desirable uses.
- Proposed % of Maximum Fee by Land Use
 - 100% - Residential, Convenience Store, Fueling Stations, Auto Dealerships, Auto Repair/Maintenance, Warehouse, Storage, Fast Food
 - ~80% - General Commercial and Retail
 - ~60% - Highly Desirable Land Uses (Sit-down restaurant, employment centers)
 - ~50% - Most Desirable Land Uses (Class A Office, Corporate Campus)

CIAC Recommendation

- In June the Capital Improvement Advisory Council unanimously approved a recommendation to adopt the proposed impact fees.



Discussion Topics & Next Steps

- City Council Strategic Plan Goal #2
 - Sustainable Anna Community Through Planned Managed Growth
 - Objective #6 – Growth Paying for Growth
- Maximum Impact Fee to set
- Land Use Decisions
 - Most desirable/needed
 - Least desirable/needed
- Formal Ordinance Adoption
 - August 23, 2022



Item No. 5.b.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022
Staff Contact: Gregory Peters

AGENDA ITEM:

Review and discuss concept plans for the Anna Community Library. (Director of Public Works Greg Peters, P.E., and Neighbor Services Director Marc Marchand)

SUMMARY:

Anna's neighbors approved Bond Proposition B for a Community Library in May 2021.

The City Council created the Anna Public Library Engagement (APLE) Task Force in the fall of 2021 to seek and obtain public engagement and feedback on the scope and program for the project. Following the public input process, the City began conceptual design of the facility earlier this year. The design team has developed concept plans for the interior, exterior, and site.

The concept plans were presented to the APLE Task Force on Tuesday, July 19th, and were well received. Those same plans will now be presented to the City Council for discussion and feedback. The next step will be to engage an architectural firm to develop and complete the construction plans for the building based on the concept plans. We expect to select the architecture firm next month, and begin full design of the facility in September.

FINANCIAL IMPACT:

None at this time. The overall project budget is \$28M.

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

Goal 3: Anna – Great Place to Live

STAFF RECOMMENDATION:

N/A. Staff is seeking feedback on the concept plans.

ATTACHMENTS:

APPROVALS:

Gregory Peters, Director of Public Works
Jim Proce, City Manager

Created/Initiated - 7/20/2022
Final Approval - 7/21/2022



Item No. 5.c.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022
Staff Contact: Dalan Walker

AGENDA ITEM:

Discuss progress and options related to Bryant Park, Geer Park and the wheeled sports park project.

SUMMARY:

Discuss Bryant Park, Geer Park and wheeled sports park

FINANCIAL IMPACT:

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

STAFF RECOMMENDATION:

ATTACHMENTS:

APPROVALS:

Dalan Walker, Parks
Jim Proce, City Manager

Created/Initiated - 7/21/2022
Final Approval - 7/21/2022



Item No. 5.d.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022
Staff Contact: Joey Grisham

AGENDA ITEM:

Presentation by Centurion Development with regard to discussion on minor amendment to Council Approved development agreement for Hurricane Creek Project and its related elements

SUMMARY:

Sean Terry, Chief Operating Officer of Centurion Development, developer of the Hurricane Creek Project, has requested the opportunity to speak to Council to propose some project development elements in alignment with existing development agreement intent, that may require some revisions to that agreement. Staff seeks Council input so that we potentially can bring back a revision with the consensus of the Council that meets the request being made should the Council agree.

FINANCIAL IMPACT:

None at this time

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

Goal 1: Growing Anna Economy

Goal 2: Sustainable Anna Community Through Planned Managed Growth

STAFF RECOMMENDATION:

Staff recommends that Council seek legal advice before discussion of this item to make sure that the proposed revision provides the legal protection for the City should the Council direct staff to negotiate and prepare the agreement for execution and approval at the next meeting.

ATTACHMENTS:

1. Res 2020-07-749 PID Amend Sherley Tract
2. Sherley Tract Development Agreement
3. Hurricane Creek North - 2nd Amd to Dev Agr (002)

APPROVALS:

Jim Proce, City Manager
Jim Proce, City Manager

Created/Initiated - 7/21/2022
Final Approval - 7/21/2022

CITY OF ANNA, TEXAS

RESOLUTION NO. 2020-07-749

A RESOLUTION OF THE CITY OF ANNA, TEXAS APPROVING THE FIRST AMENDMENT TO THE SHERLEY TRACT SUBDIVISION IMPROVEMENT AGREEMENT

WHEREAS, on June 9, 2020, the Parties entered into a Subdivision Improvement Agreement ("SIA") related to the Development of the Property known as the Sherley Tract; and

WHEREAS, the Original Agreement is only modified as expressly set forth in this First Amendment and the Original Agreement otherwise remains in full force and effect; and

WHEREAS, the Original Agreement incorrectly states the Development Standards for the minimum lot area requirement for SF-60 lots to be five thousand (5,000) square feet instead of six thousand (6,000) square feet in Exhibit D to the Original Agreement; and

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS THAT:

Recitals Incorporated

The recitals above are incorporated herein as if set forth in full for all purposes.

Approval of Amendment.

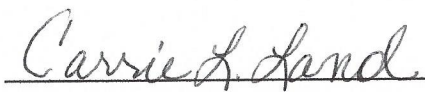
This First Amendment amends the Original Agreement in no other manner except as expressly set forth herein.

Amendment to Exhibit D. The City and the Developer agree that the fourth (4th) page of Exhibit D to the Original Agreement is hereby amended to reduce the minimum lot area requirement for SF-60 lots from six thousand (6,000) square feet to five thousand (5,000) square feet as shown on Exhibit 1 attached hereto.

PASSED AND APPROVED by the City Council of the City of Anna, Texas on this 14th day of July 2020.

ATTEST:

APPROVED:



City Secretary, Carrie L. Land





Mayor, Nate Pike

**FIRST AMENDED SHERLEY TRACT SUBDIVISION IMPROVEMENT AGREEMENT**

This First Amended Sherley Tract Subdivision Improvement Agreement (this "First Amendment") is entered into between the CITY OF ANNA, TEXAS, (the "City"), and MM Anna 325, LLC, a Texas limited liability company ("Developer");

RECITALS

WHEREAS, the Developer and the City are sometimes individually referred to as a "Party" and collectively as the "Parties"; and

WHEREAS, this First Amendment amends that certain Sherley Tract Subdivision Improvement Agreement entered into between the City and the Developer, effective as of June 9, 2020 (the "Original Agreement"); and

WHEREAS, the Original Agreement is only modified as expressly set forth in this First Amendment and the Original Agreement otherwise remains in full force and effect; and

WHEREAS, the Original Agreement incorrectly states the Development Standards for the minimum lot area requirement for SF-60 lots to be six thousand (6,000) square feet instead of five thousand (5,000) square feet in Exhibit D to the Original Agreement; and

WHEREAS, the City and the Developer desire to memorialize the revision to Exhibit D to the Development Agreement to amend the minimum lot area requirement for SF-60 lots to be five thousand (5,000) square feet instead of six thousand (6,000) square feet as shown in Exhibit 1 attached hereto;

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the City and the Developer agree as follows:

AMENDMENT

1. **Amendment to Exhibit D.** The City and the Developer agree that the fourth (4th) page of Exhibit D to the Original Agreement is hereby amended to reduce the minimum lot area requirement for SF-60 lots from six thousand (6,000) square feet to five thousand (5,000) square feet as shown on Exhibit 1 attached hereto.

This First Amendment amends the Original Agreement in no other manner except as expressly set forth herein. All capitalized terms used in this First Amendment, to the extent not otherwise expressly defined herein, shall have the meanings ascribed to them in the Original Agreement. The Developer and the City further agree that all other terms and provisions of the Original Agreement that are not modified hereby shall remain in full force and effect.

EXECUTED BY THE PARTIES TO BE EFFECTIVE ON JULY 14, 2020:

CITY OF ANNA

By: *Nate Pike*

Name: Nate Pike

Title: Mayor

Date: 7/14/2020

APPROVED AS TO FORM

Clark McCoy
Name: Clark McCoy
Title: City Attorney

STATE OF TEXAS

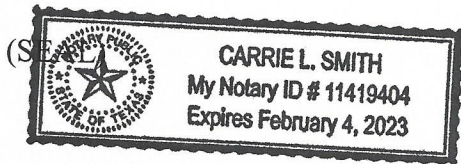
§

COUNTY OF COLLIN

§

§

This instrument was acknowledged before me on the 14th day of July, 2020 by Nate Pike, Mayor of the City of Anna, Texas on behalf of said City.



Carrie L. Land
Notary Public, State of Texas

Carrie L. Land
Name printed or typed

Commission Expires: 2/4/2023

DEVELOPER:

MM Anna 325, LLC,
a Texas limited liability company

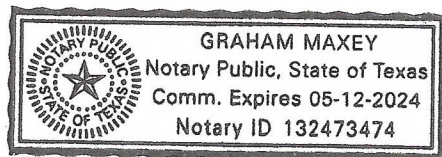
By: MMM Ventures, LLC,
a Texas limited liability company
Its Manager

By: 2M Ventures, LLC,
a Delaware limited liability company
Its Manager

By: 
Name: Mehrdad Moayed
Its: Manager

STATE OF TEXAS §
 §
COUNTY OF DALLAS §

This instrument was acknowledged before me on the 1 day of July, 2020 by Mehrdad Moayed, Manager of 2M Ventures, LLC, as Manager of MMM Ventures, LLC, as Manager of MM Anna 325, LLC, a Texas limited liability company on behalf of said company.



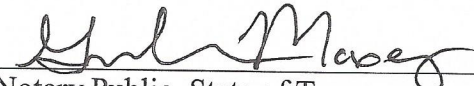

Notary Public, State of Texas

EXHIBIT 1
Zoning District Area Regulations

4. APPENDIX 1. ZONING DISTRICT AREA REGULATIONS

	SF-84	SF-72	SF-60	SF-Z	SF-TH	SF-TH (Quadplex)
Maximum height (feet)	35	35	35	35	35	35
Side yard, interior (feet)	5	5	5	0/5	0/5	0/5
Side yard, corner lot, street side (feet) (c)	10	10	10	10	10	10
Rear yard (feet) (d)	10	10	10	10	10	10
Front yard (feet)	25	25	25	20	20	20
Lot area (feet)	8,400	7,200	6,000 5,000	4,000	2000 per unit	2000 per unit
Min. lot width (feet)	70	60	50	40	20	20
Min. lot depth (feet) (e)	120	110	100	100	80	80
Max. lot coverage (%)	55%	55%	55%	85%	70%	70%
Building size (square feet)	1800	1800	1800	1200	900	900
Masonry* (%)	60%	60%	60%	60%	60%	60%
Lot/Unit Count per Concept Plan	81	139	323	143	190	108
Maximum Lot/Unit Count (+5%)	85	145	340	150	200	115
Minimum Lot/Unit Count (-5%)	77	132	305	135	180	100

* Brick or rock veneer; see also [section 9.04.034\(e\)\(6\)](#).

**If there are conflicts between the Appendix 1 Area Regulations and City Regulations, Appendix 1 shall supersede.

(c) 45 feet where adjacent to single-family or duplex residential district.

(d) The required rear yard shall be open and unobstructed to the sky from a point 30 inches above the average elevation of the graded rear yard, except for accessory buildings as permitted herein. Eaves, covered porches, and roof extensions without structural support in the rear yard may extend into the rear yard a distance not to exceed four feet. Balconies shall not project into the required rear yard.

(e) Minimum lot depth may be reduced to 110' for SF-84 lots in cul-de-sacs and knuckles.

COLLIN COUNTY, TEXAS
STACEY KEMP
2300 Bloomdale Rd, Suite 2104
McKinney, TX 75071
Phone: 972-548-4185



STACEY KEMP
COUNTY CLERK

Receipt for Services

Cashier	TBARNETT	Batch #	2069961
Customer	CITY OF ANNA PO BOX 776 ANNA, TX 75409	Date:	09/10/2020
		Time:	03:53:27PM

Date	Instrument No	Document Type	Transaction Type	GF Number	Pg/Amt
9/10/2020 3:53:27PM	20200910001531380	AG			5
		AG		Total:	42.00
		Fee Total:			42.00
CREDIT	100207711229				42.00
		Payment Total:			42.00



All Transactions Approved

Bureau: 6281876 - Collin County, TX Clerk M Land

Invoice Item	Amount	Quantity	Conv. Fee	Result
Fees: Payment ID: 100207711229 Land-REC	\$42.00	1	\$1.00	Approved
Total Amounts + All Fees:	\$43.00			

BILLING INFORMATION

Payment will be billed to:

CARRIE SMITH

Card ending in ...9293 (Mastercard)

Processed at 09/10/2020 3:55:04 PM CDT

LEGAL NOTICE

Certified Payments provides a service for consumers and businesses to make payments via their credit card for various types of services and taxes. By utilizing Certified Payments, you, the cardholder, are subject to the following terms and conditions. By submitting your payment through Certified Payments, you are agreeing to the terms and conditions listed in the Legal Notices link below. Please read all terms and conditions carefully.

Privacy Statement - www.certifiedpayments.net/PrivacyStatement.aspx

Legal Notice - www.certifiedpayments.net/LegalNotices.aspx

SHERLEY TRACT SUBDIVISION IMPROVEMENT AGREEMENT

This Sherley Tract Subdivision Improvement Agreement (this “Agreement”) is entered into between the CITY OF ANNA, TEXAS, (the “City”), BFB ANA 40 Acres, LLC, a Texas limited liability company (the “In-City Property Owner”), and MM Anna 325, LLC, a Texas limited liability company (“Developer”), to be effective on June 9, 2020 (the “Effective Date”).

ARTICLE I **RECITALS**

WHEREAS, certain terms used in these recitals are defined in Article II; and

WHEREAS, the In-City Property Owner, the Developer, and the City are sometimes collectively referenced in this Agreement as the “Parties,” or, each individually, as “Party”; and

WHEREAS, the City is a home-rule municipality of the State of Texas; and

WHEREAS, the Developer owns approximately 290.877 acres of real property located within the extraterritorial jurisdiction (the “ETJ”) of the City (the “PID Property”), and the In-City Property Owner owns approximately 31.962 acres of real property located within the city limits of the City (the “In-City Property” and together with the PID Property, the “Property”), and which Property is described by metes and bounds and depicted on Exhibit A-1; and

WHEREAS, the In-City Property shall be a commercial/retail/multifamily development and is described by metes and bounds and depicted on Exhibit A-2; and

WHEREAS, the PID Property shall be a residential development including single-family homes, townhouses, and senior independent living homes, and is described by metes and bounds and depicted on Exhibit A-3; and

WHEREAS, the PID Property is located within the ETJ of the City and not within the ETJ or corporate limit of any other municipality, and in Collin County, Texas (the “County”); and

WHEREAS, the Developer and the City desire to have the PID Property annexed into the City’s corporate boundaries and provide the City with greater regulatory powers and controls over the development of the PID Property as set forth in this Agreement; and

WHEREAS, the Developer intends to file a voluntary petition for annexation of the PID Property at least 60 days before of the issuance of the first series of PID Bonds, and the City will act upon the annexation petition upon or promptly after the sale of the first PID Bonds; and

WHEREAS, this Agreement shall be effective upon passage of this Agreement and before the annexation of the PID Property into the City; and

WHEREAS, Developer desires and intends to construct and/or make financial contributions to certain on-site and/or off-site public improvements to serve the development of the PID Property (“Authorized Improvements”), which Authorized Improvements are generally identified in Exhibit B; and

WHEREAS, in consideration of the Developer's agreements contained herein to accomplish the high-quality development of the Property envisioned by the Parties and to provide financing for the Authorized Improvements, the City intends to exercise its powers to create a PID to be coterminous with the PID Property in accordance with the PID Act, and to create one or more TIRZ for phases of residential development of the PID Property in accordance with the TIRZ Act; and

WHEREAS, the Developer plans to develop the Property as an urban multi-use master planned development upon the execution of this Agreement and subsequent issuance of PID Bonds by the City for the payment of certain costs for the construction and acquisition of certain public improvements to benefit the PID Property, and for the repayment to Developer for certain costs advanced for the construction and acquisition of certain public improvements to benefit the PID Property as set forth in this Agreement; and

WHEREAS, the Developer intends for the design, construction and installation of the Authorized Improvements to occur in a phased manner and to dedicate all such Authorized Improvements to the City for use and maintenance, subject to approval of the plans and inspection of the Authorized Improvements in accordance with this Agreement and the City Regulations, and contingent upon the issuance of PID Bonds for partial or total financing of such Authorized Improvements; and

WHEREAS, the Developer and the City estimate that the cost of the Authorized Improvements are estimated to be \$32,000,000.00; and

WHEREAS, the City recognizes the positive impact that the construction and installation of the Authorized Improvements for the PID will bring to the City and will promote state and local economic development; to stimulate business and commercial activity in the municipality; for the development and diversification of the economy of the state; development and expansion of commerce in the state; and elimination of employment or underemployment in the state; and

WHEREAS, the City recognizes that financing of the Authorized Improvements confers a special benefit to the PID Property within the PID; and

WHEREAS, in consideration of the Developer's agreements contained herein, the City shall exercise its powers under the PID Act, to provide financing arrangements that will enable the Developer to do the following in accordance with the procedures and requirements of the PID Act and this Agreement: (a) fund or be reimbursed for a specified portion of the costs of the Authorized Improvements using the proceeds of PID Bonds; or (b) obtain reimbursement for the specified portion of the costs of the Authorized Improvements, the source of which reimbursement will be installment payments from Assessments within the PID Property, provided that such reimbursements shall be subordinate to the payment of PID Bonds and Administrative Expenses; and

WHEREAS, the City, subject to the consent and approval of the City Council, and in accordance with the terms of this Agreement and all legal requirements, including but not limited to the Indenture, intends to: (i) adopt a Service and Assessment Plan; (ii) adopt an Assessment Ordinance (to pay for a specified portion of the Budgeted Cost(s) shown on **Exhibit B** and approved by the City's Director of Public Works or his designee and the costs associated with the administration

of the PID and the issuance of the PID Bonds); and (iii) issue, in multiple series, up to \$32,000,000.00 in the principal amount of PID Bonds for the purpose of financing a specified portion of the costs of the Authorized Improvements and paying associated costs as described herein; and

WHEREAS, the City shall use reasonable efforts to issue PID Bonds periodically up to a maximum principal amount of \$32,000,000.00, in multiple series, to finance the Authorized Improvements in accordance with the Service and Assessment Plan; and

WHEREAS, prior to the sale of the first PID Bond issue: (a) the City Council shall have approved and adopted the PID Resolution, a Service and Assessment Plan and an Assessment Ordinance (collectively, the “PID Documents”); (b) the City shall have reviewed and approved the Home Buyer Disclosure Program; (c) owners of the PID Property constituting all of the acreage in the PID at the time of the issuance of the first PID Bonds shall have executed a Landowner Agreement (as defined in Article II, herein); and (d) the Developer shall have delivered a fully executed copy of the Landowner Agreement(s) to the City; and

WHEREAS, the Parties agree that the Authorized Improvements are also improvements that qualify as projects under Texas Tax Code Chapter 311, as amended; and

WHEREAS, as soon as is practicable and prior to the first PID Bond issue, in consideration of the Developer’s agreements contained herein, the Parties shall use best efforts to have agreed to the final form of the following documents (collectively, the “TIRZ Documents”), which will enable the Developer to be reimbursed for a specified portion of TIRZ eligible reimbursement costs for the first phase of development of the PID Property: (a) a TIRZ Project and Finance plan; (b) a TIRZ Ordinance; and (c) an ordinance approving the final TIRZ Project and Finance plan required by the TIRZ Act; and

WHEREAS, prior to the authorization of the first Bond issue, the City Council intends to have approved a TIRZ Ordinance and to have created a TIRZ to be coterminous with the first phase of development within the PID Property; and

WHEREAS, the Parties intend for the City to create an additional TIRZ for each subsequent phase of development on the PID Property; and

WHEREAS, in consideration of the Developer’s agreements contained herein, the City intends to exercise its powers under the TIRZ Act to create one or more TIRZ and intends to adopt, approve, and execute the TIRZ Documents for each TIRZ created on the PID Property to dedicate up to fifty percent (50%) of the City’s collected *ad valorem* tax increment based on the City’s *ad valorem* tax rate in effect on the date of the establishment of each TIRZ to off-set or pay a portion of any Assessments levied on the PID Property for the costs of Authorized Improvements for a period of up to thirty-one (31) years after each TIRZ is created or until the cumulative total amount of TIRZ Increment placed into the TIRZ Funds for each TIRZ not to exceed a total of \$14,751,553, whichever comes first, paid in accordance with each TIRZ Project and Finance Plan and the SAP; and

WHEREAS, all of the City's Administrative Expenses associated with each TIRZ will be paid in accordance with the TIRZ Act, and the City will not be responsible for payment of such costs; and

WHEREAS, to the extent funds must be advanced to pay for any costs associated with the creation of the PID, each TIRZ, the issuance of PID Bonds or the preparation of documentation related thereto, including any costs incurred by the City and its consultants and advisors (excluding the fees associated with closing the PID Bonds), the Developer shall be responsible for advancing such funds, shall have a right to reimbursement for certain funds advanced from the proceeds of PID Bonds, Assessment revenues or TIRZ Increments, and the City will not be responsible for such reimbursement or the payment of such costs from any other sources of funds; and

WHEREAS, unless expressly set forth to the contrary in this Agreement, it is the Parties' mutual intent that this Agreement shall supersede City Regulations only to the extent that City Regulations directly conflict with the terms of this Agreement; and

WHEREAS, Developer understands and acknowledges that the obligations undertaken under this Agreement are primarily for the benefit of the Property; and

WHEREAS, Developer understands and acknowledges that acceptance of this Agreement is not an exaction or a concession demanded by the City but rather is an undertaking of Developer's voluntary design to ensure consistency, quality, and adequate infrastructure that will benefit Developer's development of the Property; and

WHEREAS, it is the intent of the Parties that the Property will be developed substantially in compliance with an agreed upon concept plan (the "Concept Plan"), which is attached hereto as Exhibit C, and which may be revised as set forth in this Agreement and in accordance with applicable City Regulations and the development standards set forth in certain proposed planned development zoning standards ("Development Standards"), which Development Standards are attached hereto as Exhibit D; and

WHEREAS, the Parties intend for the City to approve any revisions to the Concept Plan as a condition to the recording of a final plat in the Land Recordings of the Collin County Clerk's Office for the first (1st) phase of the Development; and

WHEREAS, immediately following annexation of the PID Property, the City intends to consider zoning the PID Property as a planned development district and the Parties acknowledge that the Property may be developed and used in accordance with this Agreement notwithstanding any zoning of the PID Property in conflict with this Agreement; and

WHEREAS, as the PID Property is within the City's ETJ on the Effective Date, the Parties have the authority to enter into this Agreement pursuant to Section 212.171 *et seq* of the Texas Local Government Code; and

WHEREAS, the Parties intend that this Agreement is a development agreement as provided for by state law in Section 212.171 *et seq* of the Texas Local Government Code; and

WHEREAS, this Agreement shall constitute a “permit” under Chapter 245 of the Texas Local Government Code and as allowed pursuant to Section 212.172(g) of the Texas Local Government Code; and

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the Parties agree as follows:

ARTICLE II **DEFINITIONS**

Unless the context requires otherwise, the following terms shall have the meanings hereinafter set forth:

Administrative Expenses shall include, without limitation, expenses incurred by the City in the establishment, administration, and operation of the PID and each TIRZ.

Amenity Center means the lot and improvements required under this Agreement to be constructed by the Developer and maintained by the HOA that shall include amenities including a clubhouse with fitness center with weight room and cardiovascular equipment, a kitchen, a meeting area, and restrooms; swimming pool; children’s pool; playground with seating; ornamental metal fencing; and landscape planting beds; all consistent with the Amenity Center Concept Plan and the minimum standards as set forth in **Exhibit C-1**.

Arterial “Rosamond Parkway” Roadway Improvements mean the Major Improvements to Arterial “Rosamond Parkway” as described and depicted in further detail in **Exhibit E-1** and in accordance with design/construction plans to be approved by the City.

Assessment means the assessment levied by the City Council pursuant to the Assessment Ordinance, to pay for a specific portion of the Budgeted Cost.

Assessment Ordinance means the ordinance approved by the City Council which levies assessments on the PID Property in accordance with the PID Act to pay for a specified portion of the costs of the Authorized Improvements set forth in the Service and Assessment Plan as well as the costs associated with the issuance of the PID Bonds that provide a special benefit to the PID Property.

Assessment Roll means the Assessment Roll attached to the Service and Assessment Plan or any other Assessment Roll in an amendment or supplement to the Service and Assessment Plan or in an annual update to the Service and Assessment Plan, showing the total amount of the Assessment against each parcel assessed under the Service and Assessment Plan related to the Authorized Improvements.

Authorized Improvements means water, sewer, drainage, and roadway facilities needed to serve the PID Property and to be constructed by the Developer or by or on behalf of the City and to be owned and maintained by the City, including but not limited to certain off-site improvements, as identified in **Exhibit B**.

Authorized Improvement Costs means the actual costs of design, engineering, construction, and inspection of the Authorized Improvements.

Bond Ordinance means and refers to an ordinance adopted by the City Council that authorizes and approves the issuance and sale of the PID Bonds.

Bond Security means Assessments levied against the PID Property by the City.

Budgeted Cost with respect to any given Authorized Improvement means the estimated cost of such improvement as set forth in **Exhibit B**.

City means the City of Anna, a home rule municipality located in Collin County, Texas.

City Code means the Anna City Code of Ordinances and all of its provisions and regulations or standards adopted by reference in said Code in effect on the Effective Date; provided, however, that as it relates to Public Infrastructure for any given phase, the applicable construction standards (including, without limitation, uniform building codes) shall be those that the City has duly adopted at the time of the filing of an application for a preliminary plat for that phase unless construction has not commenced within two years of approval of such preliminary plat in which case the construction standards shall be those that the City has duly adopted at the time that construction commences, except that to the extent there is a conflict between the City Code and the Development Standards, the Development Standards shall control.

City Council means the City Council of the City.

City Manager means the current or acting City Manager of the City of Anna or a person designated to act on behalf of the City Manager if the designation is in writing and signed by the current or acting City Manager.

City PID Fee means a fee of \$3,400 per residential lot to be paid by the Developer to the City upon the closing of PID Bonds for each phase of the Development and which shall be calculated based on the number of residential lots in such phase of the Development in accordance with Section 3.3.

City Regulations mean City Code provisions, ordinances, design standards (including but not limited to the City's Neighborhood Design Standards and the Development Standards), uniform codes, policies, requirements, limitations, restrictions, and other regulations (including but not limited to all fees and land dedications applicable to the Development) duly adopted by the City and in effect on the Effective Date; provided, however, that as it relates to Public Infrastructure for any given phase, the applicable construction standards (including, without limitation, uniform building codes) shall be those that the City has duly adopted at the time of the filing of an application for a preliminary plat for that phase unless construction has not commenced within two years of approval of such preliminary plat in which case the construction standards shall be those that the City has duly adopted at the time that construction commences, except that to the extent there is a conflict between the City Regulations and the Development Standards, the Development Standards shall control.

Collector “E-W” Roadway Improvements mean the Major Improvements to Collector “E-W” as described and depicted in further detail in Exhibit E-1 and in accordance with design/construction plans to be approved by the City.

Collector “N-S” Roadway Improvements mean the Major Improvements to Collector “N-S” as described and depicted in further detail in Exhibit E-1 and in accordance with design/construction plans to be approved by the City.

Collector “Shady Brook Trail” Roadway Improvements mean the Major Improvements to Collector “Shady Brook Trail” as described and depicted in further detail in Exhibit E-1 and in accordance with design/construction plans to be approved by the City.

Collector “Standridge Parkway” Roadway Improvements mean the Major Improvements to Collector “Standridge Parkway” as described and depicted in further detail in Exhibit E-1 and in accordance with design/construction plans to be approved by the City.

Construction Cost means the costs actually paid for Public Infrastructure related to engineering, design, permitting, construction, inspection, testing, and off-site, third-party property/easement acquisitions; however, the cost of off-site, third-party property/easement acquisitions shall be limited to the fair-market value of any property/easement acquired, plus any damages to the remainder, all as determined by a Licensed Appraiser selected by the City, and Eminent Domain Fees.

Developer means MM Anna 325, LLC, a Texas limited liability company, and its successors and assigns.

Development means the new development on the Property that is the subject of this Agreement.

Development Standards mean the design and development standards for the Development as set forth in Exhibit D.

Developer Cash Contribution means that portion of the Authorized Improvement Costs that the Developer is contributing to initially fund the Authorized Improvements.

Effective Date means the date upon which the last of all of the Parties has approved and duly executed this Agreement.

End Buyer means any Developer, developer, tenant, user, or owner of a Fully Developed and Improved Lot.

Fully Developed and Improved Lot means any lot, regardless of proposed use, which is served by the Authorized Improvements and for which a final plat has been approved by the City and recorded in the real property records of Collin County.

Home Buyer Disclosure Program means the disclosure program, administered by the PID Administrator as set forth in a document in the form of Exhibit F that establishes a mechanism to disclose to each End Buyer the terms and conditions under which their lot is burdened by the PID.

Hurricane Creek Regional Trunk Sewer Improvements means a certain segment of a regional sanitary sewer trunk line to be constructed by the City under this Agreement as generally depicted in Exhibit E-2.

Improvement Account of the Project Fund means the construction fund account created under the Indenture used to pay for the construction or acquisition of the Authorized Improvements.

Indenture means an indenture under which PID Bonds are issued.

Landowner(s) means the Developer and additional owners of the PID Property.

Landowner Agreement means the agreement, as set forth in a document in the form of Exhibit G of an owner of the PID Property consenting to the form and terms of the PID Documents.

Major Improvements means the Authorized Improvements described and depicted on Exhibits E-1, E-2, and E-3 which benefit all the PID Property within the PID.

Maximum TIRZ Contribution means an amount estimated to be \$14,751,553, which amount is subject to a TIRZ par amount of \$6,638,200 plus interest and excluding TIRZ Administrative Expenses, and as may be adjusted in accordance with the model set forth in Exhibit H, and further defined in the Final Project and Finance Plan.

Neighborhood Trails mean a system of neighborhood hike and bike trails funded and constructed by the Developer and maintained by the HOA as said trails are described and depicted in further detail in Exhibit C-2 and in accordance with design/construction plans to be approved by the City.

Non-Benefited Property means parcels or lots that accrue no special benefit from the Authorized Improvements, including but not limited to property encumbered with a public utility easement that restricts the use of such property to such easement.

Notice means any notice required or contemplated by this Agreement (or otherwise given in connection with this Agreement).

PID means a public improvement district created by the City for the benefit of the PID Property pursuant to Chapter 372, Texas Local Government Code, known as the Sherley Tract Public Improvement District.

PID Act means Chapter 372, Texas Local Government Code, as amended.

PID Administrator means an employee or designee of the City who shall have the responsibilities provided in the Service and Assessment Plan, an Indenture, or any other agreement or document approved by the City related to the duties and responsibilities for the administration of the PID.

PID Bond Proceeds means the funds generated from the sale of the PID Bonds.

PID Bonds means the revenue bonds or other obligations secured solely by the Bond Security.

PID Resolution means the resolution adopted by the Council creating the PID.

Property means the real property described by metes and bounds and depicted on **Exhibit A-1**.

Public Infrastructure means all water, sewer, drainage, roadway and other public infrastructure necessary to serve the full development of the PID Property.

Refunding Bonds means bonds issued pursuant to Section 372.027, Texas Local Government Code.

Service and Assessment Plan (“SAP”) means the PID Service and Assessment Plan and any SAP Update, to be adopted by the City Council for the purpose of assessing allocated costs against property located within the boundaries of the PID having terms, provisions and findings approved and agreed to by the Developer and City, as required by the PID Act and this Agreement.

TIRZ means a tax increment reinvestment zone the City intends to create for the benefit of the PID Property or a portion thereof pursuant to Chapter 311, Texas Tax Code.

TIRZ Act means Chapter 311 of the Texas Tax Code, as amended.

TIRZ Board means the board of directors of each TIRZ that will be established in accordance with the TIRZ Act.

TIRZ Documents means the TIRZ project and finance plan and the TIRZ Ordinance relating to each TIRZ as determined by the City.

TIRZ Fund means the fund set up by the City if the TIRZ is created, in order to receive the TIRZ funds in accordance with this Agreement, state law and the TIRZ Documents.

TIRZ Increment means an amount currently estimated at 50% inclusive of the TIRZ administrative expenses, which actual percentage shall be determined at the sale of the series of PID Bonds for each respective phase of Development (such PID Bonds to include financing of Major Improvements for the PID Property in one or more series), of the *ad valorem* tax increment, as determined on a parcel by parcel basis each year under Section 311.012 of the Texas Tax Code, that is generated by the PID Property from *ad valorem* taxes levied and collected by the City for a term of thirty-one (31) years.

TIRZ Ordinance means the City ordinance creating each TIRZ.

TIRZ Project and Finance Plan means the project plan and finance plan that governs TIRZ operations.

TIRZ Project(s) means any project composed of a certain portion of the Authorized Improvements, as described in **Exhibit B** to be undertaken by the PID, including costs to issue PID Bonds and pay for interest upon said PID Bonds, as applicable, as well as any TIRZ.

Waterline Improvements means waterline improvements as described and depicted in further detail in **Exhibit E-3** and in accordance with design/construction plans to be approved by the City.

ARTICLE III

PUBLIC IMPROVEMENT DISTRICT

3.1 PID Creation and Levy of Assessments. The City shall use its best efforts to initiate and approve all necessary documents and ordinances required to effectuate this Agreement, to create the PID, and to levy the Assessments on the PID Property within the PID. The City will prepare and approve the Service and Assessment Plan providing for the levy of the Assessments on the PID Property. Promptly following preparation and approval of a Service and Assessment Plan acceptable to the Developer and the City and subject to City Council making findings that the Authorized Improvements confer a special benefit on the PID Property, the City Council shall consider an Assessment Ordinance. The Developer shall develop the PID Property consistent with the terms of this Agreement. Nothing contained in this Agreement, however, shall be construed as creating a contractual obligation that controls, waives, or supplants the City Council's legislative discretion or functions.

3.2 Acceptance of Assessments and Recordation of Covenants Running with the Land. Concurrently with the levy of the Assessment, the Developer shall approve and accept in writing the levy of the Assessment(s) on all land owned by the Developer and shall approve and accept in writing the Home Buyer Disclosure Program and shall cause to be recorded against the PID Property covenants running with the land that will bind any and all current and successor Developers and owners of the PID Property to: (i) pay the Assessments, with applicable interest and penalties thereon, as and when due and payable hereunder and that the purchasers of such land take their title subject to and expressly assume the terms and provisions of such assessments and the liens created thereby; and (ii) comply with the Home Buyer Disclosure Program. The covenants required to be recorded under this paragraph shall be recorded substantially contemporaneously with the recordation of the final plat of the applicable phase except for the Final SAP which will be recorded immediately after approval by the City.

3.3 City PID Fee. The Developer shall pay to the City, simultaneously with the closing of each series of PID Bonds issued under this Agreement, the amount of the City PID Fee based upon the number of residential lots in the applicable phase of Development for which the PID Bonds are being issued. The aggregate amount of the City PID Fee shall not exceed \$3,066,800 (902 residential lots multiplied by \$3,400) and shall not be refundable for any reason. The City PID Fee shall not be reimbursable from Assessments or PID Bond Proceeds. The City PID Fee shall not be increased, decreased or discounted for any reason, including without limitation a change in the number of lots ultimately developed within the Development.

ARTICLE IV

AUTHORIZED IMPROVEMENTS

4.1 Authorized Improvements. Prior to the issuance of PID Bonds, the Budgeted Costs, Authorized Improvements and Authorized Improvement Cost are subject to change as may be agreed upon by Developer and the City and, if changed, shall be updated by the Developer and the City consistent with the Service and Assessment Plan and the PID Act. All approved final plats

within the Development shall include those Authorized Improvements located therein and the respective Authorized Improvement Costs shall be finalized before the applicable final plat is approved by the City Council. Without limiting the foregoing, and on a phase-by-phase basis, as applicable, Budgeted Costs, Authorized Improvement Costs, the timetable for installation of the Authorized Improvements, and all other pertinent information and data will be reviewed at least annually by the Parties in an annual update of the Service and Assessment Plan adopted and approved by the City consistent with the requirements of Section 372.013(b) of the PID Act.

4.2 Construction, Ownership, and Transfer of Authorized Improvements.

(a) Contract Award. The Developer's engineers shall prepare, or cause the preparation of, and provide all contract specifications and necessary related documents. Certain portions of the Budgeted Cost(s) shall be paid from the proceeds of PID Bonds in accordance with the applicable Indenture.

(b) Construction Standards and Inspection. The Authorized Improvements and all other Public Infrastructure required for the development of the PID Property shall be constructed and inspected—and all fees applicable to the Development shall be paid by Developer—in accordance with applicable state law, City Regulations, the applicable Bond Ordinance and other development requirements, including those imposed by any other governing body or entity with jurisdiction over the Authorized Improvements.

(c) Contract Letting. This Agreement and construction of the Authorized Improvements, including the TIRZ Projects, are anticipated to be exempt from competitive bidding pursuant to Texas Local Government Code Section 252.022(a)(9) and 252.022(a)(11) based upon current cost estimates. However, in the event that the actual costs for the Authorized Improvements do not meet the parameters for exemption from the competitive bid requirement, then either competitive bid or alternative delivery methods may be utilized by the City as allowed by law. The Parties acknowledge that the construction contracts for the construction of Authorized Improvements have not been awarded as of the Effective Date and contract prices have not yet been determined. Before entering into any construction contract for the construction of all or any part of the Authorized Improvements, the Parties agree as follows:

- (1) Developer's engineers shall prepare, or cause the preparation of, and submit to the City all contract specifications and necessary related documents, including but not limited to the proposed construction contract showing the negotiated total contract price and scope of work.
- (2) Developer shall submit all such documents along with a written notice of intention to let a construction contract at least 20 days in advance of the date that Developer intends to execute such contract.
- (3) Within 15 days after receipt of the written notice and associated documents, the City Manager may: (i) approve the amount of the contract price and provide written notice to the Developer that the Developer may execute the construction contract and provide a copy to the PID Administrator; or (ii) require that the

contract be procured through competitive bidding or competitive sealed proposals (“Competitive Procurement”) if the actual costs of the Authorized Improvements do not meet the parameters for exemption from the competitive bidding. If the City fails to notify the Developer within such 15-day period, the City shall be deemed to have approved the contract price and authorized the Developer to execute the construction contract.

- (4) In order to require Competitive Procurement, the City must provide the Developer with written notice of said requirement within 15 days of delivery to the City of the written notice as required under Section 4.2(c)(2), above.
- (5) If the City Manager requires Competitive Procurement, then the Developer must: (i) advertise for and award the contract in the same manner set forth for competitive sealed bids or competitive sealed proposals Local Government Code Chapter 252 as if the City were pursuing a public improvement contract subject to said Chapter 252 as approved by the City Manager; and (ii) supply the City with true and complete copies of all notices of bid/proposal requests and all bids/proposals subsequently received.

(d) Ownership. All of the Authorized Improvements shall be owned by the City upon acceptance of them by the City. The Developer agrees to take any action reasonably required by the City to transfer or otherwise dedicate or ensure the dedication of, easements for the Authorized Improvements to the City and the public.

(e) Operation and Maintenance. Upon inspection, approval, and acceptance of the Authorized Improvements, the City shall maintain and operate the accepted Authorized Improvements.

(f) Applicability. Subsections (a)-(c), above, shall not apply to Public Infrastructure that the City is obligated to fund and construct under this Agreement, if any.

(g) Water and Sewer Service. The City currently holds the certificates of convenience and necessity to provide retail water and sewer service to the Property. The Property will be served by the City.

ARTICLE V

ADDITIONAL OBLIGATIONS

5.1 Sanitary Sewer Facilities. Developer is responsible for funding and construction in a good and workmanlike manner of all sanitary sewer improvements required to serve the PID Property that are not constructed by the City under this Agreement. The City is responsible for the funding and construction of the Hurricane Creek Regional Trunk Sewer Project Improvements as shown on **Exhibit E-2**. The City is responsible for funding pump and haul sanitary sewer service for the Property as needed. Notwithstanding anything to the contrary in this Agreement, the City shall not withhold building permits for any delay to the Developer caused by the City’s failure to complete the Hurricane Creek Regional Trunk Sewer Project Improvements.

5.2 Water Facilities. Developer is responsible for the funding and construction in a good and workmanlike manner of all water improvements required to serve the PID Property that are not constructed by the City under this Agreement. Prior to the issuance of a residential building permit for Phase 1, the Developer is responsible for the funding and construction of the Standridge Parkway, E-W Collector and Shadybrook Trail waterlines as shown on Exhibit E-3 which water lines shall be a TIRZ Project, and which costs are reimbursable to the Developer as a qualified TIRZ Project.

5.3 Roadway Facilities. Developer is responsible for the funding and the construction in a good and workmanlike manner of the roadway improvements required to serve each phase of the PID Property that are not funded and constructed by the City under this Agreement. Prior to the issuance of a residential building permit for each phase of the Development, Developer is responsible for the funding and construction of the roadway projects for the applicable phase as shown on Exhibit E-1, which projects shall be TIRZ Projects, and which costs are reimbursable to the Developer as qualified TIRZ Projects. Upon inspection, approval and acceptance, City shall maintain and operate the roadway improvements for the Property. Notwithstanding anything to the contrary in this Agreement, the City is responsible for the acquisition of all rights of way and easements needed for the Developer's construction of the offsite portion of Rosamond Parkway between Standridge Parkway and U.S. Highway 75 as shown on Exhibit E-1 attached hereto. The City shall not withhold building permits for any delay to the Developer caused by the City's failure to obtain any of said rights of way or easements.

5.4 Drainage/Detention Infrastructure. Developer shall have full responsibility for designing, installing, and constructing the drainage/detention infrastructure that will serve the Property and the cost thereof. Prior to the recordation of the final plat for any phase of Development, Developer shall complete in a good and workmanlike manner construction of the drainage/detention improvements necessary to serve such phase. Upon inspection, approval and acceptance, City shall maintain and operate the drainage improvements for the Property.

5.5 Screening, Landscaping, and Entryways. On or before one hundred fifty (150) days after final City acceptance of the Public Infrastructure for each phase of the Development, Developer shall complete construction, in a good and workmanlike manner, of the landscaping, screening and entryways for such phase in accordance with City Regulations. Said improvements shall thereafter be maintained in good appearance and repair by the HOA or the POA as applicable.

5.6 Homeowners Association and Property Owners Association.

(a) Mandatory Homeowners Association. As relates to the PID Property, the Developer will create, in a manner acceptable to the City, a mandatory homeowner association ("HOA"), which HOA, whether one or more, shall be required to levy and collect from home owners within the PID Property annual fees in an amount calculated to maintain the open spaces, common areas, the Amenity Center as described and defined in this Agreement, hike and bike trails located in common areas, portions of which will be open to the public, right-of-way irrigation systems, raised medians and other right-of-way landscaping, and screening walls within the PID. Common areas including but not limited to the Amenity Center, the water feature, screening, landscaping, gardens, entrances to the Development and right-of-way landscaping shall be maintained solely by the

HOA. Maintenance of public rights-of-way landscaping and screening by the HOA shall comply with City Regulations and shall be subject to oversight by the City.

(b) Mandatory Property Owner's Association. As relates to the In-City Property, Developer will create or cause to be created, in a manner acceptable to the City, a mandatory property owner association ("POA"), which POA, whether one or more, shall be required to levy and collect from property owners within the In-City Property annual fees in an amount calculated to maintain the open spaces, common areas, water features, sidewalks, landscaping/screening in common areas and other common areas within the In-City PID. All such common areas shall be maintained solely by the POA. Maintenance of public rights-of-way landscaping and screening by the POA shall comply with City Regulations and shall be subject to oversight by the City.

5.7 Performance Window; Election to Terminate; Liquidated Damages. In the event that the Developer does not satisfy all of its obligations under its control pursuant to Section 6.1 or does not request that the City issue PID Bonds on or before June 1, 2021, neither Party shall thereafter be required to perform under this Agreement and this Agreement will terminate. If this Agreement is terminated under this Section 5.7 or is otherwise terminated early under any other provision of this Agreement, Developer must within 30 days of such termination file or caused to be filed with the City an irrevocable petition by the owners of the PID Property to dissolve the PID and shall thereafter promptly undertake any and all reasonable actions to facilitate the dissolution of the PID and the TIRZ—notwithstanding anything to the contrary in this Agreement—the Developer's obligations regarding the dissolution of the PID and the TIRZ in accordance with this section shall survive such termination.

5.8 Concept Plan; Revisions.

(a) The Concept Plan illustrates the approved development concept for the Property but has not been engineered and does not represent the final design that will be approved through the final platting process. As a result, Developer may revise the Concept Plan with City Manager approval to make revisions necessitated by final engineering and design of the development project prior to final platting, provided the number of residential lots shown on the Concept Plan does not increase by greater than five percent (5%), the numbers of residential lots in each category shown on the Concept Plan does not increase by greater than five percent (5%), and the amount of open space shown on the Concept Plan does not decrease by greater than five percent (5%). If the City Manager does not approve such revisions to the Initial Concept Plan within 15 days after receipt of a written request for approval, City Council approval of such revisions shall be required. Nothing in this paragraph shall preclude Developer from applying directly to the City Council for approval of any Concept Plan revisions, including revisions greater than the percentages listed herein.

(b) Except as otherwise provided in subsection (a) of this section, all other revisions to the Concept Plan require the approval of the City Council.

(c) If the Concept Plan is revised as provided by this section, the City Manager or his or her designee shall cause the revised Concept Plan to be attached to the official version of this Agreement on file with the City's Secretary's office, and Developer shall record a memorandum of the revised Concept Plan in the Land Recordings of the Collin County Clerk's office.

5.9 Restaurant and Water Feature.

The Developer shall apply for and obtain the building permits necessary to commence construction of a restaurant and a water feature (respectively, "Restaurant and Water Feature") to be located on the In-City Property and shall commence construction of the Restaurant and Water Feature before the earliest of the following occurrences: (1) the expiration of five (5) years of the Effective Date; (2) the City's issuance of a building permit for any multiple-family residential structure greater than 275 units to be located on the In-City Property (the "Multifamily Structure"); or (3) the City's issuance of a building permit for the 301st single-family residential building permit as pertains to residences on the Property. The Developer shall complete construction of the Restaurant within one (1) year and six (6) months of commencing construction of same. The Restaurant building shall be a minimum of 5,000 square feet of air-conditioned space. The Water Feature shall be a minimum of 20,000 square feet in size. The Developer shall complete construction of the Restaurant and Water Feature before the City issues a certificate of occupancy for the Multifamily Structure and the City may withhold such certificate of occupancy until the Restaurant and Water Feature are completed. Developer shall also apply for and obtain the building permits necessary to commence construction and commence construction of a minimum of 10,000 square feet of additional non-residential space to be located on the In-City Property within six (6) years of the Effective Date. This is in addition to the 5,000 square foot Restaurant referenced above.

5.10. Amenity Center. Prior to the City's issuance of a building permit for the 401st single-family residential building permit as pertains to residences on the Property, Developer shall complete construction of the Amenity Center in accordance with the applicable definition in Article II, and the City may withhold all residential building permits after issuing the first 400 single-family residential building permits until the construction of the Amenity Center is completed. The site of the Amenity Center shall be approximately 2.25 acres at the location shown on Exhibit C-1. The exterior masonry requirement for the Amenity Center shall be 80%.

5.11 Neighborhood Trails. Developer is responsible for funding and construction of the Neighborhood Trails. Neighborhood Trails shall be constructed as required or necessary for each phase of the Development, and the Developer shall complete construction of each portion of the Neighborhood Trails within ten (10) months after the City's acceptance of the Authorized Improvements for the applicable phase.

5.12 Community and Botanical Garden. Developer is responsible for funding and construction of the Community and Botanical Garden within the PID Property as shown on the Concept Plan attached hereto as Exhibit C. The Community and Botanical Garden shall be completed on or before the earliest of the following occurrences: (1) the City's issuance of a building permit for the 801st single-family residential building permit as pertains to residences on the Property, (2) six (6) months after construction of the Public Infrastructure necessary to provide access to the Community and Botanical Garden site is completed, or (3) twelve (12) months after City acceptance of the Public Infrastructure for the third (3rd) phase of the Development.

5.13 In-City Property Obligations. The In-City Property Owner shall not be obligated to perform any obligations or meet any requirements under this Agreement as relates to the In-City Property.

ARTICLE VI **PID BONDS**

6.1 PID Bond Issuance. Subject to the satisfaction of conditions set forth in this article, the City may issue PID Bonds solely for the purposes of acquiring or constructing Authorized Improvements. The Developer may request issuance of PID Bonds by filing with the City a list of the Authorized Improvements to be funded with the PID Bonds and the estimated costs of such Authorized Improvements. The Developer acknowledges that the City may require at that time a professional services agreement that obligates the Developer to fund the costs of the City's professionals relating to the preparation for and issuance of PID Bonds, which amount shall be agreed to by the Parties and considered a cost payable from such PID Bonds. The issuance of PID Bonds is subject to all of the following conditions.

- (1) The City has evaluated and determined that there will be no negative impact on the City's creditworthiness, bond rating, access to or cost of capital, or potential for liability.
- (2) The City has determined that the PID Bonds assessment level, structure, terms, conditions and timing of the issuance of the PID Bonds are reasonable for the Authorized Improvement Costs to be financed and that there is sufficient security for the PID Bonds to be creditworthy.
- (3) All costs incurred by the City that are associated with the administration of the PID shall be paid out of special assessment revenue levied against property within the PID. City administration costs shall include those associated with continuing disclosure, compliance with federal tax law, agent fees, staff time, regulatory reporting and legal and financial reporting requirements.
- (4) The adoption of a service and assessment plan (the "Service and Assessment Plan") and an assessment ordinance levying assessments on all or any portion of the PID Property benefitted by such Authorized Improvements in amounts sufficient to pay all costs related to such PID Bonds and said PID Bonds shall be at a 3:1 Value to Lien ratio ("VTL") based on the anticipated final lots values as provided in a third-party appraisal; provided, however, it shall be at the City's discretion if the VTL is reduced to 2 ½:1 ratio, at which time, the amount of funds below the 3:1 VTL ratio shall be "restricted" from access by the Developer until such a time as the value of the Development reaches the 3:1 ratio. The final language and calculation will be provided for in the Certificate for Payment attached to any PID reimbursement agreement between the City and the Developer, subject to amounts that must be restricted in order for the City, on the advice of bond counsel, to comply with federal tax regulation spending requirements.

- (5) The City has formed and utilized its own financing team including, but not limited to, bond counsel, financial advisor, PID Administrator, and underwriters related to the issuance of PID Bonds and bond financing proceedings.
- (6) The City has chosen and utilized its own continuing disclosure consultant and arbitrage rebate consultant. Any and all costs incurred by these activities will be included in City administration costs recouped from special assessments. The continuing disclosure will be divided into City disclosure and Developer disclosure, and the City will not be responsible or liable for Developer disclosure but the City's disclosures professional will be used for both disclosures.
- (7) The aggregate principal amount of PID Bonds issued and to be issued shall not exceed \$32,000,000.00.
- (8) Each series of PID Bonds shall be in an amount estimated to be sufficient to fund the Authorized Improvements or portions thereof for which such PID Bonds are being issued.
- (9) Delivery by the Developer to the City of a certification or other evidence from an independent appraiser acceptable to the City confirming that the special benefits conferred on the properties being assessed for the Authorized Improvements increase the value of the property by an amount at least equal to the amount assessed against such property.
- (10) Approval by the Texas Attorney General of the PID Bonds and registration of the PID Bonds by the Comptroller of Public Accounts of the State of Texas.
- (11) The Developer is current on all taxes, assessments, fees and obligations to the City including without limitation payment of Assessments.
- (12) The Developer is not in default under this Agreement or, with respect to the Property, any other agreement to which Developer and the City are parties.
- (13) No outstanding PID Bonds are in default and no reserve funds established for outstanding PID Bonds have been drawn upon that have not been replenished.
- (14) The Administrator has certified that the specified portions of the costs of the Authorized Improvements to be paid from the proceeds of the PID Bonds are eligible to be paid with the proceeds of such PID Bonds.

- (15) The Authorized Improvements to be financed by the PID Bonds have been or will be constructed according to the approved Development Standards imposed by this Agreement including without limitation any applicable City Regulations.
- (16) The City has determined that the amount of proposed PID assessments and the structure, terms, conditions and timing of the issuance of the PID Bonds are reasonable for the project costs to be financed and the degree of development activity within the PID, and that there is sufficient security for the PID Bonds to be creditworthy.
- (17) The maximum maturity for PID Bonds shall not exceed 30 years from the date of delivery thereof.
- (18) The final maturity for any PID Bonds shall be not later than 45 years from the date of this Agreement.
- (19) The City has determined that the PID Bonds meet all regulatory and legal requirements applicable to the issuance of the PID Bonds.
- (20) Unless otherwise agreed to by the City, the PID Bonds shall be sold and may be transferred or assigned only (i) in compliance with applicable securities laws and (ii) in minimum denominations of \$25,000 or integral multiples of \$1,000 in excess thereof; provided, however, that the limitation on transferability or assignment in this subparagraph (ii) shall not apply if the PID Bonds have a rating of not less than BBB- from Fitch Ratings or Standard & Poor's Ratings Services or Baa3 from Moody's Investors Service, Inc.
- (21) If the applicable portion of Authorized Improvements has not already been constructed and to the extent PID Bond Proceeds are insufficient to fund such Authorized Improvement Costs, Developer shall, at time of closing the PID Bonds, fund or cause the funding of the difference between the Authorized Improvement Costs and the PID Bond Proceeds available to fund such Authorized Improvement Costs related to the applicable Authorized Improvement (without limiting any other provision, in the event Developer does not or cannot provide such funding, the City shall not be required to sell such PID Bonds, and Developer shall reimburse the City for all expenses and liabilities incurred by the City in connection with the proposed issuance of the PID Bonds).
- (22) No information regarding the City, including without limitation financial information, shall be included in any offering document relating to PID Bonds without the consent of the City.
- (23) The Developer agrees to provide periodic information and notices of material events regarding the Developer and the Developer's development within the

PID in accordance with Securities and Exchange Commission Rule 15c2-12 and any continuing disclosure agreements executed by the Developer in connection with the issuance of PID Bonds.

- (24) The Developer satisfies the City's Director of Public Works or his designee that the Budgeted Cost(s) are reasonable.
- (25) Developer is not in default under a Developer Continuing Disclosure Agreement.
- (26) The issuance of any Refunding Bonds, the amount of assessment necessary to pay the Refunding Bonds shall not exceed the amount of the assessments that were levied to pay the PID Bonds that are being refunded.
- (27) The maximum tax equivalent assessment rate for the assessment levy shall not exceed \$0.9572 per \$100.00 taxable assessed valuation, without prior, written consent of the City, in its sole discretion.
- (28) Developer has completed and the City has accepted the Authorized Improvements for any previous phase of the Development; and
- (29) Unless otherwise set forth in this Section 6.1, a minimum value to lien ratio of 3:1 for PID Bonds; provided, however, it shall be at the City's discretion if the VTL is reduced to 2 ½:1 ratio, at which time, the amount of funds below the 3:1 VTL ratio shall be "restricted" from access by the Developer until such a time as the value of the Development reaches the 3:1 ratio. Any receivables due under any PID reimbursement agreement between the City and the Developer may be sold or assigned in accordance with Section 11.1 of the Agreement; such value shall be confirmed by appraisal from licensed MAI appraiser based on the assumption that development of property only includes the public improvements in place and to be constructed with the PID Bond proceeds and any Developer Cash Contribution deposited with trustee and finished lots (without vertical construction) for an improvement area.
- (30) The Developer and the City shall have entered into a PID reimbursement agreement that provides for the Developer's construction of certain Authorized Improvements and the City's reimbursement to the Developer of certain Authorized Improvement Costs.

6.2 Disclosure Information. Prior to the issuance of PID Bonds by the City, Developer agrees to provide all relevant information, including financial information, that is reasonably necessary in order to provide potential bond investors with a true and accurate offering document for any PID Bonds. Developer agrees, represents, and warrants that any information provided by Developer for inclusion in a disclosure document for an issue of PID Bonds will not, to Developer's actual knowledge, contain any untrue statement of a material fact or omit any

statement of material fact required to be stated therein or necessary to make the statements made therein, in light of the circumstances under which they were made, not misleading, and Developer further agrees that it will provide a certification to such effect as of the date of the closing of any PID Bonds. .

6.3 Qualified Tax-Exempt Status.

(1) Generally. In any calendar year in which PID Bonds are issued, Developer agrees to pay the City its actual additional costs (“Additional Costs”) the City may incur in the issuance of its own public securities or obligations on its own taxing power of municipal revenues (the “City Obligations”), as described in this section, if the City Obligations are deemed not to qualify for the designation of qualified tax-exempt obligations (“QTEO”), as defined in section 265(b)(3) of the Internal Revenue Code (“IRC”) as amended, as a result of the issuance of PID Bonds by the City in any given year. The City agrees to deposit all funds for the payment of such Additional Costs received under this section into a segregated account of the City, and such funds shall remain separate and apart from all other funds and accounts of the City until December 31 of the calendar year in which the PID Bonds are issued, at which time the City is authorized to utilize such funds for any purpose permitted by law. On or before January 15th of the following calendar year, the final Additional Costs shall be calculated. By January 31st of such year, any funds in excess of the final Additional Costs that remain in such segregated account on December 31st of the preceding calendar year shall be refunded to the Developer and any deficiencies in the estimated Additional Costs paid to the City by Developer shall be remitted to the City by the Developer.).

(2) Issuance of PID Bonds prior to City Obligations.

A. In the event the City issues PID Bonds prior to the issuance of City Obligations, the City, with assistance from its financial advisor (“Financial Advisor”), shall estimate the Additional Costs based on the market conditions as they exist approximately 30 days prior to the date of the pricing of the PID Bonds (the “Estimated Costs”). The Estimated Costs are an estimate of the increased cost to the City to issue its City Obligations as non-QTEO. Promptly following the determination of the Estimated Costs, the City shall provide a written invoice to Developer in an amount less than or equal to the Estimated Costs. Developer, in turn, shall remunerate to the City the amount shown on said invoice on or before the earlier of: (i) 15 business days after the date of said invoice, or (ii) 5 business days prior to pricing the PID Bonds. The City shall not be required to price or sell any series of PID Bonds until Developer has paid the invoice of Estimated Costs related to the PID Bonds then being issued.

B. Upon the City’s approval of the City Obligations, the Financial Advisor shall calculate the Additional Costs to the City of issuing its City Obligations as non-QTEO. The City will, within 5 business days of the issuance of the City Obligations, provide written notice to Developer of the amount of the Additional Costs. In the event the Additional Costs are less than the Estimated Costs, the City will refund to Developer the difference between the Additional Costs and the Estimated Costs within 15 business days of the date of the City’s notice to Developer required under this paragraph. If the Additional Costs are more than the Estimated Costs, Developer will pay to the City the difference between the Additional Costs and the Estimated Costs within 15 business days of the date of the City’s notice required under this

paragraph. If Developer does not pay the City the difference between the Additional Costs and the Estimated Costs within 15 business days of the date of the City's notice required under this paragraph, Developer shall not be paid any reimbursement amounts under any PID reimbursement agreement related to the Development until such payment of Additional Costs is made in full.

(3) Issuance of City Obligations prior to PID Bonds.

A. In the event the City issues City Obligations prior to the issuance of PID Bonds, the City, with assistance from the Financial Advisor, shall calculate the Estimated Costs based on the market conditions as they exist 20 days prior to the date of the pricing of the City Obligations. Promptly following the determination of the Estimated Costs, the City shall provide a written invoice to Developer: (1) in an amount less than or equal to the Estimated Costs, and (2) that includes the pricing date for such City Obligations. The Developer, in turn, shall remunerate to the City the amount shown on said invoice at least 15 days prior to the pricing date indicated on the invoice. If Developer fails to pay the Estimated Costs as required under this paragraph, the City, at its option, may elect to designate the City Obligations as QTEO, and the City shall not be required to issue any PID Bonds in such calendar year.

B. Upon the City's approval of the City Obligations, the Financial Advisor shall calculate the Additional Costs to the City of issuing non-QTEO City Obligations. The City will, within 5 business days of the issuance of the City Obligations, provide written notice to Developer of the Additional Costs. In the event the Additional Costs are less than the Estimated Costs, the City will refund to Developer the difference between the Additional Costs and the Estimated Costs within 15 business days of the date of the City's notice to Developer. If the Additional Costs are more than the Estimated Costs, Developer will pay to the City the difference between the Additional Costs and the Estimated Costs within 15 business days of the date of the City's notice. If Developer does not pay to the City the difference between the Additional Costs and the Estimated Costs as required under this paragraph, then Developer shall not be paid any reimbursement amounts under any PID reimbursement agreement related to the Development until such payment of Additional Costs is made in full.

(4) To the extent any developer(s) or property owner(s) (including Developer, as applicable) has (have) paid Additional Costs for any particular calendar year, any such Additional Costs paid subsequently by a developer or property owner (including Developer, as applicable) to the City applicable to the same calendar year shall be reimbursed by the City to the developer(s) or property owner(s) (including Developer, as applicable) as necessary so as to put all developers and property owners (including Developer, if applicable) so paying for the same calendar year in the proportion set forth in subsection (e), below, said reimbursement to be made by the City within 15 business days after its receipt of such subsequent payments of such Additional Costs.

(5) The City shall charge Additional Costs attributable to any other developer or property owner on whose behalf the City has issued debt in the same manner as described in this section, and Developer shall only be liable for its portion of the Additional Costs under this provision, and if any Additional Costs in excess of Developer's portion has already been paid to the City under this provision, then such excess of Additional Costs shall be reimbursed to Developer. The portion owed by Developer shall be determined by dividing the total proceeds

from any debt issued on behalf of Developer in such calendar year by the total proceeds from any debt issued by the City pursuant to the PID Act for the benefit of all developers (including Developer) in such calendar year.

6.4 Developer Cash Contribution. At closing on any series of PID Bonds intended to fund construction of Authorized Improvements that have not already been constructed by the Developer, Developer shall deposit into the Developer Improvement Account a pro-rata amount of the Developer Cash Contribution.

ARTICLE VII

PAYMENT OF AUTHORIZED IMPROVEMENTS

7.1 Improvement Account of the Project Fund. The Improvement Accounts of each Project Fund shall be administered and controlled by the City and funds in the Improvement Account of each Project Fund shall be deposited and disbursed in accordance with the terms of the respective Indenture.

7.2 Cost Overrun. If the total cost of the Authorized Improvements in the aggregate exceeds the total amount of monies on deposit in the Improvement Account of a Project Fund, the Developer shall be solely responsible for the remainder of the costs of the Authorized Improvements, except as provided in Section 7.3 below.

7.3 Cost Underrun. Upon the final acceptance by City of an Authorized Improvement and payment of all outstanding invoices for such Authorized Improvement, if the Actual Cost of such Authorized Improvement is less than the Budgeted Cost (a "Cost Underrun"), any remaining Budgeted Cost, to the extent available in the monies on deposit in the Improvement Account of the applicable Project Fund, will be available to pay Cost Overruns on any other Authorized Improvement. The City shall promptly confirm to the Trustee that such remaining amounts are available to pay such Cost Overruns, and the Developer and the City will agree how to use such moneys to secure the payment and performance of the work for other Authorized Improvements.

7.4 Remainder for Authorized Improvements. If funds remain in an Improvement Account of any Project Fund after the completion of all Authorized Improvements and the payment of all Authorized Improvement Costs to be funded with such PID Bonds, then such funds shall thereafter be the exclusive property of the City and shall be used by the City for the purpose of paying or retiring the PID Bonds as provided in the respective Indenture, the Service and Assessment Plan, and any construction funding agreement entered into by the Parties.

ARTICLE VIII

TIRZ AND AGRICULTURAL EXEMPTION

8.1 Tax Increment Reinvestment Zone. If PID Bonds are issued for a development phase in accordance with this Agreement, the City agrees that it will create, operate and maintain a TIRZ over such development phase of the PID Property with the intention to provide revenue to pay for: (i) the construction or acquisition of Authorized Improvements to serve the PID Property; (ii) to reimburse the Developer for any costs advanced or expended by the Developer related to the construction or acquisition of Authorized Improvements; and/or (iii) to pay PID Bond Assessments or to retire all or part of the debt created by PID Bonds. Determination of which of

the three purposes (or a combination of those purposes), referenced above, for which the TIRZ Increment shall be expended will be at the City's sole discretion. The City shall deposit and disburse, or cause to be deposited and disbursed, the TIRZ Increment in accordance with the TIRZ Project and Finance Plan for each TIRZ created for each phase of development. Notwithstanding any other provision of this Agreement, the term of each TIRZ created on the PID Property shall be thirty-one (31) years from the year of its creation, and the total combined amount of the TIRZ Increment to be provided for the purposes described above shall not exceed the Maximum TIRZ Contribution for each TIRZ as provided in the TIRZ Documents; provided that any TIRZ Increments due and uncollected as of the termination date of the last remaining TIRZ created on the PID Property shall be deposited and disbursed, when and if received by the City, in accordance with the TIRZ Project and Finance Plan. If the total amount of the TIRZ Increment collected and disbursed reaches the Maximum TIRZ Contribution during the term of any TIRZ, then the remaining TIRZ may be terminated at the City's sole discretion and the City shall have no further obligations with respect to any TIRZ. The members of each TIRZ Board shall be appointed by the City Council in accordance with Chapter 311, Texas Tax Code.

8.2 Additional TIRZ Qualified Projects. In addition to the listed Authorized Improvements attached as **Exhibit B**, qualified public improvement projects such as roads, sewers, drainage, water, right of way and real estate acquisition projects, and costs of issuance, capitalized interest, and reserve amounts, totaling \$6,638,200 (the "TIRZ Qualified Projects") are included in the Maximum TIRZ Contribution, and shall be added to the Authorized Improvements to the extent such TIRZ Qualified Projects are not already included.

8.3 TIRZ Fund. In accordance with the TIRZ Project and Finance Plan, the TIRZ Increment obtained from the PID Property shall be placed into the TIRZ Fund, a separate fund which has been created by the City for each TIRZ. It is anticipated that the monies in each TIRZ Fund shall be distributed in accordance with Section 8.1 and the TIRZ Project and Finance Plan for each TIRZ.

8.4 Agricultural Exemption. The City acknowledges that some or all of the PID Property may now have or may in the future have an agricultural, timber, or wildlife management use tax classification, and the City may not request removal of any such tax classification until PID Bonds secured by the PID Property are issued to pay for the costs of the Authorized Improvements and related costs, notwithstanding any waiver of such exemption for other political subdivisions or public entities. However, to the extent that the City might otherwise be required under Section 23.41 et seq. of the Texas Tax Code or other applicable law, including but not limited to Section 43.035 of the Texas Local Government Code, or offers to enter into a development agreement with a Landowner containing other such restrictions, this Agreement shall be deemed to have satisfied any such requirement.

ARTICLE IX

ANNEXATION AND POST-ANNEXATION MATTERS

9.1 Annexation. The Developer shall submit a voluntary irrevocable petition for annexation of the PID Property to the City in compliance with Chapter 43 of the Texas Local Government Code, as amended, at least sixty (60) days before the issuance of PID Bonds by the

City. The Developer agrees to execute and supply any and all instruments and/or other documentation necessary for the City to annex the PID Property into the City's corporate limits and the Parties agree that the annexation of the PID Property shall occur upon or as soon as reasonably practicable after or the execution of this Agreement and the issuance of PID Bonds, in accordance with statutory requirements. Such annexation petition shall be filed with the City before Developer can access any bond proceeds.

9.2 Zoning of Property. The City shall consider zoning the Property consistent with the Development Standards, the Concept Plan, and applicable provisions of this Agreement. Through this Agreement, the Developer expressly consents and agrees to the zoning of the Property consistent with and as contemplated by this section. The City will not require the Developer to submit a formal zoning application in order to proceed with zoning the Property as contemplated by this section. Any such zoning of the Property shall otherwise be in accordance with all procedures set forth in the applicable City Regulations.

9.3 Full Compliance with City Standards.

(a) When not in direct conflict with the terms and conditions of this Agreement—and without regard to whether any part of the Property is inside or outside the City's corporate limits at any given time—the development of the Property shall be subject to all applicable City Regulations, including but not limited to the City's subdivision regulations and design standards and all applicable fees and land dedications. The City shall be the sole authority for approval of all plats, concept plans, civil engineering plans and other development applications required under City Regulations, and the requirement to obtain approval of all such development applications shall apply to the Property to the extent applicable as if all of the Property were located within the City's corporate limits.

(b) Development and use of the Property, including, without limitation, the construction, installation, maintenance, repair, and replacement of all buildings and all other improvements and facilities of any kind whatsoever on and within the Property, shall be in compliance with the Development Standards, the Concept Plan (as may be revised in accordance with Section 5.8), both as attached in Exhibit D and Exhibit C, and applicable City Regulations. All City Regulations shall apply to the development and use of the Property unless expressly set forth to the contrary in this Agreement.

9.4 Phasing. The Parties acknowledge that the Property may be developed in phases. If deemed necessary, the Developer may submit a replat for all or any portions of the Property. Any replat shall be in general conformance with the Final Concept Plan and subject to City approval.

9.5 Conflicts. In the event of any direct conflict between this Agreement and any other ordinance, rule, regulation, standard, policy, order, guideline, or other City adopted or City enforced requirement, whether existing on the Effective Date or hereinafter adopted, this Agreement, including its exhibits, as applicable, shall control.

9.6 Vested Rights. This Agreement shall constitute a "permit" (as defined in Chapter 245 of the Texas Local Government Code) that is deemed filed with the City on the Effective Date.

ARTICLE X
EVENTS OF DEFAULT; REMEDIES

10.1 Events of Default. No Party shall be in default under this Agreement until notice of the alleged failure of such Party to perform has been given in writing (which notice shall set forth in reasonable detail the nature of the alleged failure) and until such Party has been given a reasonable time to cure the alleged failure (such reasonable time to be determined based on the nature of the alleged failure, but in no event more than thirty (30) days (or any longer time period to the extent expressly stated in this Agreement as relates to a specific failure to perform) after written notice of the alleged failure has been given except as relates to a type of default for which a different time period is expressly set forth in this Agreement). Notwithstanding the foregoing, no Party shall be in default under this Agreement if, within the applicable cure period, the Party to whom the notice was given begins performance and thereafter diligently and continuously pursues performance until the alleged failure has been cured. Notwithstanding the foregoing, however, a Party shall be in default of its obligation to make any payment required under this Agreement if such payment is not made within twenty (20) business days after it is due.

10.2 Remedies. As compensation for the other party's default, an aggrieved Party is limited to seeking specific performance of the other party's obligations under this Agreement. However, the Parties agree that the Developer will not be required to specifically perform under this Agreement in the event that the Developer satisfies all of its obligations under Section 6.1 and the City does not issue PID Bonds on or before June 1, 2021. The City will not be required to specifically perform under this Agreement in the event that the Developer does not satisfy all of its obligations under its control pursuant to Section 6.1; or, regardless of Developer's actions with regard to its obligations under Section 6.1 if Developer does not request that the City issue the PID Bonds by June 1, 2021.

ARTICLE XI
ASSIGNMENT; ENCUMBRANCE

11.1 Assignment.

(a) This Agreement shall be binding upon and inure to the benefit of the successors and assigns of the parties hereto. The obligations, requirements, or covenants to develop the Property in this Agreement shall be able to be assigned to any affiliate or related entity of the Developer, or any lien holder on the Property, without the prior written consent of the City. The obligations, requirements or covenants to the development of the Property shall not be assigned by Developer to a non-affiliate or non-related entity of the Developer without the prior written consent of the City Manager of the City, which consent shall not be unreasonably withheld if the assignee (an "Assignee") demonstrates financial ability to perform. Any receivables due under this Agreement, any construction funding agreement, or any PID reimbursement agreement between the City and the Developer may be assigned by the Developer upon written notice to the City pursuant to Section 11.4 of this Agreement. An Assignee shall be considered a "Party" for the purposes of this Agreement. Each assignment shall be in writing executed by Developer and the Assignee and shall obligate the Assignee to be bound by this Agreement to the extent this Agreement applies or relates to the obligations, rights, title, or interests being assigned. No assignment by Developer shall release Developer from any liability

that resulted from an act or omission by Developer that occurred prior to the effective date of the assignment unless the City approves the release in writing. Developer shall maintain written records of all assignments made by Developer to Assignees, including a copy of each executed assignment and, upon written request from any Party or Assignee, shall provide a copy of such records to the requesting person or entity, and this obligation shall survive the assigning Party's sale, assignment, transfer, or other conveyance of any interest in this Agreement or the Property.

(b) The Developer and Assignee(s) have the right, from time to time, to collaterally assign, pledge, grant a lien or security interest in, or otherwise encumber any of their respective rights, title, or interest under this Agreement for the benefit of their respective lenders without the consent of, but with prompt written notice to the City. The collateral assignment, pledge, grant of lien or security interest, or other encumbrance shall not, however, obligate any lender to perform any obligations or incur any liability under this Agreement unless the lender agrees in writing to perform such obligations or incur such liability. Provided the City has been given a copy of the documents creating the lender's interest, including Notice information for the lender, then that lender shall have the right, but not the obligation, to cure any default under this Agreement and shall be given a reasonable time to do so in addition to the cure periods otherwise provided to the defaulting Party by this Agreement; and the City agrees to accept a cure, not to be unreasonably withheld, offered by the lender as if offered by the defaulting Party. A lender is not a party to this Agreement unless this Agreement is amended, with the consent of the lender, to add the lender as a Party. Notwithstanding the foregoing, however, this Agreement shall continue to bind the Property and shall survive any transfer, conveyance, or assignment occasioned by the exercise of foreclosure or other rights by a lender, whether judicial or non-judicial. Any purchaser from or successor owner through a lender of any portion of the Property shall be bound by this Agreement and shall not be entitled to the rights and benefits of this Agreement with respect to the acquired portion of the Property until all defaults under this Agreement with respect to the acquired portion of the Property have been cured.

11.2 Assignees as Parties. An Assignee authorized in accordance with this Agreement and for which notice of assignment has been provided in accordance with Section 11.4 of this Agreement shall be considered a "Party" for the purposes of this Agreement. With the exception of the End-Buyer of a lot within the Property, any person or entity upon becoming an owner of land within the PID or upon obtaining an ownership interest in any part of the Property shall be deemed to be a "Developer" and have all of the obligations of the Developer as set forth in this Agreement and all related documents to the extent of said ownership or ownership interest.

11.3 Third Party Beneficiaries. Subject to Section 11.1 of this Agreement, this Agreement only inures to the benefit of, and may only be enforced by, the Parties. No other person or entity shall have any right, title, or interest under this Agreement or otherwise be deemed to be a third-party beneficiary of this Agreement.

11.4 Notice of Assignment. The following requirements shall apply in the event that the Developer sells, assigns, transfers, or otherwise conveys the Property or any part thereof and/or any of its rights or benefits under this Agreement:

- (a) the Developer must provide written notice to the City to the extent required under Section 11.1 at least fifteen (15) business days in advance of any such sale, assignment, transfer, or other conveyance;
- (b) said notice must describe the extent to which any rights or benefits under this Agreement will be sold, assigned, transferred, or otherwise conveyed;
- (c) said notice must state the name, mailing address, and telephone contact information of the person(s) that will acquire any rights or benefits as a result of any such sale, assignment, transfer or other conveyance; and
- (d) said notice must be signed by a duly authorized person representing the Developer.

ARTICLE XII

RECORDATION AND ESTOPPEL CERTIFICATES

12.1 Binding Obligations. This Agreement and all amendments thereto and assignments hereof shall be recorded in the property records of Collin County. This Agreement binds and constitutes a covenant running with the Property and, upon the Effective Date, is binding upon the Developer and the City, and forms a part of any other requirements for development within the Property. This Agreement, when recorded, shall be binding upon the Parties and their successors and assigns as permitted by this Agreement and upon the Property; however, this Agreement shall not be binding upon, and shall not constitute any encumbrance to title as to, any End-Buyer of a Fully Developed and Improved Lot except for land use and development regulations that apply to such lots.

12.2 Estoppel Certificates. From time to time upon written request of the Developer or any future owner, and upon the payment to the City of a \$100.00 fee plus all reasonable costs incurred by the City in providing the certificate described in this section, the City Manager, or his/her designee will, in his official capacity and to his reasonable knowledge and belief, execute a written estoppel certificate identifying any obligations of an owner under this Agreement that are in default.

ARTICLE XIII

GENERAL PROVISIONS

13.1 Term. The term of this Agreement shall be fifteen (15) years after the Effective Date unless extended by mutual agreement of the Developer and the City. Upon expiration of the Term, the City shall have no obligations under this Agreement with the exception of: (i) maintaining and operating the PID in accordance with the Service and Assessment Plan and any Indenture; and (ii) fulfilling its obligations under the TIRZ Documents. The term of each TIRZ shall be as stated in Article VIII of this Agreement.

13.2 Public Infrastructure, Generally. Except as otherwise expressly provided for in this Agreement, Developer shall provide all Public Infrastructure, including streets, utilities, drainage, sidewalks, trails, street lighting, street signage, and all other required improvements dedicated or

intended to be dedicated for public use or benefit, at no cost to the City except as provided herein, and in accordance with City Regulations, and as approved by the City's engineer or his or her agent. Developer shall cause the installation of such improvements within all applicable time frames in accordance with the City Regulations unless otherwise approved herein. Developer shall provide engineering studies, plan/profile sheets, and other construction documents at the time of platting as required by City Regulations. Such plans shall be approved by the City's engineer or his or her agent prior to approval of a final plat. Construction of any portion of the Public Infrastructure shall not be initiated until a pre-construction conference that includes a City representative has been held regarding the proposed construction and City has issued a written notice to proceed.

13.3 Performance Bond, Payment Bond and Other Security Developer shall include in every contract with a subcontractor that will work on any of the Public Improvements a clause that requires the subcontractor to execute or cause to be executed one or more valid performance bonds in favor of the City for the construction, work and materials necessary to complete the Public Improvements. Said bonds may be dual obligee bonds and shall be in accordance with Texas Government Code, Chapter 2253 and applicable City Regulations for each subcontractor's construction contract for any part of the Public Improvements and shall contain a provision that increases the amount of the bond to the extent that the contract price increases by change order. Developer shall further execute or cause to be executed a valid Maintenance Bond in accordance with applicable City Regulations that guarantees the costs of any repairs which may become necessary to any part of the construction work performed in connection with the Public Improvements, arising from defective workmanship or materials used therein, for a full period of two years from the date of final acceptance of the Public Improvements constructed under any such contract(s).

13.4 Inspections, Acceptance of Public Infrastructure, and Developer's Remedy. The City shall inspect, as required by City Regulations, the construction of all Authorized Improvements, and any Public Infrastructure necessary to support the proposed development within the Property, including water, sanitary sewer, drainage, streets, park facilities, electrical, and street lights and signs. The City's inspections shall not release the Developer from its responsibility to construct, or ensure the construction of, adequate Authorized Improvements and Public Infrastructure in accordance with approved engineering plans, construction plans, and other approved plans related to development of the Property. Notwithstanding any provision of this Agreement, it shall not be a breach or violation of the Agreement if the City withholds City utility services as to any portion of the Development until all required Public Infrastructure necessary to such portion is properly constructed according to the approved engineering plans and City Regulations, and until such Public Infrastructure has been dedicated to and accepted by the City. From and after the inspection and acceptance by the City of the Public Infrastructure and any other dedications required under this Agreement, such improvements and dedications shall be owned by the City. Developer's sole remedy for nonperformance of this Agreement by the City shall be to seek specific performance and cost reimbursements pursuant to the terms of this Agreement.

13.5 Approval of Plats/Plans. Approval by the City, the City's Engineer or other City employee or representative, of any plans, designs or specifications submitted by Developer pursuant to this Agreement or pursuant to City Regulations shall not constitute or be deemed to be a release of the responsibility and liability of Developer, his engineer, employees, officers or agents

for the accuracy and competency of their design and specifications. Further, any such approvals shall not be deemed to be an assumption of such responsibility and liability by the City for any defect in the design and specifications prepared by Developer or Developer's engineer, or engineer's officers, agents, servants or employees, it being the intent of the parties that approval by the City's engineer signifies the City's approval on only the general design concept of the improvements to be constructed.

13.6 Insurance. Developer or its contractor(s) shall acquire and maintain, during the period of time when any of the Public Infrastructure is under construction (and until the full and final completion of the Public Infrastructure and acceptance thereof by the City: (a) workers compensation insurance in the amount required by law; and (b) commercial general liability insurance including personal injury liability, premises operations liability, and contractual liability, covering, but not limited to, the liability assumed under any indemnification provisions of this Agreement, with limits of liability for bodily injury, death and property damage of not less than \$1,000,000.00. Such insurance shall also cover any and all claims which might arise out of the Public Infrastructure construction contracts, whether by Developer, a contractor, subcontractor, material man, or otherwise. Coverage must be on a "per occurrence" basis. All such insurance shall: (i) be issued by a carrier which is rated "A-1" or better by A.M. Best's Key Rating Guide and licensed to do business in the State of Texas; and (ii) name the City as an additional insured and contain a waiver of subrogation endorsement in favor of the City. Upon the execution of Public Infrastructure construction contracts, Developer shall provide to the City certificates of insurance evidencing such insurance coverage together with the declaration of such policies, along with the endorsement naming the City as an additional insured. Each such policy shall provide that, at least 30 days prior to the cancellation, non-renewal or modification of the same, the City shall receive written notice of such cancellation, non-renewal or modification.

13.7 INDEMNIFICATION and HOLD HARMLESS. THE DEVELOPER, INCLUDING ITS RESPECTIVE SUCCESSORS AND ASSIGNS, HEREBY COVENANT AND AGREE TO RELEASE, DEFEND, HOLD HARMLESS, AND INDEMNIFY THE CITY AND ITS OFFICERS, AGENTS, SERVANTS AND EMPLOYEES, FROM AND AGAINST ALL THIRD-PARTY CLAIMS, SUITS, JUDGMENTS, DAMAGES, AND DEMANDS (TOGETHER, "CLAIMS") AGAINST THE CITY, WHETHER REAL OR ASSERTED INCLUDING WITHOUT LIMITATION REASONABLE ATTORNEY'S FEES, RELATED EXPENSES, EXPERT WITNESS FEES, CONSULTANT FEES, AND OTHER COSTS, ARISING OUT OF THE NEGLIGENCE OF THE DEVELOPER, INCLUDING THE NEGLIGENCE OF ITS RESPECTIVE EMPLOYEES, CONTRACTORS, SUBCONTRACTORS, MATERIAL MEN, AND AGENTS, IN CONNECTION WITH THE DESIGN OR CONSTRUCTION OF ANY PUBLIC INFRASTRUCTURE, STRUCTURES, OR OTHER FACILITIES OR IMPROVEMENTS THAT ARE REQUIRED OR PERMITTED UNDER THIS AGREEMENT AND/OR CITY REGULATIONS AND/OR ANY APPLICABLE DEVELOPMENT STANDARDS AND/OR ANY OTHER GOVERNING REGULATIONS; **AND IT IS EXPRESSLY UNDERSTOOD THAT SUCH CLAIMS SHALL, EXCEPT AS MODIFIED BELOW, INCLUDE CLAIMS EVEN IF CAUSED BY THE CITY'S OWN CONCURRENT NEGLIGENCE SUBJECT TO THE TERMS OF THIS SECTION. THE DEVELOPER SHALL NOT, HOWEVER, BE REQUIRED TO INDEMNIFY THE CITY AGAINST CLAIMS CAUSED BY THE CITY'S SOLE NEGLIGENCE. IF THE CITY INCURS CLAIMS THAT ARE CAUSED BY THE CONCURRENT NEGLIGENCE OF THE**

DEVELOPER AND THE CITY, THE DEVELOPER'S INDEMNITY OBLIGATION WILL BE LIMITED TO A FRACTION OF THE TOTAL CLAIMS EQUIVALENT TO THE DEVELOPER'S OWN PERCENTAGE OF RESPONSIBILITY. THE DEVELOPER, INCLUDING ITS RESPECTIVE SUCCESSORS AND ASSIGNS, FURTHER COVENANTS AND AGREES TO RELEASE, DEFEND, HOLD HARMLESS, AND INDEMNIFY, THE CITY AGAINST ANY AND ALL CLAIMS BY ANY PERSON CLAIMING AN OWNERSHIP INTEREST IN THE PROPERTY WHO HAS NOT SIGNED THIS AGREEMENT IF SUCH CLAIMS RELATE IN ANY MANNER OR ARISE IN CONNECTION WITH: (1) THE CITY'S RELIANCE UPON THE DEVELOPER'S REPRESENTATIONS IN THIS AGREEMENT; (2) THIS AGREEMENT OR OWNERSHIP OF THE PROPERTY; OR (3) THE CITY'S APPROVAL OF ANY TYPE OF DEVELOPMENT APPLICATION OR SUBMISSION WITH RESPECT TO THE PROPERTY. At no time shall the City have any control over or charge of the Developer's design, construction or installation of any of the Public Infrastructure that is the subject of this Agreement, nor the means, methods, techniques, sequences or procedures utilized for said design, construction or installation. This Agreement does not create a joint enterprise or venture between the City and Developer.

13.8 Eminent Domain. Developer agrees to use reasonable efforts to obtain all third-party rights-of-way, consents, or easements, if any, required for the Public Infrastructure. If, however, Developer is unable to obtain such third-party rights-of-way, consents, or easements within ninety (90) days of commencing efforts to obtain the needed easements and right of way, the City agrees to take reasonable steps to secure same (subject to City Council authorization after a finding of public necessity) through the use of the City's power of eminent domain. Developer shall be responsible for funding all reasonable and necessary legal proceeding/litigation costs, attorney's fees and related expenses, and appraiser and expert witness fees (collectively, "Eminent Domain Fees") paid or incurred by the City in the exercise of its eminent domain powers that for any reason are not funded by the proceeds of the PID Bonds or TIRZ Increment and shall escrow with a mutually agreed upon escrow agent the City's reasonably estimated Eminent Domain Fees both in advance of the initiations of each eminent domain proceeding and as funds are needed by the City. Provided that the escrow fund remains appropriately funded in accordance with this Agreement, the City will use all reasonable efforts to expedite such condemnation procedures so that the Public Infrastructure can be constructed as soon as reasonably practicable. If the City's Eminent Domain Fees exceed the amount of funds escrowed in accordance with this paragraph, Developer shall deposit additional funds as requested by the City into the escrow account within ten (10) days after written notice from the City. Any unused escrow funds will be refunded to Developer with thirty (30) days after any condemnation award or settlement becomes final and non-appealable. Nothing in this subsection is intended to constitute a delegation of the police powers or governmental authority of the City, and the City reserves the right, at all times, to control its proceedings in eminent domain.

13.9 Payee Information. With respect to any and every type of payment/remittance due to be paid at any time by the City to the Developer under this Agreement, the name of the payee for such payment shall be MM Anna 325, LLC, and the payment/remittance shall be sent or delivered to the following address:

MM Anna 325, LLC
1800 Valley View Lane

Suite 300
Farmers Branch, Texas 75234

Developer may change the name of the payee and/or address set forth above by delivering written notice to the City designating a new payee and/or address.

ARTICLE XIV
ADDITIONAL PROVISIONS

14.1 Recitals. The recitals contained in this Agreement: (a) are true and correct as of the Effective Date; (b) form the basis upon which the Parties negotiated and entered into this Agreement; and (c) reflect the final intent of the Parties with regard to the subject matter of this Agreement. In the event it becomes necessary to interpret any provision of this Agreement, the intent of the Parties, as evidenced by the recitals, shall be taken into consideration and, to the maximum extent possible, given full effect. The Parties have relied upon the recitals as part of the consideration for entering into this Agreement and, but for the intent of the Parties reflected by the recitals, would not have entered into this Agreement.

14.2 Notices. Any notice, submittal, payment or instrument required or permitted by this Agreement to be given or delivered to any party shall be deemed to have been received when personally delivered or 72 hours following deposit of the same in any United States Post Office, registered or certified mail, postage prepaid, addressed as follows:

To the City:	City of Anna, Texas Attn: City Manager 111 N. Powell Parkway Anna, Texas 75409
With a copy to:	Wolfe, Tidwell & McCoy, LLP Attn: Clark McCoy 2591 Dallas Parkway, Suite 300 Frisco, Texas 75034
And to:	McCall, Parkhurst & Horton L.L.P. Attn: Rodolfo Segura Jr 717 North Harwood, Suite 900 Dallas, TX 75201
To the Developer:	MM Anna 325, LLC Attn: Mehrdad Moayed 1800 Valley View Lane, Suite 300 Farmers Branch, Texas 75234
With a copy to:	Miklos Cinclair, PLLC Attn: Robert Miklos 1800 Valley View Lane, Suite 360 Farmers Branch, Texas 75234

To the In-City Property Owner: BFB ANA 40 Acres, LLC
Attn: Brooks F. Bock
1701 Directors Boulevard
Austin, Texas 78744
Brooks@strategacapital.com

And to: Centurion American
Attn: Trevor Kollinger
1800 Valley View Lane, Suite 300
Farmers Branch, Texas 75234

Any Party may change its address or addresses for delivery of notice by delivering written notice of such change of address to the other Party.

14.3 Interpretation. The Parties acknowledge that each has been actively involved in negotiating this Agreement. Accordingly, the rule of construction that any ambiguities are to be resolved against the drafting Party will not apply to interpreting this Agreement. In the event of any dispute over the meaning or application of any provision of this Agreement, the provision will be interpreted fairly and reasonably and neither more strongly for nor against any Party, regardless of which Party originally drafted the provision.

14.4 Time. In this Agreement, time is of the essence and compliance with the times for performance herein is required.

14.5 Authority and Enforceability. The City represents and warrants that this Agreement has been approved by official action by the City Council of the City in accordance with all applicable public notice requirements (including, but not limited to, notices required by the Texas Open Meetings Act, as such act was in effect on the date of such official action) and that the individual executing this Agreement on behalf of the City has been duly authorized to do so. The Developer represents and warrants that this Agreement has been approved by appropriate action of the Developer, and that each individual executing this Agreement on behalf of the Developer has been duly authorized to do so. Each Party respectively acknowledges and agrees that this Agreement is binding upon such Party and is enforceable against such Party, in accordance with its terms and conditions and to the extent provided by law.

14.6 Severability. This Agreement shall not be modified or amended except in writing signed by the Parties. If any provision of this Agreement is determined by a court of competent jurisdiction to be unenforceable for any reason, then: (a) such unenforceable provision shall be deleted from this Agreement; (b) the unenforceable provision shall, to the extent possible and upon mutual agreement of the parties, be rewritten to be enforceable and to give effect to the intent of the Parties; and (c) the remainder of this Agreement shall remain in full force and effect and shall be interpreted to give effect to the intent of the Parties.

14.7 Applicable Law; Venue. This Agreement is entered into pursuant to, and is to be construed and enforced in accordance with, the laws of the State of Texas, and all obligations of

the Parties are performable in Collin County. Exclusive venue for any action related to, arising out of, or brought in connection with this Agreement shall be in the Collin County District Court.

14.8 Non Waiver. Any failure by a Party to insist upon strict performance by the other Party of any material provision of this Agreement shall not be deemed a waiver thereof, and the Party shall have the right at any time thereafter to insist upon strict performance of any and all provisions of this Agreement. No provision of this Agreement may be waived except by writing signed by the Party waiving such provision. Any waiver shall be limited to the specific purposes for which it is given. No waiver by any Party of any term or condition of this Agreement shall be deemed or construed to be a waiver of any other term or condition or subsequent waiver of the same term or condition.

14.9 Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed an original and constitute one and the same instrument.

14.10 Exhibits. The following exhibits are attached to this Agreement and are incorporated herein for all purposes:

Exhibit A-1	Metes and Bounds Description and Depiction of the Property
Exhibit A-2	Metes and Bounds Description and Depiction of the In-City Property
Exhibit A-3	Metes and Bounds Description and Depiction of the PID Property
Exhibit B	Authorized Improvements with their Budgeted Costs
Exhibit C	Concept Plan
Exhibit C-1	Amenity Center Concept Plan
Exhibit C-2	Neighborhood Trail Plan
Exhibit D	Development Standards
Exhibit E-1	Roadway Improvements
Exhibit E-2	Hurricane Creek Regional Trunk Sewer Improvements
Exhibit E-3	Waterline Improvements
Exhibit F	Home Buyer Disclosure Program
Exhibit G	Landowner Agreement
Exhibit H	City PID Bond financing and TIRZ Contribution Analysis - draft for illustration purposes only

14.11 Force Majeure. Each Party shall use good faith, due diligence and reasonable care in the performance of its respective obligations under this Agreement, and time shall be of the essence in such performance; however, in the event a Party is unable, due to force majeure, to perform its obligations under this Agreement, then the obligations affected by the force majeure shall be temporarily suspended. Within ten (10) business days after the occurrence of a force majeure, the Party claiming the right to temporarily suspend its performance, shall give Notice to all the Parties, including a detailed explanation of the force majeure and a description of the action that will be taken to remedy the force majeure and resume full performance at the earliest possible time. The term “force majeure” shall include events or circumstances that are not within the reasonable control of the Party whose performance is suspended and that could not have been avoided by such Party with the good faith exercise of good faith, due diligence and reasonable care.

14.12 Complete Agreement. This Agreement embodies the entire Agreement between the Parties and cannot be varied or terminated except as set forth in this Agreement, or by written agreement of the City and Developer expressly amending the terms of this Agreement.

14.13 Consideration. This Agreement is executed by the Parties hereto without coercion or duress and for substantial consideration, the sufficiency of which is hereby acknowledged.

[SIGNATURES PAGES FOLLOW, REMAINDER OF THIS PAGE INTENTIONALLY LEFT
BLANK]

EXECUTED BY THE PARTIES TO BE EFFECTIVE ON THE EFFECTIVE DATE:

CITY OF ANNA

By: _____
Name: Nate Pike
Title: Mayor
Date: _____

APPROVED AS TO FORM

Name: Clark McCoy
Title: City Attorney

STATE OF TEXAS §
 §
COUNTY OF COLLIN §

 This instrument was acknowledged before me on the ____ day of _____, 2019 by
Nate Pike, Mayor of the City of Anna, Texas on behalf of said City.

(SEAL)

Notary Public, State of Texas

Name printed or typed

Commission Expires: _____

DEVELOPER:

MM Anna 325, LLC,
a Texas limited liability company

By: MMM Ventures, LLC,
a Texas limited liability company
Its Manager

By: 2M Ventures, LLC,
a Delaware limited liability company
Its Manager

By: 
Name: Mehrdad Moayed
Its: Manager

STATE OF TEXAS §
 §
COUNTY OF DALLAS §

This instrument was acknowledged before me on the 9 day of Jun,
2019 by Mehrdad Moayed, Manager of 2M Ventures, LLC, as Manager of MMM Ventures, LLC,
as Manager of MM Anna 325, LLC, a Texas limited liability company on behalf of said company.




Notary Public, State of Texas

IN-CITY PROPERTY OWNER:

BFB Ana 40 Acres, LLC
a Texas limited liability company

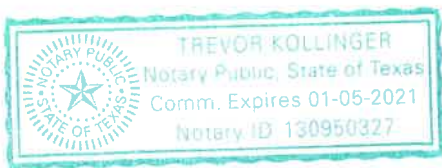
By: BFB Ana Holdings, LLC
a Texas limited liability company
Its Manager

By: The Brooks F. Bock Living Trust
Its Manager

By: 
Name: Brooks F. Bock
Its: Trustee

STATE OF TEXAS §
 §
COUNTY OF Dallas §

This instrument was acknowledged before me on June 9 2020,
by Brooks F. Bock, Trustee of the Brooks F. Bock Living Trust, as Manager of BFB Ana Holdings, LLC, a Texas limited liability company, as Manager of BFB Ana 40 Acres, LLC, a Texas limited liability company, on behalf of said company.




Notary Public, State of Texas

Exhibit A-1

METES AND BOUNDS DESCRIPTION AND DEPICTION OF THE PROPERTY

EXHIBIT A-3: "PID PROPERTY" 290.877 ACRES

BEING THAT CERTAIN TRACT OF LAND SITUATED IN THE Z. ROBERTS SURVEY, ABSTRACT NUMBER 760, THE J. BOYLE SURVEY, ABSTRACT NUMBER 105, THE J.M. KINCADE SURVEY, ABSTRACT NUMBER 509, THE J. ELLET SURVEY, ABSTRACT NUMBER 296, AND THE W. RATTAN SURVEY, ABSTRACT NUMBER 752 COLLIN COUNTY, TEXAS, BEING ALL OF THAT LAND DESCRIBED BY DEED TO MM ANNA 325, LLC, (TRACT 1) RECORDED IN INSTRUMENT NUMBER 20190411000386110, OFFICIAL PUBLIC RECORDS, COLLIN COUNTY, TEXAS, AND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING AT THE MOST NORTHERLY NORTHEAST CORNER OF SAID TRACT 1;

THENCE S 01°39'27"E, 46.23 FEET;

THENCE S 00°07'45"W, 239.62 FEET;

THENCE S 00°02'54"E, 240.98 FEET;

THENCE S 00°16'10"W, 240.11 FEET;

THENCE S 00°05'15"W, 193.73 FEET;

THENCE S 00°09'49"W, 159.37 FEET;

THENCE S 03°07'30"W, 136.17 FEET;

THENCE S 00°10'28"W, 117.40 FEET;

THENCE S 89°51'18"E, 18.32 FEET;

THENCE N 55°45'18"E, 13.27 FEET;

THENCE N 29°20'54"E, 61.95 FEET;

THENCE N 82°59'12"E, 29.11 FEET;

THENCE S 76°48'02"E, 38.97 FEET;

THENCE N 81°31'02"E, 42.52 FEET;

THENCE N 64°56'10"E, 12.15 FEET;

THENCE S 30°32'08"E, 25.22 FEET;

THENCE S 00°14'15"W, 13.28 FEET;

THENCE S 32°18'58"E, 21.36 FEET;

THENCE S 78°07'20"E, 14.66 FEET;

THENCE N 10°26'29"E, 17.31 FEET;

THENCE N 53°35'10"E, 21.88 FEET;

THENCE N 78°49'58"E, 15.44 FEET;

THENCE S 57°06'59"E, 24.14 FEET;

THENCE S 41°22'42"E, 62.38 FEET;

THENCE S 01°13'29"E, 28.82 FEET;

THENCE S 00°45'46"W, 119.18 FEET;

THENCE S 88°56'22"E, 602.59 FEET, TO THE NORTHEAST CORNER OF SAID MILLER AND PAYNE TRACT
RECORDED IN INSTRUMENT NUMBER 20110401000341650 AND BEING THE NORTHWEST CORNER OF
AFOREMENTIONED MILLER TRACT RECORDED IN VOLUME 2667, PAGE 671;

THENCE N 89°49'51"E, 933.16 FEET;

THENCE N 89°46'06"E, 488.86 FEET, PASSING THE NORTHEAST CORNER OF SAID MILLER TRACT AND BEING
THE NORTHWEST CORNER OF AFOREMENTIONED MILLER TRACT RECORDED IN VOLUME 1068, PAGE 507;

THENCE S 03°23'35"E, 989.07 FEET, TO THE BEGINNING OF A CURVE TO THE RIGHT;

THENCE WITH SAID CURVE TO THE RIGHT, AN ARC DISTANCE OF 277.01 FEET, THROUGH A CENTRAL ANGLE OF 38°31'54", HAVING A RADIUS OF 411.91 FEET, THE LONG CHORD WHICH BEARS S 15°52'22"W, 271.82 FEET;

THENCE S 35°08'19"W, 286.03 FEET;

THENCE S 06°06'41"W, 811.64 FEET;

THENCE S 89°56'10"W, 1154.19 FEET;

THENCE N 00°10'56"E, 232.21 FEET;

THENCE S 89°09'27"W, 794.06 FEET;

THENCE S 89°39'13"W, 1753.66 FEET;

THENCE S 89°55'39"W, 746.70 FEET;

THENCE S 89°51'39"W, 315.81 FEET;

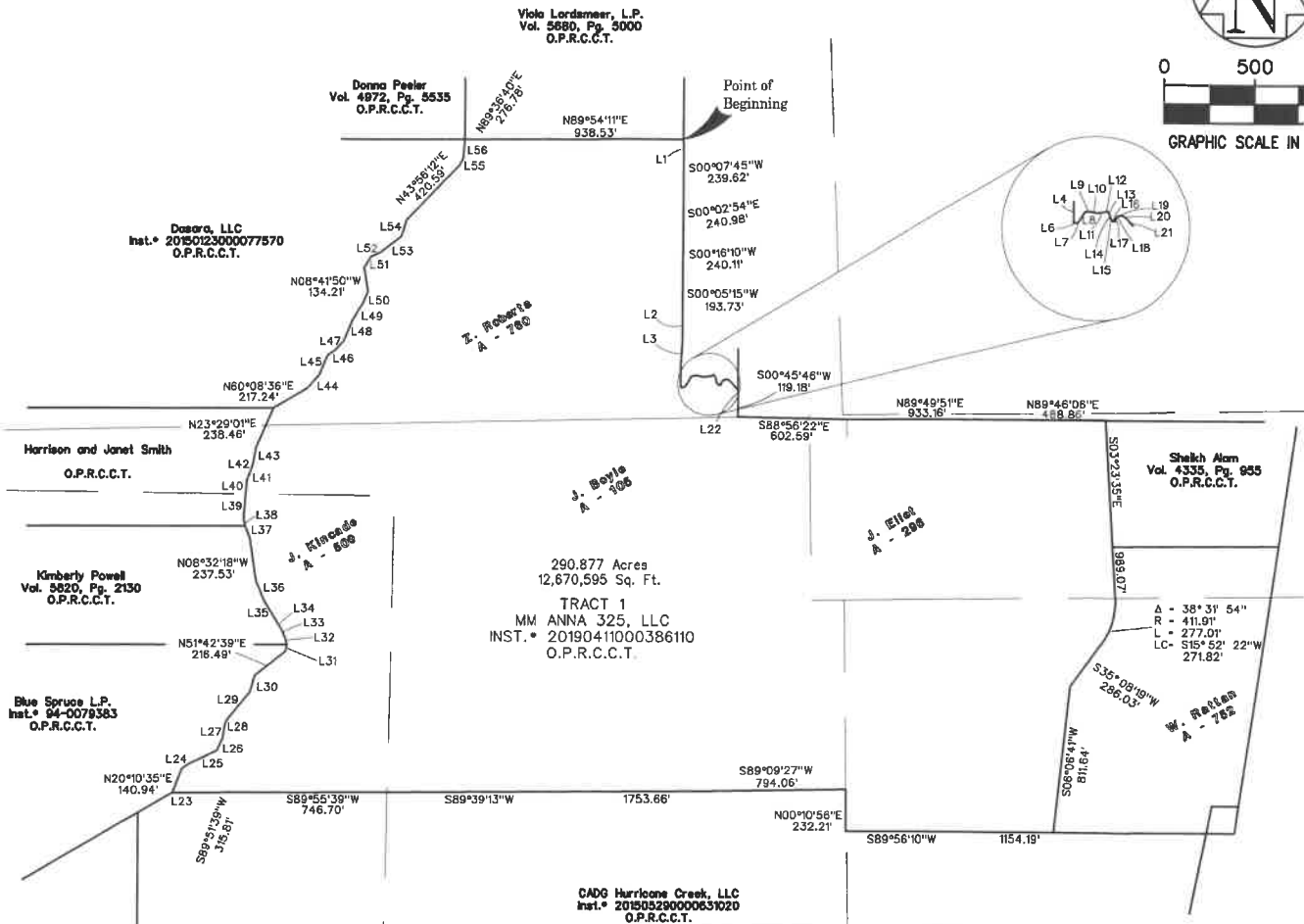
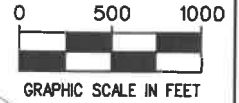
THENCE S 89°09'41"W, 111.58 FEET;

THENCE N 20°10'35"E, 140.94 FEET;
THENCE N 55°00'59"E, 55.72 FEET;
THENCE N 65°08'55"E, 164.54 FEET;
THENCE N 24°07'01"E, 75.15 FEET;
THENCE N 08°28'12"E, 68.74 FEET;
THENCE N 18°33'24"E, 30.27 FEET;
THENCE N 39°07'19"E, 204.32 FEET;
THENCE N 15°58'26"E, 96.33 FEET;
THENCE N 51°42'39"E, 216.49 FEET;
THENCE N 10°14'20"E, 39.18 FEET;
THENCE N 16°20'38"W, 43.77 FEET;
THENCE N 25°38'17"W, 56.21 FEET;
THENCE N 30°23'51"W, 42.71 FEET;
THENCE N 30°57'56"W, 141.18 FEET;
THENCE N 22°04'56"W, 112.22 FEET;
THENCE N 08°32'18"W, 237.53 FEET;
THENCE N 21°21'56"W, 73.37 FEET;
THENCE N 12°45'32"W, 39.65 FEET;
THENCE N 04°05'51"E, 114.57 FEET;
THENCE N 05°37'47"E, 102.03 FEET;
THENCE N 20°12'50"E, 61.91 FEET;
THENCE N 15°56'54"E, 37.72 FEET;
THENCE N 10°49'32"E, 87.03 FEET;
THENCE N 23°29'01"E, 238.46 FEET;
THENCE N 60°08'36"E, 217.24 FEET;

THENCE N 40°36'12"E, 97.96 FEET;
THENCE N 22°54'02"E, 117.90 FEET;
THENCE N 54°18'35"E, 58.08 FEET;
THENCE N 42°30'22"E, 62.53 FEET;
THENCE N 22°13'30"E, 121.36 FEET;
THENCE N 31°23'35"E, 106.80 FEET;
THENCE N 24°37'01"E, 76.66 FEET;
THENCE N 08°41'50"W, 134.21 FEET;
THENCE N 30°06'30"E, 75.08 FEET;
THENCE N 66°06'02"E, 55.48 FEET;
THENCE N 52°19'07"E, 141.40 FEET;
THENCE N 18°14'45"E, 95.78 FEET;
THENCE N 43°56'12"E, 420.59 FEET;
THENCE N 28°03'26"E, 46.51 FEET;
THENCE N 04°16'56"E, 105.49 FEET;
THENCE N 89°36'40"E, 276.78 FEET;

THENCE N 89°54'11"E, 938.53 FEET TO THE POINT OF BEGINNING AND CONTAINING
12,670,595 SQUARE FEET OR 290.877 ACRES OF LAND MORE OR LESS.

"This document was prepared under 22 TAC 663.21, does not reflect the results of an on the ground survey, and is not to be used to convey or establish interests in real property except those rights and interests implied or established by the creation or reconfiguration of the boundary of the political subdivision for which it was prepared."



CADG Hurricane Creek, LLC
Inst. # 20150529000063020
O.P.R.C.C.T.

NO.	BEARING	DISTANCE	NO.	BEARING	DISTANCE
L1	S 01° 39' 27" E	48.23'	L36	N 22° 04' 56" W	112.22'
L2	S 00° 06' 49" W	159.37'	L37	N 21° 21' 56" W	73.37'
L3	S 03° 07' 30" W	136.17'	L38	N 12° 45' 32" W	39.65'
L4	S 00° 10' 28" W	117.40'	L39	N 04° 05' 51" E	114.57'
L5	S 89° 51' 18" E	18.32'	L40	N 05° 37' 47" E	102.03'
L6	S 55° 45' 18" E	13.27'	L41	N 20° 12' 50" E	61.91'
L7	N 29° 20' 54" E	61.95'	L42	N 15° 56' 54" E	37.72'
L8	N 82° 59' 12" E	29.11'	L43	N 10° 49' 32" E	87.03'
L9	S 76° 48' 02" E	38.97'	L44	N 40° 36' 12" E	97.96'
L10	N 81° 31' 02" E	42.52'	L45	N 22° 54' 02" E	117.80'
L11	N 64° 56' 10" E	12.15'	L46	N 54° 18' 35" E	58.08'
L12	S 30° 32' 08" E	25.22'	L47	N 42° 30' 22" E	62.53'
L13	S 00° 14' 15" W	13.28'	L48	N 22° 13' 30" E	121.36'
L14	S 32° 18' 58" E	21.38'	L49	N 31° 23' 35" E	106.80'
L15	S 78° 07' 20" E	14.66'	L50	N 24° 37' 01" E	78.66'
L16	N 10° 26' 29" E	17.31'	L51	N 30° 06' 30" E	75.08'
L17	N 53° 35' 10" E	21.88'	L52	N 66° 06' 02" E	55.48'
L18	N 78° 49' 58" E	15.44'	L53	N 52° 19' 07" E	141.40'
L19	S 57° 06' 59" E	24.14'	L54	N 18° 14' 45" E	95.78'
L20	S 41° 22' 42" E	62.38'	L55	N 28° 03' 26" E	48.51'
L21	S 01° 13' 29" E	28.82'	L56	N 04° 16' 56" E	105.49'
L22	S 89° 09' 41" W	111.58'			
L23	N 55° 00' 59" E	55.72'			
L24	N 65° 08' 55" E	164.54'			
L25	N 24° 07' 01" E	75.15'			
L26	N 08° 28' 12" E	68.74'			
L27	N 18° 33' 24" E	30.27'			
L28	N 39° 07' 19" E	204.32'			
L29	N 15° 58' 26" E	96.33'			
L30	N 10° 14' 20" E	39.18'			
L31	N 16° 20' 38" W	43.77'			
L32	N 25° 38' 17" W	56.21'			
L33	N 30° 23' 51" W	42.71'			
L34	N 30° 57' 56" W	141.18'			
L35					

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EXHIBIT A-3 "PID PROPERTY" 290.877 ACRES



JOB #: CEN18001

DRAWN BY: SRAMSEY

CHECKED BY: SRAMSEY

DATE: 11/26/2019

PAGE #: 1 OF 1

EXHIBIT A-2: "IN CITY PROPERTY" 31.964 ACRES

BEING THAT CERTAIN TRACT OF LAND SITUATED IN THE J. ELLET SURVEY, ABSTRACT NUMBER 296, AND THE W. RATTAN SURVEY, ABSTRACT NUMBER 752 COLLIN COUNTY, TEXAS, BEING ALL OF THAT TRACT OF LAND DESCRIBED BY DEED TO BFB ANA 40 ACRES, LLC, RECORDED IN INSTRUMENT NUMBER 20190412000390800, OFFICIAL PUBLIC RECORDS, COLLIN COUNTY, TEXAS, AND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING AT THE MOST SOUTHERLY SOUTHEAST CORNER OF SAID BFB ANNA 40 ACRES TRACT BEING THE SOUTHWEST CORNER OF THAT TRACT OF LAND DESCRIBED IN DEED TO AT&T CORP. RECORDED IN INSTRUMENT NUMBER 20170308000301250 OF SAID O.P.R.C.C.T. AND BEING IN THE NORTH LINE OF THAT TRACT OF LAND DESCRIBED IN DEED TO ONE ANNA TWO, LTD. RECORDED IN INSTRUMENT NUMBER 20070201000151600 OF SAID O.P.R.C.C.T.

THENCE S 89°04'42"W, 832.53 FEET;

THENCE N 05°15'18"E, 811.64 FEET;

THENCE N 34°16'56"E, 286.03 FEET TO THE BEGINNING OF A CURVE TO THE LEFT;

THENCE WITH SAID CURVE TO THE LEFT, AN ARC DISTANCE OF 277.01 FEET, THROUGH A CENTRAL ANGLE OF 38°31'54", HAVING A RADIUS OF 411.91 FEET, THE LONG CHORD WHICH BEARS N15°00'59"E, 271.82 FEET;

THENCE N 04°14'58"W, 285.02 FEET;

THENCE N 88°44'00"E, 810.23 FEET;

THENCE S 08°01'37"E, 97.91 FEET;

THENCE S 03°36'10"W, 200.49 FEET;

THENCE S 07°36'25"W, 1,157.29 FEET;

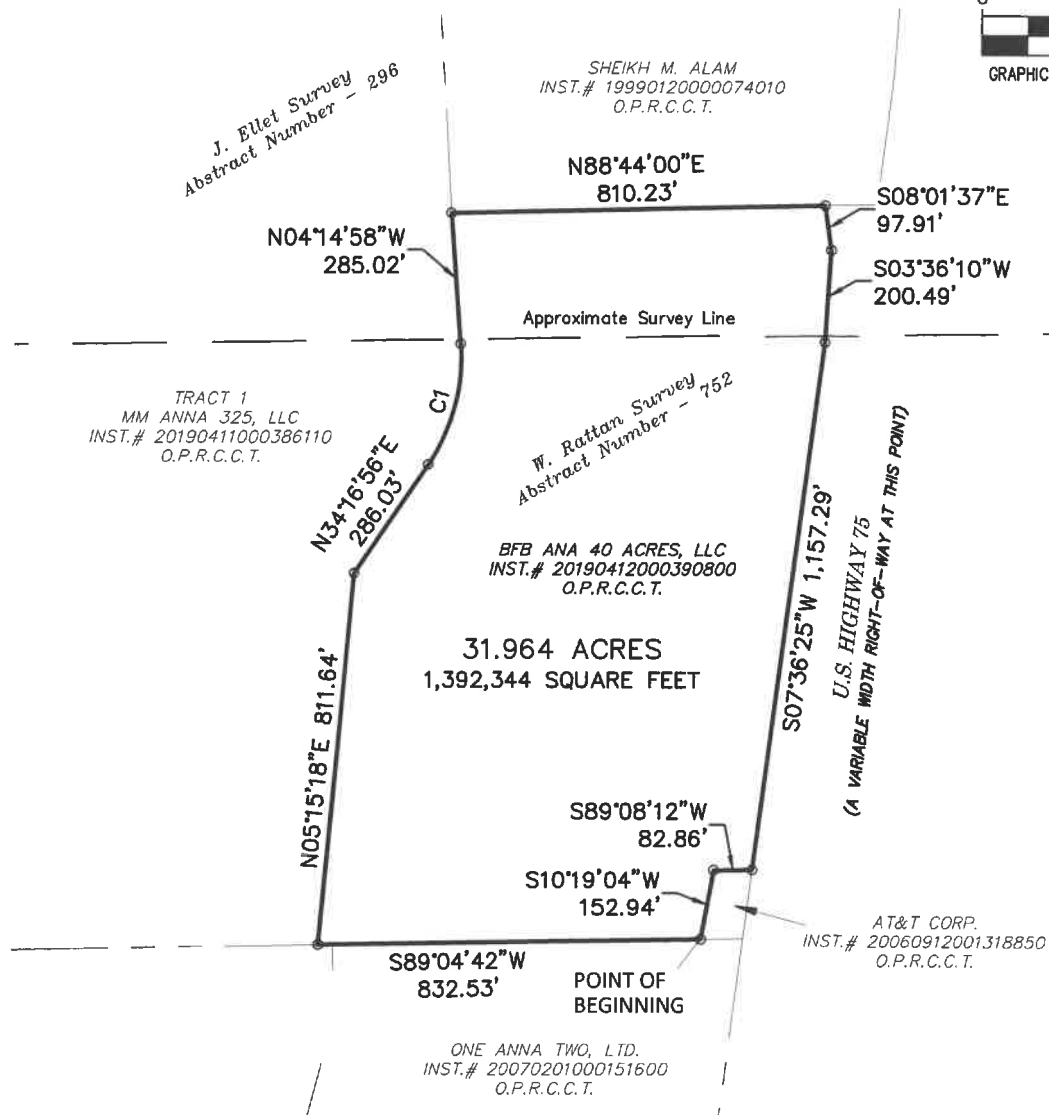
THENCE S 89°08'12"W, 82.86 FEET;

THENCE S 10°19'04"W, 152.94 FEET TO THE POINT OF BEGINNING AND CONTAINING 1,392,344 SQUARE FEET OR 31.964 ACRES OF LAND MORE OR LESS.

"This document was prepared under 22 TAC 663.21, does not reflect the results of an on the ground survey, and is not to be used to convey or establish interests in real property except those rights and interests implied or established by the creation or reconfiguration of the boundary of the political subdivision for which it was prepared."

CURVE TABLE

NO.	DELTA	RADIUS	LENGTH	CHORD BEARING	CHORD
C1	38°31'54"	411.91'	277.01'	N15°00'59"E	271.82'



"This document was prepared under 22 TAC 663.21, does not reflect the results of an on the ground survey, and is not to be used to convey or establish interests in real property except those rights and interests implied or established by the creation or reconfiguration of the boundary of the political subdivision for which it was prepared."

EXHIBIT A-2 "IN CITY PROPERTY"
31.964 ACRES



Exhibit A-2
METES AND BOUNDS DESCRIPTION AND DEPICTION OF THE IN-CITY
PROPERTY

EXHIBIT A-2: "IN CITY PROPERTY" 31.964 ACRES

BEING THAT CERTAIN TRACT OF LAND SITUATED IN THE J. ELLET SURVEY, ABSTRACT NUMBER 296, AND THE W. RATTAN SURVEY, ABSTRACT NUMBER 752 COLLIN COUNTY, TEXAS, BEING ALL OF THAT TRACT OF LAND DESCRIBED BY DEED TO BFB ANA 40 ACRES, LLC, RECORDED IN INSTRUMENT NUMBER 20190412000390800, OFFICIAL PUBLIC RECORDS, COLLIN COUNTY, TEXAS, AND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING AT THE MOST SOUTHERLY SOUTHEAST CORNER OF SAID BFB ANNA 40 ACRES TRACT BEING THE SOUTHWEST CORNER OF THAT TRACT OF LAND DESCRIBED IN DEED TO AT&T CORP. RECORDED IN INSTRUMENT NUMBER 20170308000301250 OF SAID O.P.R.C.C.T. AND BEING IN THE NORTH LINE OF THAT TRACT OF LAND DESCRIBED IN DEED TO ONE ANNA TWO, LTD. RECORDED IN INSTRUMENT NUMBER 20070201000151600 OF SAID O.P.R.C.C.T.

THENCE S 89°04'42"W, 832.53 FEET;

THENCE N 05°15'18"E, 811.64 FEET;

THENCE N 34°16'56"E, 286.03 FEET TO THE BEGINNING OF A CURVE TO THE LEFT;

THENCE WITH SAID CURVE TO THE LEFT, AN ARC DISTANCE OF 277.01 FEET, THROUGH A CENTRAL ANGLE OF 38°31'54", HAVING A RADIUS OF 411.91 FEET, THE LONG CHORD WHICH BEARS N15°00'59"E, 271.82 FEET;

THENCE N 04°14'58"W, 285.02 FEET;

THENCE N 88°44'00"E, 810.23 FEET;

THENCE S 08°01'37"E, 97.91 FEET;

THENCE S 03°36'10"W, 200.49 FEET;

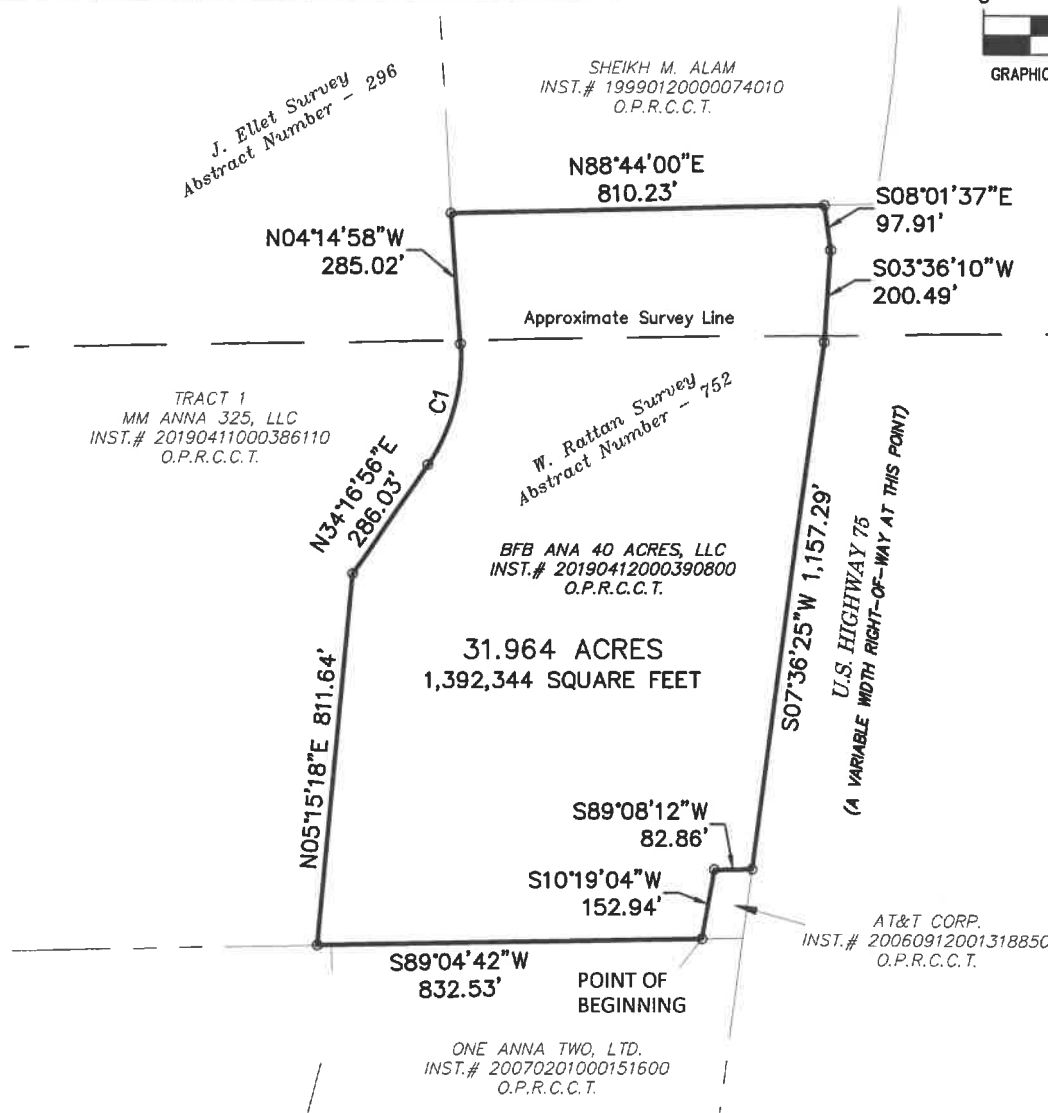
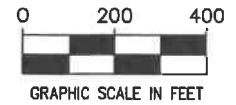
THENCE S 07°36'25"W, 1,157.29 FEET;

THENCE S 89°08'12"W, 82.86 FEET;

THENCE S 10°19'04"W, 152.94 FEET TO THE POINT OF BEGINNING AND CONTAINING 1,392,344 SQUARE FEET OR 31.964 ACRES OF LAND MORE OR LESS.

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CURVE TABLE					
NO.	DELTA	RADIUS	LENGTH	CHORD BEARING	CHORD
C1	38°31'54"	411.91'	277.01'	N15°00'59"E	271.82'



"This document was prepared under 22 TAC 663.21, does not reflect the results of an on the ground survey, and is not to be used to convey or establish interests in real property except those rights and interests implied or established by the creation or reconfiguration of the boundary of the political subdivision for which it was prepared."

EXHIBIT A-2 "IN CITY PROPERTY"
31.964 ACRES



PELOTON
LAND SOLUTIONS

11000 FRISCO ST. SUITE 400
FRISCO, TX 75033 469-213-1800

JOB #: CEN18001

DRAWN BY: MYOST

CHECKED BY: SRAMSEY

DATE: 6/08/2020

PAGE #: 1 OF 1

Exhibit A-3
METES AND BOUNDS DESCRIPTION AND DEPICTION OF THE PID PROPERTY

EXHIBIT A-3: "PID PROPERTY" 290.877 ACRES

BEING THAT CERTAIN TRACT OF LAND SITUATED IN THE Z. ROBERTS SURVEY, ABSTRACT NUMBER 760, THE J. BOYLE SURVEY, ABSTRACT NUMBER 105, THE J.M. KINCADE SURVEY, ABSTRACT NUMBER 509, THE J. ELLET SURVEY, ABSTRACT NUMBER 296, AND THE W. RATTAN SURVEY, ABSTRACT NUMBER 752 COLLIN COUNTY, TEXAS, BEING ALL OF THAT LAND DESCRIBED BY DEED TO MM ANNA 325, LLC, (TRACT 1) RECORDED IN INSTRUMENT NUMBER 20190411000386110, OFFICIAL PUBLIC RECORDS, COLLIN COUNTY, TEXAS, AND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING AT THE MOST NORTHERLY NORTHEAST CORNER OF SAID TRACT 1;

THENCE S 01°39'27"E, 46.23 FEET;

THENCE S 00°07'45"W, 239.62 FEET;

THENCE S 00°02'54"E, 240.98 FEET;

THENCE S 00°16'10"W, 240.11 FEET;

THENCE S 00°05'15"W, 193.73 FEET;

THENCE S 00°09'49"W, 159.37 FEET;

THENCE S 03°07'30"W, 136.17 FEET;

THENCE S 00°10'28"W, 117.40 FEET;

THENCE S 89°51'18"E, 18.32 FEET;

THENCE N 55°45'18"E, 13.27 FEET;

THENCE N 29°20'54"E, 61.95 FEET;

THENCE N 82°59'12"E, 29.11 FEET;

THENCE S 76°48'02"E, 38.97 FEET;

THENCE N 81°31'02"E, 42.52 FEET;

THENCE N 64°56'10"E, 12.15 FEET;

THENCE S 30°32'08"E, 25.22 FEET;

THENCE S 00°14'15"W, 13.28 FEET;

THENCE S 32°18'58"E, 21.36 FEET;

THENCE S 78°07'20"E, 14.66 FEET;

THENCE N 10°26'29"E, 17.31 FEET;

THENCE N 53°35'10"E, 21.88 FEET;

THENCE N 78°49'58"E, 15.44 FEET;

THENCE S 57°06'59"E, 24.14 FEET;

THENCE S 41°22'42"E, 62.38 FEET;

THENCE S 01°13'29"E, 28.82 FEET;

THENCE S 00°45'46"W, 119.18 FEET;

THENCE S 88°56'22"E, 602.59 FEET, TO THE NORTHEAST CORNER OF SAID MILLER AND PAYNE TRACT
RECORDED IN INSTRUMENT NUMBER 20110401000341650 AND BEING THE NORTHWEST
CORNER OF
AFOREMENTIONED MILLER TRACT RECORDED IN VOLUME 2667, PAGE 671;

THENCE N 89°49'51"E, 933.16 FEET;

THENCE N 89°46'06"E, 488.86 FEET, PASSING THE NORTHEAST CORNER OF SAID MILLER
TRACT AND BEING
THE NORTHWEST CORNER OF AFOREMENTIONED MILLER TRACT RECORDED IN
VOLUME 1068, PAGE 507;

THENCE S 03°23'35"E, 989.07 FEET, TO THE BEGINNING OF A CURVE TO THE RIGHT;

THENCE WITH SAID CURVE TO THE RIGHT, AN ARC DISTANCE OF 277.01 FEET, THROUGH
A CENTRAL ANGLE OF 38°31'54", HAVING A RADIUS OF 411.91 FEET, THE LONG CHORD
WHICH BEARS S 15°52'22"W, 271.82 FEET;

THENCE S 35°08'19"W, 286.03 FEET;

THENCE S 06°06'41"W, 811.64 FEET;

THENCE S 89°56'10"W, 1154.19 FEET;

THENCE N 00°10'56"E, 232.21 FEET;

THENCE S 89°09'27"W, 794.06 FEET;

THENCE S 89°39'13"W, 1753.66 FEET;

THENCE S 89°55'39"W, 746.70 FEET;

THENCE S 89°51'39"W, 315.81 FEET;

THENCE S 89°09'41"W, 111.58 FEET;

THENCE N 20°10'35"E, 140.94 FEET;
THENCE N 55°00'59"E, 55.72 FEET;
THENCE N 65°08'55"E, 164.54 FEET;
THENCE N 24°07'01"E, 75.15 FEET;
THENCE N 08°28'12"E, 68.74 FEET;
THENCE N 18°33'24"E, 30.27 FEET;
THENCE N 39°07'19"E, 204.32 FEET;
THENCE N 15°58'26"E, 96.33 FEET;
THENCE N 51°42'39"E, 216.49 FEET;
THENCE N 10°14'20"E, 39.18 FEET;
THENCE N 16°20'38"W, 43.77 FEET;
THENCE N 25°38'17"W, 56.21 FEET;
THENCE N 30°23'51"W, 42.71 FEET;
THENCE N 30°57'56"W, 141.18 FEET;
THENCE N 22°04'56"W, 112.22 FEET;
THENCE N 08°32'18"W, 237.53 FEET;
THENCE N 21°21'56"W, 73.37 FEET;
THENCE N 12°45'32"W, 39.65 FEET;
THENCE N 04°05'51"E, 114.57 FEET;
THENCE N 05°37'47"E, 102.03 FEET;
THENCE N 20°12'50"E, 61.91 FEET;
THENCE N 15°56'54"E, 37.72 FEET;
THENCE N 10°49'32"E, 87.03 FEET;
THENCE N 23°29'01"E, 238.46 FEET;
THENCE N 60°08'36"E, 217.24 FEET;

THENCE N 40°36'12"E, 97.96 FEET;

THENCE N 22°54'02"E, 117.90 FEET;

THENCE N 54°18'35"E, 58.08 FEET;

THENCE N 42°30'22"E, 62.53 FEET;

THENCE N 22°13'30"E, 121.36 FEET;

THENCE N 31°23'35"E, 106.80 FEET;

THENCE N 24°37'01"E, 76.66 FEET;

THENCE N 08°41'50"W, 134.21 FEET;

THENCE N 30°06'30"E, 75.08 FEET;

THENCE N 66°06'02"E, 55.48 FEET;

THENCE N 52°19'07"E, 141.40 FEET;

THENCE N 18°14'45"E, 95.78 FEET;

THENCE N 43°56'12"E, 420.59 FEET;

THENCE N 28°03'26"E, 46.51 FEET;

THENCE N 04°16'56"E, 105.49 FEET;

THENCE N 89°36'40"E, 276.78 FEET;

THENCE N 89°54'11"E, 938.53 FEET TO THE POINT OF BEGINNING AND CONTAINING
12,670,595 SQUARE FEET OR 290.877 ACRES OF LAND MORE OR LESS.

Exhibit B
AUTHORIZED IMPROVEMENTS WITH THEIR BUDGETED COSTS



OPINION OF PROBABLE COST
CENTURION AMERICAN - SHERLEY TRACT, PHASE 1
City of Anna, Collin County, Texas

348 TOTAL LOTS
61.3 SINGLE FAMILY/TH ACRES
9.0 THOROUGHFARE ACRES
11,250 LOCAL LENGTH OF STREETS (FT)
5,920 MINOR ARTERIAL LENGTH (FT)

Project Number: CEN18001
Prepared For: CENTURION AMERICAN
Date: April 30, 2020
File Name: SHERLEY - PHASE 1
Prepared by: THM
Checked by: CAL

CONSTRUCTION COSTS

SUMMARY	MI Costs	PID Costs	Private Costs	Total Costs
DESCRIPTION				
1 - Earthwork	\$132,960	\$300,480	\$558,035	\$991,475
2 - Retaining Walls	\$0	\$0	\$339,330	\$339,330
3 - Water	\$390,689	\$969,453	\$0	\$1,360,142
4 - Sanitary Sewer	\$0	\$925,840	\$0	\$925,840
5 - Storm	\$668,780	\$735,270	\$0	\$1,404,050
6 - Paving	\$1,558,867	\$1,883,780	\$0	\$3,442,647
7 - Street Lights & Signs	\$177,800	\$87,675	\$0	\$265,475
8 - Screen Walls & Entry Monument	\$0	\$345,000	\$0	\$345,000
9 - Landscaping and Irrigation	\$0	\$59,960	\$0	\$59,960
10 - Amenities	-	-	-	\$0
11 - District Formation	-	-	-	\$0
TOTAL CONSTRUCTION COSTS	\$2,929,096	\$5,307,458	\$897,365	\$9,133,919

MISCELLANEOUS COSTS

DESCRIPTION	QTY	UNIT	AMOUNT	AMOUNT	AMOUNT	TOTAL
Engineering & Surveying (12% of items 1-6 above)	1	LS	\$330,156	\$577,779	\$66,964	\$974,898
SWPPP (plan preparation & inspections)	1	LS	\$9,000	\$6,000	\$6,000	\$21,000
Preliminary Platting Fee (\$325 + \$5/LOT)	1	LS	\$2,065	\$0	\$0	\$2,065
Final Platting Fee (\$325 + \$5/LOT)	1	LS	\$2,065	\$0	\$0	\$2,065
Maintenance Bond (2% of Pvg & Util Contracts)	2%	%	\$52,370	\$90,290	\$0	\$142,660
Engineering Review Fee	1	LS	\$2,500	\$0	\$0	\$2,500
Inspection Fee	4%	%	\$117,160	\$212,300	\$35,890	\$365,350
Geotechnical Testing (10% of Earthwork)	10%	%	\$13,300	\$30,050	\$55,800	\$99,150
12 - TOTAL MISC. COSTS			\$528,616	\$916,419	\$164,654	\$1,609,688

SUMMARY

Construction Costs			\$2,929,096	\$5,307,458	\$897,365	\$9,133,919
Miscellaneous Costs			\$528,616	\$916,419	\$164,654	\$1,609,688
13 - Contingency Costs	5%		\$172,886	\$311,194	\$53,101	\$537,180
NET PROJECT COSTS			\$3,630,600	\$6,535,070	\$1,115,120	\$11,280,790

Per Acre: \$184,026
Per Lot: \$32,416

Bv/Checked	Description	Date	Previous Cost
AM	Original Estimate	DK Landplan 12/3/2018	\$ 10,808,289
CAL	Revised Landplan	DK Landplan 8/2/2019	\$ 3,983,670
THM	Revised phase 1 limits	DK Landplan 8/9/2019	\$ 5,223,470
CAL	Revised unit costs and inspection fees	DK Landplan 10/14/2019	\$ 11,322,720
MPP	Checked/revised cell formulas	DK Landplan 11/26/2019	\$ 12,860,980
MPP	Deleted 30" MI sewer line	DK Landplan 4/30/2020	\$ 12,861,310

GENERAL NOTES (PAGE 1)

- 1) This estimate is based on the land plan prepared by Peloton Land Solutions dated 7/18/19. Actual quantities will be determined at the conclusion of the final construction plans.
- 2) Earthwork quantities do not include costs for rock excavation. 2' of cut across the entire site was used for the purposes of determining earthwork. A preliminary geotechnical was not cross referenced for this task
- 3) Sidewalks adjacent to residential lots are excluded from the cost estimate. Sidewalks are assumed to be constructed by the home builder, except to where adjacent to park detention or open space. ADA ramps are required to be built by the developer and are included in this estimate.
- 4) All fees need to be verified by the City of Anna.
- 5) Impact fees and Park fees are not included in this estimate.
- 6) Franchise costs are not included in this estimate.
- 7) This estimate does not include costs for tree mitigation.
- 8) Costs for exposed beams have been excluded from this estimate.
- 9) The lot grading assumptions are as follows: The use of a maximum 1' exposed beam, a maximum backyard slope of 10:1, 1% minimum grade, and a 3:1 maximum slope of side yards.
- 10) This estimate does not include moisture conditioning. Should it be necessary, the actual cost would be dependent on the final geotechnical report. No street moisture conditioning was included in this estimate.
- 11) Cost estimate does not include costs for detention. A preliminary downstream analysis has not been conducted. This cost estimate assumes Oncor will allow for utility crossings within their easement
- 12) This cost estimate assumes for the 12" offsite waterline to be looped into an existing waterlines at the north ends of Standridge Blvd. and Shadybrook Trail, as constructed with Villages of Hurricane Creek, Phase 1
- 13) Costs shown herein exclude interest, legal fees, other services provided by others, off-site sanitary sewer pro-rata, off-site water line improvements, telephone service, off-site easement preparation & procurement, impact fees, or other costs not specifically addressed, rock excavation, jurisdictional determination and permit processing, and brick pavers. Engineering costs do not include cost for staking retaining walls.
- 14) Since the design professional has no control over the cost of labor, materials, or equipment, or over the contractor's method of determining prices, or over competitive bidding or market conditions, his opinions of probable development cost provided for herein are to be made on the basis of his experience and qualifications. These opinions represent his best judgment as a design professional familiar with the construction industry. However, the design professional cannot and does not guarantee that proposals, bids, or the development cost will not vary from opinions of probable cost prepared by him. If the owner wishes greater assurance as to the development cost, he shall employ an independent cost estimator.
- 15) This estimate has been modified to reflect City of Anna being responsible for constructing the Hurricane Creek sanitary sewer lines (Projects D & E) as shown on the Conceptual Alignment Exhibit dated May 2018. No costs for this construction are contained within this estimate.

MI COSTS

OFFSITE EXCAVATION (STANDRIDGE PKWY., E-W COLLECTOR AND SHADYBROOK TRAIL)				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
Clear, Strip & Grub	9.00	AC	2,500.00	22,500.00
Excavation (2 foot Cut)	35,080	CY	2.50	87,700.00
Silt Fence	11,840	LF	1.50	17,760.00
Removal & Disposal of Unsuitable Materials	1	LS	5,000.00	5,000.00
TOTAL EXCAVATION				\$132,960.00

OFFSITE WATER (STANDRIDGE PKWY., E-W COLLECTOR AND SHADYBROOK TRAIL)				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
12" PVC Water Line (STANDRIDGE BLVD, E-W COLLECTOR)	3,790	LF	45.00	170,550.00
8" PVC Water Line (SHADYBROOK TRAIL)	2,680	LF	24.00	64,320.00
12" Gate Valve & Box	18	EA	2,400.00	43,200.00
8" Gate Valve & Box	9	EA	1,400.00	12,600.00
Fire Hydrant Assembly (inc. 6" Gate Valve)	15	EA	4,200.00	63,000.00
Cast Iron Fittings	3	TN	6,000.00	19,800.00
Concrete Blocking - Type B	10	CY	150.00	1,485.00
Trench Safety	6,470	LF	1.00	6,470.00
Testing (Excluding Geotech)	6,470	LF	1.20	7,764.00
Connect to Existing Water Stub	2	EA	750.00	1,500.00
TOTAL OFFSITE WATER				\$390,689.00

OFFSITE SANITARY SEWER MAIN ALONG HURRICANE CREEK				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
30" Sanitary Sewer Main (PS115, ASTM F679)	5,400	LF		0.00
15" Sanitary Sewer Main (SDR-35)	580	LF		0.00
12" Sanitary Sewer Main (SDR-35)	2,820	LF		0.00
6' Dia. Manhole w/ epoxy coating	12	EA		0.00
5' Dia. Manhole w/ epoxy coating	13	EA		0.00
Manhole - Vacuum test	25	EA		0.00
Connect to Existing Sewer Stub	2	EA		0.00
Trench Safety	8,800	LF		0.00
Post Construction CCTV	8,800	LF		0.00
TOTAL SEWER				\$0.00

STORM DRAINAGE (STANDRIDGE PKWY., E-W COLLECTOR AND SHADYBROOK TRAIL)				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
18" RCP	400	LF	53.00	21,200.00
21" RCP	150	LF	57.00	8,550.00
24" RCP	440	LF	67.00	29,480.00
30" RCP	40	LF	85.00	3,400.00
36" RCP	50	LF	109.00	5,450.00
42" RCP	820	LF	146.00	119,720.00
48" RCP	300	LF	176.00	52,800.00
2-5'x5' RCB	170	LF	625.00	106,250.00
2-7'x4' RCB	160	LF	850.00	136,000.00
4'x4' Drop Inlet	1	EA	4,000.00	4,000.00
10' Std. Curb Inlet	6	EA	4,000.00	24,000.00
15' Std. Curb Inlet	6	EA	5,100.00	30,600.00
20' Std. Curb Inlet	2	EA	6,000.00	12,000.00
5' Square Stormwater Manhole	2	EA	5,500.00	11,000.00
42" Headwall	1	EA	4,750.00	4,750.00
54" Headwall	1	EA	6,250.00	6,250.00
2-5'x5' Headwall	2	EA	13,000.00	26,000.00
2-7'x4' Headwall	2	EA	15,000.00	30,000.00
Trench Safety	2,530	LF	1.00	2,530.00
Rip Rap	140	SY	90.00	12,600.00
Inlet/SDMH Protectors	15	EA	130.00	1,950.00
Onsite Channel (Concrete)	2,700	SF	7.50	20,250.00
TOTAL STORM				\$668,780.00

MI COSTS

OFFSITE PAVING (STANDRIDGE PKWY., E-W COLLECTOR AND SHADYBROOK TRAIL)				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
8" Conc Pavement w/ 1 - 25' B-B (Standridge Pkwy.)	2,916	SY	48.00	139,968.00
8" Conc Pavement w/ 2 - 25' B-B (E-W Coll. & Shadybrook Tr.)	3,940	SY	48.00	189,120.00
8" Conc Pavement w/ 40' B-B (E-W Coll. & Shadybrook Tr.)	18,500	SY	48.00	888,000.00
6" Lime Stabilized Subgrade	27,892	SY	3.20	89,253.12
*Hydrated Lime (36#/SY)	510	TONS	164.00	83,640.00
4', 4" Conc. Sidewalk	11,840	SF	5.65	66,896.00
Curlex	11,840	LF	1.00	11,840.00
B/F Ramps	46	EA	1,525.00	70,150.00
Standard Street Header	400	LF	25.00	10,000.00
Standard Street Barricade	400	LF	25.00	10,000.00
TOTAL PAVING				\$1,558,867.12
STREET LIGHTS & SIGNS (STANDRIDGE PKWY., E-W COLLECTOR AND SHADYBROOK TRAIL)				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
Street Light - 2 Fixtures (400' spacing)	15	EA	5,000.00	74,000.00
Street Light - 1 Fixture (at intersections)	16	EA	3,000.00	48,000.00
Conduit - 2 Inch - Open Cut - Sched. 40 (Street Lights)	4,700	LF	10.00	47,000.00
Sign Posts/Street Name Blades	16	EA	550.00	8,800.00
TOTAL STREET LIGHTS & SIGNS				\$177,800.00

PID DIRECT

EARTHWORK				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
35% of private earthwork cost is associated with streets				\$300,480.25

ONSITE WATER				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
8" PVC Water Line	14,090	LF	24.00	338,160.00
8" Gate Valve & Box	58	EA	1,400.00	81,200.00
1" Water Service - Residential	348	EA	875.00	304,500.00
Fire Hydrant Assembly (inc. 6" Gate Valve)	39	EA	4,200.00	163,800.00
Sampling Station	1	EA	5,000.00	5,000.00
Cast Iron Fittings	7	TN	6,000.00	42,600.00
Concrete Blocking - Type B	21	CY	150.00	3,195.00
Trench Safety	14,090	LF	1.00	14,090.00
Testing (Excluding Geotech)	14,090	LF	1.20	16,908.00
TOTAL WATER				\$969,453.00

SANITARY SEWER				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
8" Sanitary Sewer Main (SDR-35)	12,640	LF	35.00	442,400.00
4' Dia. Manhole w/ epoxy coating	46	EA	5,100.00	234,600.00
Manhole - Vacuum test	46	EA	150.00	6,900.00
4" Sewer Service with cleanouts	348	EA	585.00	203,580.00
Connect to Existing Sewer Stub	2	EA	1,800.00	3,600.00
Trench Safety	12,640	LF	1.00	12,640.00
Post Construction CCTV	12,640	LF	1.75	22,120.00
TOTAL SEWER				\$925,840.00

STORM				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
18" RCP	360	LF	53.00	19,080.00
21" RCP	150	LF	57.00	8,550.00
24" RCP	1,050	LF	67.00	70,350.00
30" RCP	1,610	LF	85.00	136,850.00
36" RCP	50	LF	109.00	5,450.00
42" RCP	250	LF	146.00	36,500.00
48" RCP	550	LF	176.00	96,800.00
54" RCP	600	LF	177.00	106,200.00
4'x4' Drop Inlet	2	EA	4,000.00	8,000.00
10' Std. Curb Inlet	18	EA	4,000.00	72,000.00
15' Std. Curb Inlet	8	EA	5,100.00	40,800.00
20' Std. Curb Inlet	6	EA	6,000.00	36,000.00
4' Square Stormwater Manhole	2	EA	4,500.00	9,000.00
5' Square Stormwater Manhole	1	EA	5,500.00	5,500.00
6' Square Stormwater Manhole	1	EA	6,500.00	6,500.00
24" Headwall	1	EA	2,000.00	2,000.00
30" Headwall	3	EA	3,500.00	10,500.00
36" Headwall	1	EA	4,250.00	4,250.00
42" Headwall	1	EA	4,750.00	4,750.00
54" Headwall	2	EA	6,250.00	12,500.00
Trench Safety	4,620	LF	1.00	4,620.00
Rip Rap	160	SY	90.00	14,400.00
Inlet/SDMH Protectors	34	EA	130.00	4,420.00
Onsite Channel (Concrete)	2,700	SF	7.50	20,250.00
TOTAL STORM				\$735,270.00

PID DIRECT

PAVING				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
6" Conc Pavement w/ 31' B-B	40,700	SY	38.00	1,546,600.00
6" Lime Stabilized Subgrade	44,800	SY	3.20	143,360.00
*Hydrated Lime (36#/SY)	810	TONS	164.00	132,840.00
4', 4" Conc. Sidewalk	3,240	SF	5.75	18,630.00
B/F Ramps	12	EA	1,525.00	18,300.00
Curlex	22,500	LF	1.00	22,500.00
Standard Street Header	31	LF	25.00	775.00
Standard Street Barricade	31	LF	25.00	775.00
TOTAL PAVING				\$1,883,780.00

STREET LIGHTS & SIGNS				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
Street Light - 1 Fixture (at intersections)	28	EA	3,000.00	84,375.00
Sign Posts/Street Name Blades	6	EA	550.00	3,300.00
TOTAL STREET LIGHTS & SIGNS				\$87,675.00

SCREENING WALLS & ENTRY MONUMENTS				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
6' Brick Thinwall	2,050	LF	100.00	205,000.00
Entry Feature	4	EA	35,000.00	140,000.00
TOTAL SCREENING WALLS & ENTRY MONUMENTS				\$345,000.00

LANDSCAPING & IRRIGATION				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
Water Service 2" Irrigation Line	8	EA	2,400.00	19,200.00
2-4" PVC Irrigation Sleeve - Schedule 40 (Street Intersections)	320	LF	18.00	5,760.00
Landscape	1	LS	25,000.00	25,000.00
Miscellaneous Mowing, Cleanup & Haul-Off	1	LS	10,000.00	10,000.00
TOTAL LANDSCAPING & IRRIGATION				\$59,960.00

PRIVATE

EARTHWORK				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
Clear, Strip & Grub	61.3	AC	2,500.00	153,250.00
Excavation (2 foot Cut)	226,900	CY	2.50	567,250.00
Rough Lot Grading	348	LOT	200.00	69,600.00
Final Lot Grading	348	LOT	110.00	38,280.00
Silt Fence	10,090	LF	1.50	15,135.00
Rock Check Dam	6	EA	1,000.00	6,000.00
Construction Entrance	2	EA	2,000.00	4,000.00
Removal & Disposal of Unsuitable Materials	1	LS	5,000.00	5,000.00
TOTAL EARTHWORK				\$858,515.00

65% of private earthwork not associated with streets

\$558,034.75

RETAINING WALLS				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
2' Retaining Wall	2,890	LF	50.00	144,500.00
3' Retaining Wall	300	LF	65.00	19,500.00
4' Retaining Wall	890	LF	82.00	72,980.00
5' Retaining Wall (Structural)	50	LF	100.00	5,000.00
6' Retaining Wall (Structural)	440	LF	120.00	52,800.00
8' Retaining Wall (Structural)	270	LF	165.00	44,550.00
TOTAL RETAINING WALLS				\$339,330.00



OPINION OF PROBABLE COST
CENTURION AMERICAN - REMAINDER SHERLEY 554
 City of Anna, Collin County, Texas

554 TOTAL LOTS
 142.0 SINGLE FAMILY ACRES
 19.1 THOROUGHFARE ACRES
 11.9 COLLECTOR ACRES
 22,280 LOCAL LENGTH OF STREETS (FT)
 16,270 COLLECTOR LENGTHS (FT)

Project Number: CEN18001
Prepared For: CENTURION AMERICAN
Date: April 30, 2020
File Name: REMAINDER SHERLEY 554 OPC
Prepared by: TJW
Checked by: CAL

CONSTRUCTION COSTS

SUMMARY	MI Costs	PID Costs	Private Costs	Total Costs
DESCRIPTION				
1 - Earthwork	\$369,410	\$596,830	\$1,108,398	\$2,074,638
2 - Retaining Walls	\$0	\$0	\$1,425,085	\$1,425,085
3 - Water	\$1,286,889	\$1,599,121	\$0	\$2,886,010
4 - Sanitary Sewer	\$0	\$1,682,193	\$0	\$1,682,193
5 - Storm	\$1,581,895	\$1,267,660	\$0	\$2,849,555
6 - Paving	\$3,446,675	\$3,576,419	\$0	\$7,023,093
7 - Street Lights & Signs	\$151,150	\$180,700	\$0	\$331,850
8 - Screen Walls & Entry Monument	\$0	\$967,500	\$0	\$967,500
9 - Landscaping and Irrigation	\$0	\$103,400	\$0	\$103,400
10 - Amenities	-	-	-	\$0
11 - District Formation	-	-	-	\$0
TOTAL CONSTRUCTION COSTS	\$6,836,019	\$9,973,822	\$2,533,483	\$19,343,323

MISCELLANEOUS COSTS

DESCRIPTION	QTY	UNIT	AMOUNT	AMOUNT	AMOUNT	TOTAL
Engineering & Surveying (12% of items 1-6 above)	1	LS	\$802,184	\$1,046,667	\$133,008	\$1,981,859
SWPPP (plan preparation & inspections)	1	LS	\$9,000	\$6,000	\$6,000	\$21,000
Preliminary Platting Fee (\$325 + \$5/LOT)	1	LS	\$3,095	\$0	\$0	\$3,095
Final Platting Fee (\$325 + \$5/LOT)	1	LS	\$3,095	\$0	\$0	\$3,095
Maintenance Bond (2% of Pvg & Util Contracts)	2%	%	\$126,310	\$162,510	\$0	\$288,820
Engineering Review Fee	1	LS	\$2,500	\$0	\$0	\$2,500
Inspection Fee	4%	%	\$273,440	\$398,950	\$101,340	\$773,730
Geotechnical Testing (10% of Earthwork)	10%	%	\$36,940	\$59,680	\$110,840	\$207,460
12 - TOTAL MISC. COSTS			\$1,256,564	\$1,673,807	\$351,188	\$3,281,559

SUMMARY

Construction Costs		\$6,836,019	\$9,973,822	\$2,533,483	\$19,343,323
Miscellaneous Costs		\$1,256,564	\$1,673,807	\$351,188	\$3,281,559
13 - Contingency Costs	5%	\$404,629	\$582,381	\$144,234	\$1,131,244
NET PROJECT COSTS		\$8,497,210	\$12,230,010	\$3,028,900	\$23,756,130

Per Acre: **\$167,297**
Per Lot: **\$42,881**

By/Checked	Description	Date	Previous Cost
TJW/CAL	Original Estimate	8/5/2019	\$ 28,536,800
CAL	Revised layout removing Sherley 348 costs	8/19/2019	\$ 14,194,230
CAL	Revised Unit Prices per CA, 4% insp. Fee	10/15/2019	\$ 16,019,590
MPP	Checked/revised cell formulas	11/26/2019	\$ 17,488,410
MPP	Deleted 30" & 12" MI sewer	4/30/2020	\$ 24,288,850

GENERAL NOTES (PAGE 1)

- 1) This estimate is based on the land plan prepared by Peloton Land Solutions dated 7/18/19. Actual quantities will be determined at the conclusion of the final construction plans.
- 2) Earthwork quantities do not include costs for rock excavation. 2' of cut across the entire site was used for the purposes of determining earthwork. A preliminary geotechnical was not cross referenced for this task
- 3) Sidewalks adjacent to residential lots are excluded from the cost estimate. Sidewalks are assumed to be constructed by the home builder, except to where adjacent to park detention or open space. ADA ramps are required to be built by the developer and are included in this estimate.
- 4) All fees need to be verified by the City of Anna.
- 5) Fees listed for Platting, Engineering, SWPPP, etc., are based on the assumption the entire project is developed in one phase.
- 6) This estimate has been modified to reflect City of Anna being responsible for constructing the Hurricane Creek sanitary sewer lines (Projects D & E) as shown on the Conceptual Alignment Exhibit dated May 2018. No costs for this construction are contained within this estimate.
- 7) Impact fees and Park fees are not included in this estimate.
- 8) Franchise costs are not included in this estimate.
- 9) This estimate does not include costs for tree mitigation.
- 10) Costs for exposed beams have been excluded from this estimate.
- 11) The lot grading assumptions are as follows: The use of a maximum 1' exposed beam, a maximum backyard slope of 10:1, 1% minimum grade, and a 3:1 maximum slope of side yards.
- 12) This estimate does not include moisture conditioning. Should it be necessary, the actual cost would be dependent on the final geotechnical report. No street moisture conditioning was included in this estimate.
- 13) Cost estimate does not include costs for detention. A preliminary downstream analysis has not been conducted. This cost estimate assumes Oncor will allow for utility crossings within their easement
- 14) This cost estimate assumes for the 12" offsite waterline to be looped into an existing waterlines at the north ends of Standridge Blvd. and Shadybrook Trail, as constructed with Sherley Tract, Phase 1
- 15) Cost estimate does not include acquiring offsite easements for 30" sanitary sewer, 12" water or ROW for Standridge Blvd.
- 16) Rosemond Pkwy. at gas and electric easements will need approval for non-90 degree crossings.
- 17) Costs shown herein exclude interest, legal fees, other services provided by others, off-site sanitary sewer pro-rata, off-site water line improvements, telephone service, off-site easement preparation & procurement, impact fees, or other costs not specifically addressed, rock excavation, jurisdictional determination and permit processing, and brick pavers. Engineering costs do not include cost for staking retaining walls.
- 18) Since the design professional has no control over the cost of labor, materials, or equipment, or over the contractor's method of determining prices, or over competitive bidding or market conditions, his opinions of probable development cost provided for herein are to be made on the basis of his experience and qualifications. These opinions represent his best judgment as a design professional familiar with the construction industry. However, the design professional cannot and does not guarantee that proposals, bids, or the development cost will not vary from opinions of probable cost prepared by him. If the owner wishes greater assurance as to the development cost, he shall employ an independent cost estimator.

MI COSTS

OFFSITE EXCAVATION (STANDRIDGE BLVD., ROSAMOND PKWY AND N/S COLLECTORS)				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
Clear, Strip & Grub	31.00	AC	2,500.00	77,500.00
Excavation (2 foot Cut)	100,100	CY	2.50	250,250.00
Silt Fence	24,440	LF	1.50	36,660.00
Removal & Disposal of Unsuitable Materials	1	LS	5,000.00	5,000.00
TOTAL EXCAVATION				\$369,410.00

OFFSITE WATER (ALONG ROSAMOND PKWY. AND US 75)				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
12" PVC Water Line (along Rosamond Pkwy and US 75)	10,170	LF	45.00	457,650.00
12" Jack and Bore (TxDOT Crossing)	800	LF	500.00	400,000.00
8" PVC Water Line	5,050	LF	24.00	121,200.00
8" Jack and Bore (Creek Crossing)	150	LF	375.00	56,250.00
12" Gate Valve & Box	20	EA	2,400.00	48,000.00
8" Gate Valve & Box	37	EA	1,400.00	51,800.00
Fire Hydrant Assembly (inc. 6" Gate Valve)	15	EA	4,200.00	63,000.00
Cast Iron Fittings	8	TN	6,000.00	48,600.00
Concrete Blocking - Type B	24	CY	150.00	3,645.00
Connect to Existing Water Stub	2	EA	750.00	1,500.00
Trench Safety	16,020	LF	1.00	16,020.00
Testing (Excluding Geotech)	16,020	LF	1.20	19,224.00
TOTAL OFFSITE WATER				\$1,286,889.00

OFFSITE SANITARY SEWER MAIN (ALONG HURRICANE CREEK SOUTH TO FM 455)				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
30" Sanitary Sewer Main (PS115, ASTM F679)	1,160	LF		0.00
12" Sanitary Sewer Main (SDR-35)	3,300	LF		0.00
6' Dia. Manhole w/ epoxy coating	3	EA		0.00
5' Dia. Manhole w/ epoxy coating	8	EA		0.00
Manhole - Vacuum test	11	EA		0.00
Connect to Existing Sewer Stub	1	EA		0.00
Trench Safety	4,460	LF		0.00
Post Construction CCTV	4,460	LF		0.00
TOTAL SEWER				\$0.00

STORM (STANDRIDGE BLVD., ROSAMOND PKWY AND N/S COLLECTORS)				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
18" RCP	670	LF	53.00	35,510.00
21" RCP	1,535	LF	57.00	87,495.00
24" RCP	1,325	LF	67.00	88,775.00
27" RCP	525	LF	75.00	39,375.00
30" RCP	225	LF	85.00	19,125.00
36" RCP	225	LF	109.00	24,525.00
42" RCP	1,755	LF	146.00	256,230.00
48" RCP	180	LF	176.00	31,680.00
5'x3' RCB	725	LF	240.00	174,000.00
6'x3' RCB	250	LF	360.00	90,000.00
7'x4' RCB	75	LF	440.00	33,000.00
3-8'x5' RCB	100	LF	1,325.00	132,500.00
4-8'x6' RCB	100	LF	1,700.00	170,000.00
10' Std. Curb Inlet	22	EA	4,000.00	88,000.00
15' Std. Curb Inlet	12	EA	5,100.00	61,200.00
20' Std. Curb Inlet	4	EA	6,000.00	24,000.00
6' x 6' Junction Box	7	EA	7,500.00	52,500.00
27" Headwall	2	EA	3,000.00	6,000.00
42" Headwall	1	EA	4,750.00	4,750.00
48" Headwall	1	EA	5,850.00	5,850.00
6'x3' Headwall	1	EA	6,500.00	6,500.00
7'x4' Headwall	1	EA	7,250.00	7,250.00
3-8'x5' Headwall	2	EA	20,000.00	40,000.00
4-8'x6' Headwall	2	EA	27,500.00	55,000.00
Trench Safety	7,690	LF	1.00	7,690.00
Rip Rap	225	SY	90.00	20,250.00
Inlet/SDMH Protectors	38	EA	130.00	4,940.00
Onsite Channel (Concrete)	2,100	SF	7.50	15,750.00
TOTAL STORM				\$1,581,895.00

MI COSTS

OFFSITE PAVING (STANDRIDGE BLVD., ROSAMOND PKWY AND N/S COLLECTORS)				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
8" Conc Pavement w/ 1 - 25' B-B - STANDRIDGE BLVD.	4,722	SY	48.00	226,656.00
8" Conc Pavement w/ 2 - 25' B-B - ROSAMOND PKWY.	38,445	SY	48.00	1,845,360.00
8" Conc Pavement w/ 40' B-B - N/S COLLECTORS	16,000	SY	48.00	768,000.00
6" Lime Stabilized Subgrade	65,084	SY	3.20	208,267.84
*Hydrated Lime (36#/SY)	1,180	TONS	164.00	193,520.00
4', 4" Conc. Sidewalk	22,740	SF	5.65	128,481.00
Curlex	24,440	LF	1.00	24,440.00
B/F Ramps	30	EA	1,525.00	45,750.00
Standard Street Header	124	LF	25.00	3,100.00
Standard Street Barricade	124	LF	25.00	3,100.00
TOTAL PAVING				\$3,446,674.84

STREET LIGHTS & SIGNS (STANDRIDGE BLVD., ROSAMOND PKWY AND N/S COLLECTORS)				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
Street Light - 2 Fixtures (400' spacing)	18	EA	5,000.00	90,000.00
Street Light - 1 Fixture (at intersections)	6	EA	3,000.00	18,000.00
Conduit - 2 Inch - Open Cut - Sched. 40 (Street Lights)	3,600	LF	10.00	36,000.00
Sign Posts/Street Name Blades	13	EA	550.00	7,150.00
TOTAL STREET LIGHTS & SIGNS				\$151,150.00

PID DIRECT

OFFSITE EXCAVATION (STANDRIDGE BLVD., E-W COLLECTOR AND SHADYBROOK TRAIL)				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
35% of private earthwork cost associated with streets				\$596,829.63

ONSITE WATER				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
8" PVC Water Line	25,405	LF	24.00	609,720.00
8" Gate Valve & Box	87	EA	1,400.00	121,800.00
1" Water Service - Residential	554	EA	875.00	484,750.00
Fire Hydrant Assembly (inc. 6" Gate Valve)	57	EA	4,200.00	239,400.00
Sampling Station	1	EA	5,000.00	5,000.00
Cast Iron Fittings	13	TN	6,000.00	76,800.00
Concrete Blocking - Type B	38	CY	150.00	5,760.00
Trench Safety	25,405	LF	1.00	25,405.00
Testing (Excluding Geotech)	25,405	LF	1.20	30,486.00
TOTAL WATER				\$1,599,121.00

SANITARY SEWER				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
8" Sanitary Sewer Main (SDR-35)	21,510	LF	35.00	752,850.00
4' Dia. Manhole w/ epoxy coating	90	EA	5,100.00	459,000.00
5' Dia. Manhole w/ epoxy coating	7	EA	8,050.00	56,350.00
Manhole - Vacuum test	97	EA	150.00	14,550.00
4" Sewer Service with cleanouts	554	EA	585.00	324,090.00
Connect to Existing Sewer Stub	9	EA	1,800.00	16,200.00
Trench Safety	21,510	LF	1.00	21,510.00
Post Construction CCTV	21,510	LF	1.75	37,642.50
TOTAL SEWER				\$1,682,192.50

STORM				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
18" RCP	1,385	LF	53.00	73,405.00
21" RCP	1,320	LF	57.00	75,240.00
24" RCP	1,905	LF	67.00	127,635.00
27" RCP	925	LF	75.00	69,375.00
30" RCP	2,630	LF	85.00	223,550.00
36" RCP	430	LF	109.00	46,870.00
42" RCP	500	LF	146.00	73,000.00
48" RCP	170	LF	176.00	29,920.00
10' Std. Curb Inlet	56	EA	4,000.00	224,000.00
15' Std. Curb Inlet	27	EA	5,100.00	137,700.00
20' Std. Curb Inlet	8	EA	6,000.00	48,000.00
5' x 5' Junction Box	4	EA	6,500.00	26,000.00
21" Headwall	1	EA	1,750.00	1,750.00
24" Headwall	2	EA	2,000.00	4,000.00
30" Headwall	5	EA	3,500.00	17,500.00
36" Headwall	1	EA	4,250.00	4,250.00
42" Headwall	1	EA	4,750.00	4,750.00
48" Headwall	1	EA	5,850.00	5,850.00
Trench Safety	9,265	LF	1.00	9,265.00
Rip Rap	250	SY	90.00	22,500.00
Inlet/SDMH Protectors	95	EA	130.00	12,350.00
Onsite Channel (Concrete)	4,100	SF	7.50	30,750.00
TOTAL STORM				\$1,267,660.00

PID DIRECT

PAVING				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
6" Conc Pavement w/ 31' B-B	76,742	SY	38.00	2,916,196.00
6" Lime Stabilized Subgrade	84,500	SY	3.20	270,400.00
*Hydrated Lime (36#/SY)	1,530	TONS	164.00	250,920.00
4', 4" Conc. Sidewalk	6,850	SF	5.65	38,702.50
B/F Ramps	64	EA	1,525.00	97,600.00
Curlex	2,600	LF	1.00	2,600.00
TOTAL PAVING				\$3,576,418.50

STREET LIGHTS & SIGNS				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
Street Light - 1 Fixture (at intersections)	54	EA	3,000.00	162,000.00
Sign Posts/Street Name Blades	34	EA	550.00	18,700.00
TOTAL STREET LIGHTS & SIGNS				\$180,700.00

SCREENING WALLS & ENTRY MONUMENTS				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
6' Brick Thinwall	6,875	LF	100.00	687,500.00
Entry Feature	8	EA	35,000.00	280,000.00
TOTAL SCREENING WALLS & ENTRY MONUMENTS				\$967,500.00

LANDSCAPING & IRRIGATION				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
Water Service 2" Irrigation Line	15	EA	2,400.00	36,000.00
2-4" PVC Irrigation Sleeve - Schedule 40 (Street Intersections)	1,800	LF	18.00	32,400.00
Landscape	1	LS	25,000.00	25,000.00
Miscellaneous Mowing, Cleanup & Haul-Off	1	LS	10,000.00	10,000.00
TOTAL LANDSCAPING & IRRIGATION				\$103,400.00

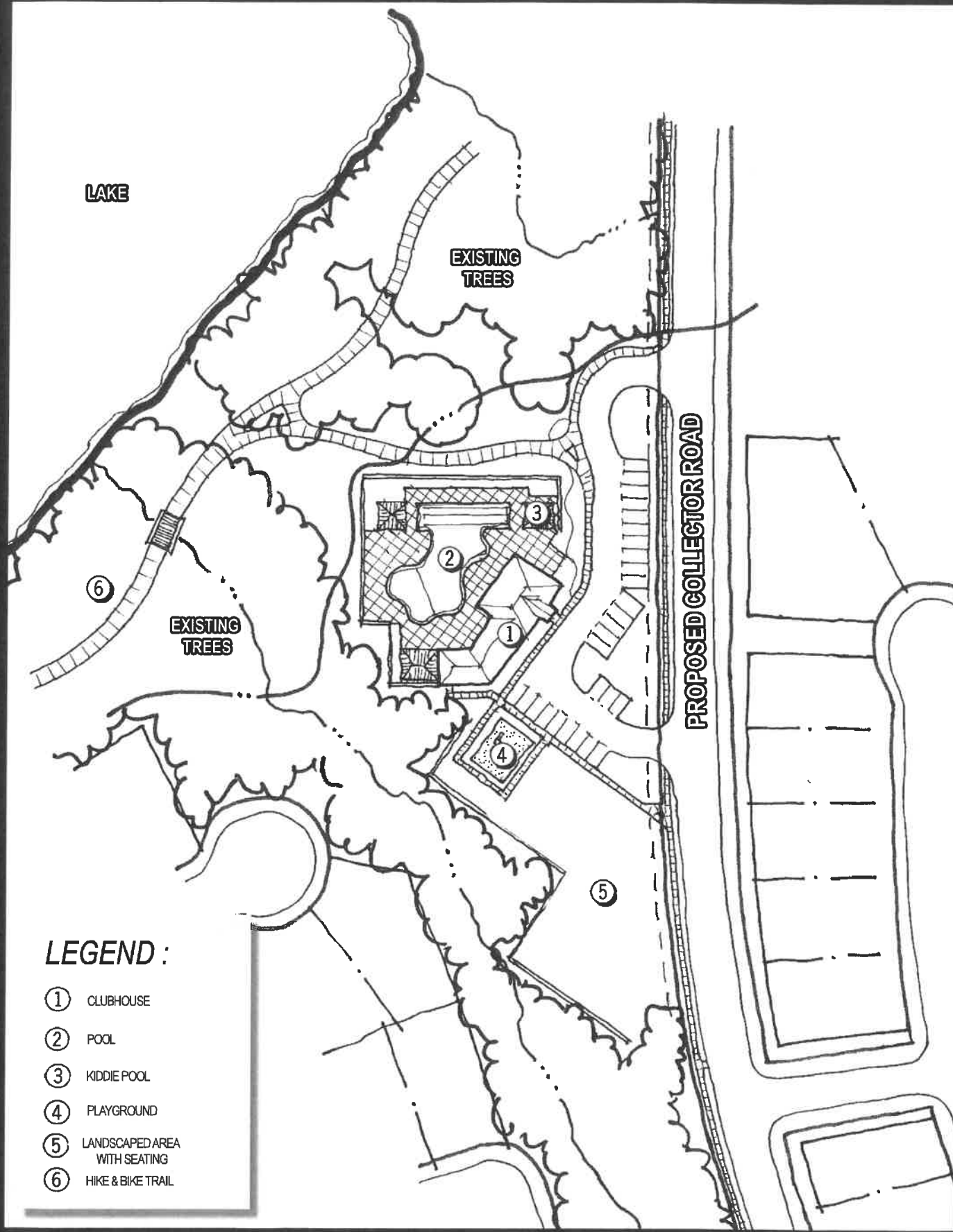
PRIVATE

EARTHWORK				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
Clear, Strip & Grub	142.0	AC	2,500.00	355,000.00
Excavation (2 foot Cut)	458,200	CY	2.50	1,145,500.00
Rough Lot Grading	554	LOT	200.00	110,800.00
Final Lot Grading	554	LOT	110.00	60,940.00
Silt Fence	9,325	LF	1.50	13,987.50
Rock Check Dam	10	EA	1,000.00	10,000.00
Construction Entrance	2	EA	2,000.00	4,000.00
Removal & Disposal of Unsuitable Materials	1	LS	5,000.00	5,000.00
TOTAL EARTHWORK				\$1,705,227.50
65% of private earthwork not associated with streets				\$1,108,397.88

RETAINING WALLS				
Description	QTY	UNIT	UNIT PRICE	AMOUNT
2' Retaining Wall	12,510	LF	50.00	625,500.00
4' Retaining Wall	5,405	LF	82.00	443,210.00
6' Retaining Wall (Structural)	1,830	LF	120.00	219,600.00
8' Retaining Wall (Structural)	425	LF	165.00	70,125.00
10' Retaining Wall (Structural)	310	LF	215.00	66,650.00
TOTAL RETAINING WALLS				\$1,425,085.00

Exhibit C
CONCEPT PLAN

Exhibit C-1
AMENITY CENTER CONCEPT PLAN



LEGEND :

- ① CLUBHOUSE
- ② POOL
- ③ KIDDIE POOL
- ④ PLAYGROUND
- ⑤ LANDSCAPED AREA WITH SEATING
- ⑥ HIKE & BIKE TRAIL



Exhibit C-2
NEIGHBORHOOD TRAIL PLAN

NOTE:

THIS PLAN IS CONCEPTUAL IN NATURE AND MAY NOT NECESSARILY BE BUILT AS DEPICTED.

TRAILS TO BE CONSTRUCTED IN PHASES CONCURRENT WITH ADJACENT RESIDENTIAL DEVELOPMENT.

THE ULTIMATE LOCATION OF TRAILS SHALL BE DETERMINED DURING THE FINAL DESIGN PROCESS.



EXHIBIT C-2
ANNA, TEXAS

Exhibit D
DEVELOPMENT STANDARDS

Exhibit D Development Standards

These Development Standards reference the City of Anna Zoning Ordinance, Subdivision Regulation, Subdivision Design Standards, and Tree Preservation & Landscape Regulations effective April 9, 2019 and are not subject to future revisions, amendments or changes.

1. Definitions: The following additional definitions shall apply:

Quadplex: Single-story building with a maximum of four dwelling units per building. Each dwelling unit will have a distinct ingress/egress and garage. Driveways can be shared between adjacent garages.

2. Permitted Uses and Development Standards: The permitted uses and standards shall be in accordance with the SF-Z Single-Family Residence District - Zero lot line homes, SF-TH Townhome District, SF-60 Single-Family Residence District, SF-72 Single-Family Residence District, and SF-84 Single-Family Residence District zoning districts, unless otherwise specified herein.

SF-TH-SR: Townhome Senior District: Provides age-restricted attached housing arranged as single-story quadplex buildings. Permitted uses and standards shall be in accordance with the SF-TH Townhome District, unless otherwise specified herein. To be established and recorded in the CCR's.

	SF - TH	SF - TH - SR	SF-Z	SF-60	SF-72	SF-84
Typical Lot Size per Concept Plan	25' x 90'	85' x 75'	40' x 110'	50' x 120'	60' x 120'	70' x 120'; 80' x 125'
Lot/Unit Count per Concept Plan	190	108	143	323	139	55; 26
Maximum Lot/Unit Count (+5%)	200	115	150	340	145	58; 27
Minimum Lot/Unit Count (- 5%)	180	100	135	305	132	52; 25
Maximum height (feet)	35	35	35	35	35	35
Side Yard, interior (feet)	0/5	0/5	5	5	5	5
Side Yard, corner lot, street side (feet)	10	10	10	10	10	10
Rear Yard (feet)	10	10	10	15	15	15
Front Yard (feet)	20	20	20	25	25	25
Lot Area (feet)	2000	2000	4000	6000	7200	8400
Min. Lot Width (feet)	20	20	40	50	60	70
Min. Lot Depth (feet)	80	80	100	100	110	110
Max. Lot Coverage (%)	70	70	85	55	55	55
Building Size (square feet)	900	900	1200	1600	1800	1800
Masonry (%)	60	60	60	60	60	60

3. Supplementary Design Standards:

- a. Waiver of strict compliance with masonry requirements shall not be required [9.04.034(d)];
- b. Within residential developments, single-family homes with substantially identical exterior elevations can only repeat every three (3) lots when fronting the same right of way including both sides of the street [9.04.034(e)(1)(A)];
- c. Garages for lots developed as SF-TH or SF-TH-SR may be developed as front entry and shall not be required to provide swing drives ("J" drives) or be restricted to alley access. Garage door frontage restrictions shall not apply [9.04.034(e)(3)];
- d. Building Articulation: At least two (2) façade articulation techniques will be provided on each single-family home [9.04.034(e)(4)];
- e. Front porch of at least forty (40) square feet [9.04.034(e)(4)(D)];
- f. Divided light windows in front is an acceptable technique for building façade articulation;

4. Landscaping Standards:

- a. Section 9.06.006(p) is deleted in its' entirety;
- b. Requirements for single-family residential lots: One tree per lot for SF-TH, SF-TH-SR and SF-Z lots shall be planted in either the front or rear yard at the builder's discretion. Two trees per lot will be required for SF-60, SF-72 and SF-80 lots; at least one tree must be planted in the front yard [9.06.006(q)];
- c. Only tree species listed in Section 9.07 Appendix 2, Overstory (Shade) Trees will be required to satisfy these Standards.

5. Tree Preservation:

- a. Remove definition of protected tree, quality tree, specimen tree, and tree survey [9.07.002];
- b. An aerial photograph canopy map at the same scale as the site plan or preliminary plat with building pad, pavement areas, and other construction features that will disturb the land indicated. The aerial photograph canopy map shall include the following information [9.07.008(b)(2)];
- c. An aerial photograph accompanied by a transparent plan of the development at the same scale as the photograph, showing all non-disturbance areas and proposed exemption areas where no trees will be critically altered will be provided, The aerial photograph will also include an outline of the existing tree canopy area on the property and the calculated area (square feet or acres) of the existing canopy coverage. [9.07.008(b)(2)(G-K)];
- d. A tree preservation plan shall be submitted showing existing tree canopy to remain, existing tree canopy to be removed, and replacement trees with type, location, number, and size of replacement trees indicated. The tree

preservation plan information may be included on the aerial photograph canopy map if all information can be clearly delineated [9.07.008(d)];

- e. Tree replacement credits will be given for all trees planted under Landscaping Standards 4.b and 4.c above. Trees planted to provide canopy coverage will be credited at its canopy coverage at normal maturity. These credits are as follows:

- Large canopy tree with typical crown width of fifty (50) feet in diameter two thousand (2,000) square feet;
- Medium canopy tree with typical crown width of thirty (30) feet in diameter seven hundred (700) square feet;
- Small canopy tree with typical crown width of ten (10) feet in diameter one hundred (100) square feet

Tree replacement canopy will be provided for up to 25% of the tree canopy removed from the site [9.07.011(l) and 9.07.013 (B-E)];

Exhibit E-1
ROADWAY IMPROVEMENTS

LEGEND

PHASE 1 - 60' ROW

PHASE 1 - 80' ROW

LEGEND

60' ROW

80' ROW

120' ROW

NOTE: CITY OF ANNA WILL BE RESPONSIBLE FOR ACQUIRING ALL ROW AND EASEMENT'S NECESSARY TO CONSTRUCT ALL IMPROVEMENTS OUTSIDE OF PID BOUNDARY.

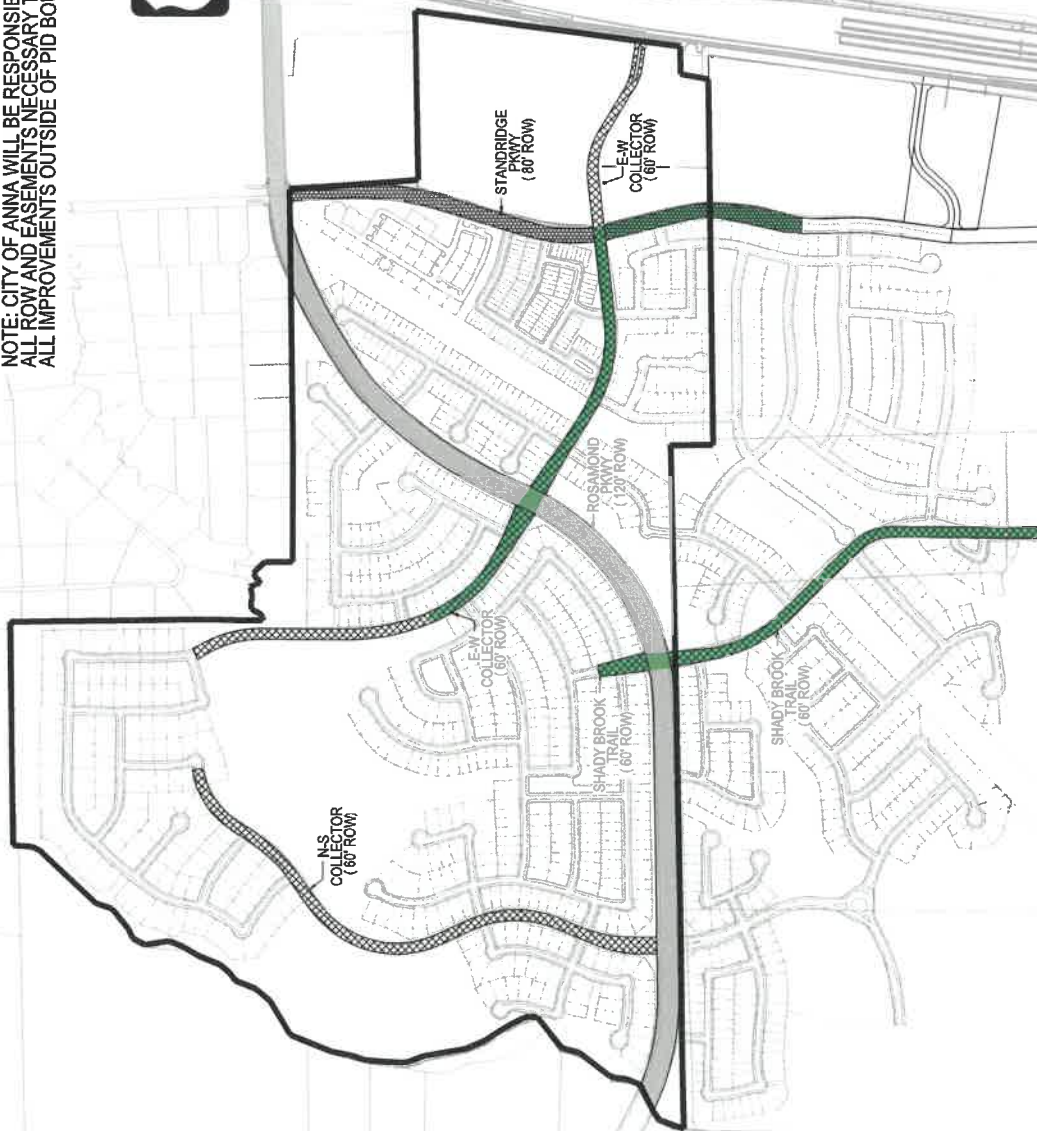
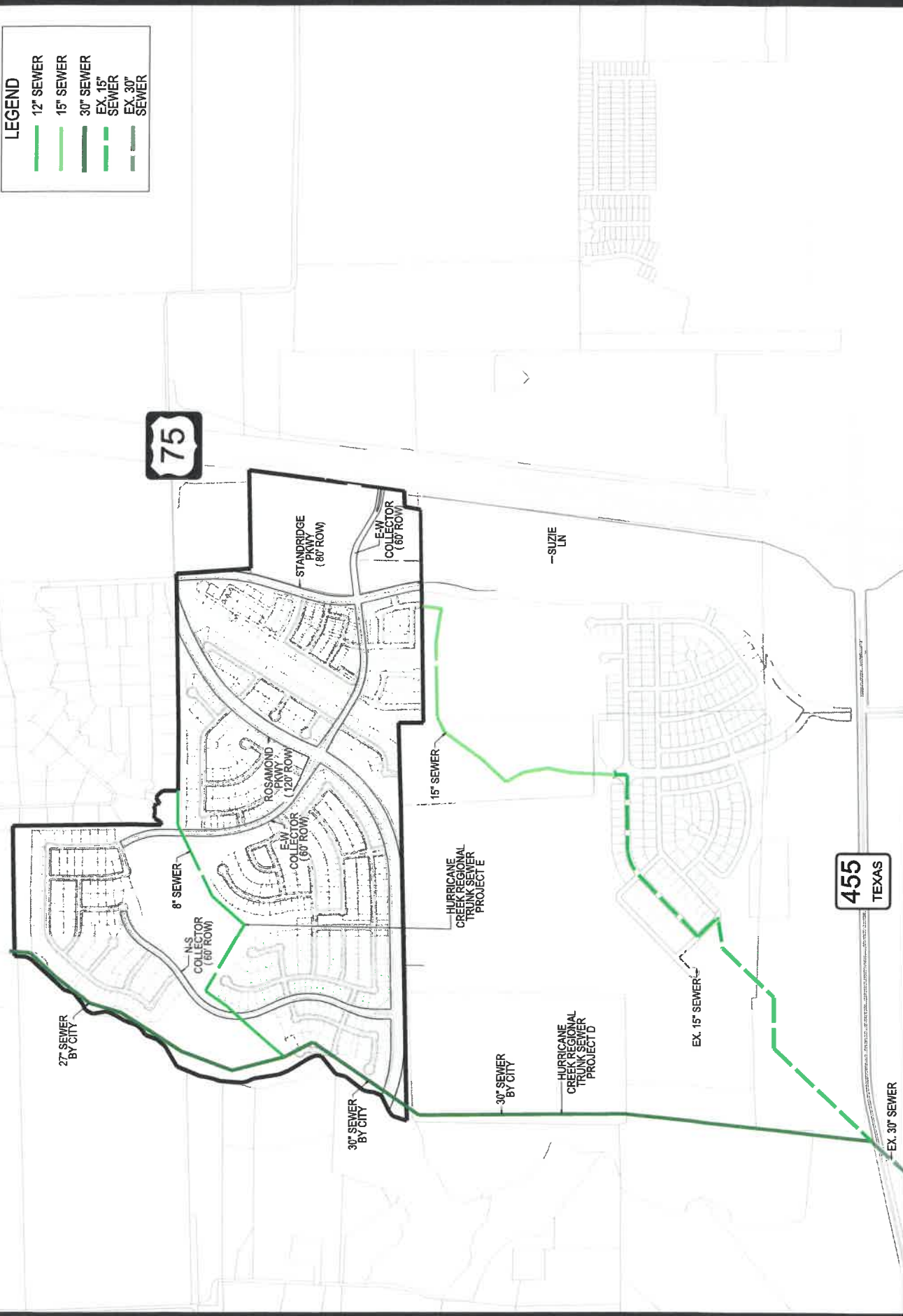


Exhibit E-2
HURRICANE CREEK REGIONAL TRUNK SEWER IMPROVEMENTS

LEGEND

- 12" SEWER
- 15" SEWER
- 30" SEWER
- EX. 15" SEWER
- EX. 30" SEWER



E-2
NOVEMBER 2019

Exhibit E-3
WATERLINE IMPROVEMENTS

LEGEND	
—	ROSAMOND WATER
—	N-S WATER
—	E-W WATER
—	SHADYBROOK WATER
---	EXISTING 12" WATER
---	EXISTING 8" WATER

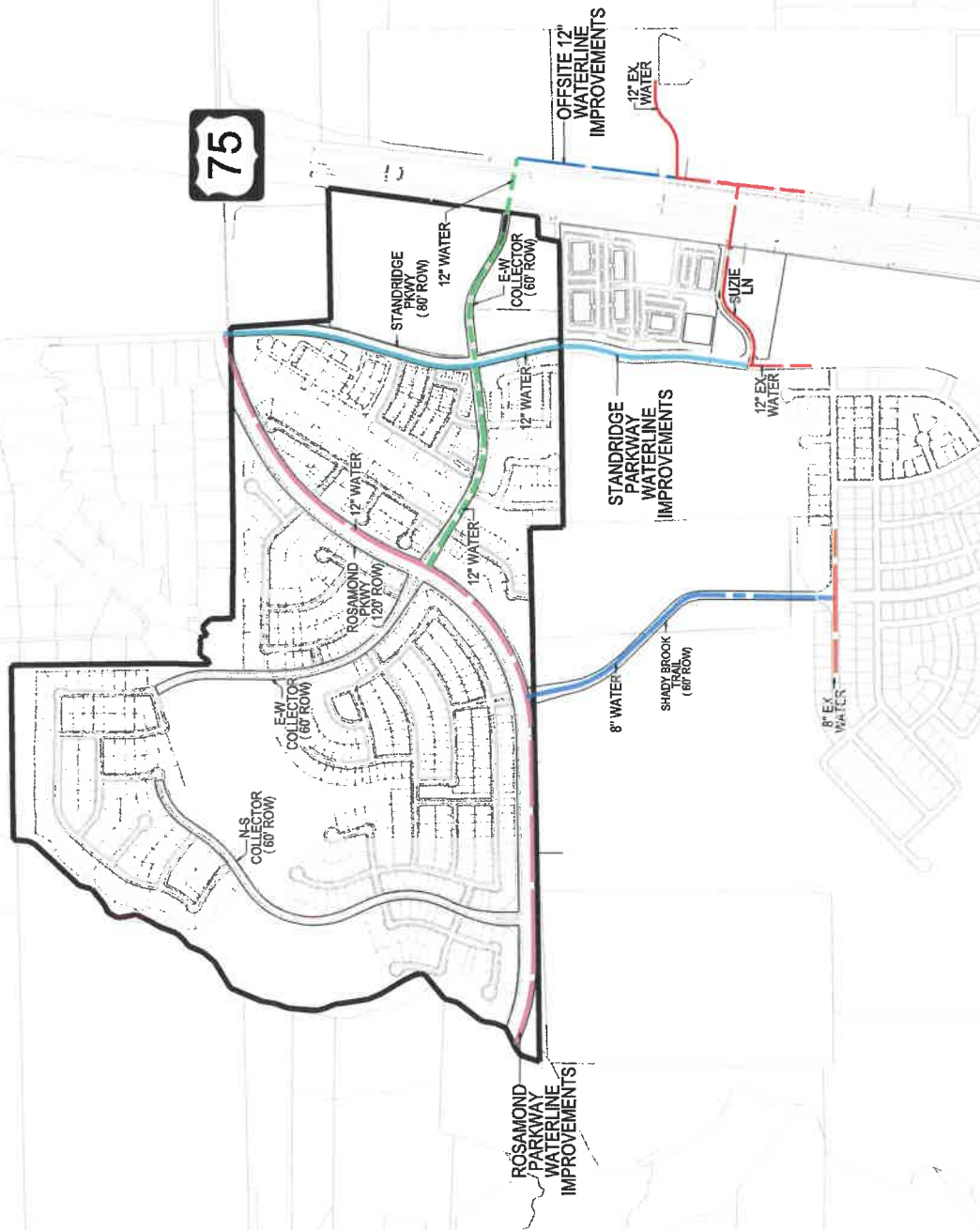


Exhibit F
HOME BUYER DISCLOSURE PROGRAM

The Administrator (as defined in the Service and Assessment Plan) shall facilitate notice to prospective homebuyers in accordance the following notices. Administrator shall monitor the enforcement of the following minimum requirements:

1. Record notice of the special assessment district in the appropriate land records for the property.
2. Require builders to include notice of the special assessment district in addendum to contract on brightly colored paper.
3. Collect a copy of the addendum signed by each buyer from builders and provide to the City.
4. Require signage indicating that the property for sale is located in a special assessment district and require that such signage be located in conspicuous places in all model homes.
5. Prepare and provide to builders an overview of the District for those builders to include in each sales packets.
6. Notify builders who estimate monthly ownership costs of the requirement that they must include special taxes in estimated property taxes.
7. Notify Settlement Companies through the builders that they are required to include special taxes on HUD 1 forms and include in total estimated taxes for the purpose of setting up tax escrows.
8. Include notice of the special assessment district in the homeowner association documents in conspicuous bold font.
9. The City will include announcements of the special assessment district on the City's web site and community channel.
10. The disclosure program shall be monitored by the Developer and Administrator.

Exhibit G
LANDOWNER AGREEMENT

LANDOWNER AGREEMENT

This **LANDOWNER AGREEMENT** (the "Agreement"), is entered into as of _____, among the City of Anna, Texas (the "City"), a home-rule municipality of the State of Texas (the "State"), and _____, a Texas _____ (the "Landowner").

RECITALS:

WHEREAS, capitalized terms used but not defined herein shall have the meanings given to them in the Service and Assessment Plan (as defined herein); and

WHEREAS, Landowner owns the Assessed Property described by a metes and bounds description attached as **Exhibit I** to this Agreement and which is incorporated herein for all purposes, comprising all of the non-exempt, privately-owned land described in **Exhibit I** (the "Landowner Parcel") which is coterminous with the Sherley Tract Public Improvement District (the "District") in the City; and

WHEREAS, the City Council has adopted an assessment ordinance (including all exhibits and attachments thereto, the "Assessment Ordinance") for the Authorized Improvements and the Sherley Tract Public Improvement District Service and Assessment Plan (as updated and amended, the "Service and Assessment Plan") and which is incorporated herein for all purposes, and has levied an assessment on the Assessed Property in the District that will be used for the payment of certain infrastructure improvements and to pay the costs of constructing the Authorized Improvements that will benefit the Assessed Property; and

WHEREAS, the Declaration of Covenants, Conditions and Restrictions attached to this Agreement as **Exhibit II** and which are incorporated herein for all purposes includes the statutory notification required by Texas Property Code, Section 5.014, as amended, to be provided by the seller of residential property that is located in a public improvement district established under Chapter 372 of the Texas Local Government Code, as amended (the "PID Act"), to the purchaser.

NOW, THEREFORE, for and in consideration of the mutual promises, covenants, obligations and benefits hereinafter set forth, the City and the Landowner hereby contract, covenant and agree as follows:

DEFINITIONS; APPROVAL OF AGREEMENTS

Definitions. Capitalized terms used but not defined herein (including each exhibit hereto) shall have the meanings ascribed to them in the Service and Assessment Plan.

Affirmation of Recitals. The findings set forth in the Recitals of this Agreement are hereby incorporated as the official findings of the City Council.

I.

AGREEMENTS OF LANDOWNER

A. Affirmation and Acceptance of Agreements and Findings of Benefit. Landowner hereby ratifies, confirms, accepts, agrees to, and approves:

(i) the creation and boundaries of the District, and the boundaries of the Landowner's Parcel which are coterminous with the District, all as shown on Exhibit I, and the location and development of the Authorized Improvements on the Landowner Parcel and on the property within the District;

(ii) the determinations and findings as to the benefits by the City Council in the Service and Assessment Plan and the Assessment Ordinance; and

(iii) the Assessment Ordinance and the Service and Assessment Plan.

B. Acceptance and Approval of Assessments and Lien on Property. Landowner consents to, agrees to, acknowledges and accepts the following:

(i) each Assessment levied by the City on the Assessed Property within the District (the "Assessments"), as shown on the assessment roll attached as Appendix ___ to the Service and Assessment Plan (the "Assessment Roll");

(ii) the Authorized Improvements specially benefit the District, and the Landowner's Parcel, in an amount at least equal to the Assessment levied on the Landowner's Parcel within the District, as such Assessment is shown on the Assessment Roll;

(iii) each Assessment is final, conclusive and binding upon Landowner and any subsequent owner of the Assessed Property, regardless of whether such landowner may be required to prepay a portion of, or the entirety of, such Assessment upon the occurrence of a mandatory prepayment event as provided in the Service and Assessment Plan;

(iv) the obligation to pay the Assessment levied on the Assessed Property owned by it when due and in the amount required by and stated in the Service and Assessment Plan and the Assessment Ordinance;

(v) each Assessment or reassessment, with interest, the expense of collection, and reasonable attorney's fees, if incurred, is a first and prior lien against the Assessed Property, superior to all other liens and monetary claims except liens or monetary claims

for state, county, school district, or municipal ad valorem taxes, and is a personal liability of and charge against the owner of the Assessed Property regardless of whether such owner is named;

(vi) the Assessment lien on the Assessed Property is a lien and covenant that runs with the land and is effective from the date of the Assessment Ordinance and continues until the Assessment is paid and may be enforced by the governing body of the City in the same manner that an ad valorem tax lien against real property may be enforced by the City;

(vii) delinquent installments of the Assessment shall incur and accrue interest, penalties, and attorney's fees as provided in the PID Act;

(viii) the owner of a Assessed Property may pay at any time the entire Assessment, with interest that has accrued on the Assessment, on any parcel in the Landowner Parcel;

(ix) the Annual Installments of the Assessments (as defined in the Service and Assessment Plan and Assessment Roll) may be adjusted, decreased and extended; and, the assessed parties shall be obligated to pay their respective revised amounts of the Annual Installments, when due, and without the necessity of further action, assessments or reassessments by the City, the same as though they were expressly set forth herein; and

(x) Landowner has received, or hereby waives, all notices required to be provided to it under Texas law, including the PID Act, prior to the Effective Date (defined herein).

C. Mandatory Prepayment of Assessments. Landowner agrees and acknowledges that Landowner or subsequent landowners may have an obligation to prepay an Assessment upon the occurrence of a mandatory prepayment event, at the sole discretion of the City and as provided in the Service and Assessment Plan, as amended and updated.

D. Notice of Assessments. Landowner further agrees as follows:

(i) the Declaration of Covenants, Conditions and Restrictions in the form attached hereto as **Exhibit II** shall be terms, conditions and provisions running with the Landowner Parcel and shall be recorded (the contents of which shall be consistent with the Assessment Ordinance and the Service and Assessment Plan as reasonably determined by the City), in the records of the County Clerk of Collin County, as a lien and encumbrance against such Assessed Property, and Landowner hereby authorizes the City to so record such documents against the Assessed Property owned by Landowner;

(ii) in the event of any subdivision, sale, transfer or other conveyance by the Landowner of the right, title or interest of the Landowner in the Landowner's Parcel or any part thereof, the Landowner's Parcel, or any such part thereof, shall continue to be bound

by all of the terms, conditions and provisions of such Declaration of Covenants, Conditions and Restrictions and any purchaser, transferee or other subsequent owner shall take such Assessed Property subject to all of the terms, conditions and provisions of such Declaration of Covenants, Conditions and Restrictions; and

(iii) Landowner shall comply with, and shall contractually obligate (and, upon the City's request, promptly provide written evidence of such contractual provisions to the City) any party who purchases any Assessed Property owned by Landowner, or any portion thereof, for the purpose of constructing residential properties that are eligible for "homestead" designations under State law, to comply with, the Homebuyer Education Program described on Exhibit III to this Agreement. Such compliance obligation shall terminate as to each Lot if, and when, (i) a final certificate of occupancy for a residential unit on such Lot is issued by the City, and (ii) there is a sale of a Lot to an individual homebuyer, it being the intent of the undersigned that the Homebuyer Education Program shall apply only to a commercial builder who is in the business of constructing and/or selling residences to individual home buyers (a "Builder") but not to subsequent sales of such residence and Lot by an individual home buyer after the initial sale by a Builder.

Notwithstanding the provisions of this Section, upon the Landowner's request and the City's consent, in the City's sole and absolute discretion, the Declaration of Covenants, Conditions and Restrictions may be included with other written restrictions running with the land on property within the District, provided they contain all the material provisions and provide the same material notice to prospective property owners as does the document attached as Exhibit II.

II. OWNERSHIP AND CONSTRUCTION OF AUTHORIZED IMPROVEMENTS

A. Ownership and Transfer of Authorized Improvements. Landowner acknowledges that the portion of the Authorized Improvements benefitting the Landowner Parcel and the land (or easements, as applicable) needed therefor shall be owned by the City as constructed and/or conveyed to the City and Landowner will execute such conveyances and/or dedications of public rights of way and easements as may be reasonably required to evidence such ownership, as generally described on the current plats of the property within the District.

B. Grant of Easement and License. Construction of Authorized Improvements.

(i) Any subsequent owner of the Assessed Property shall, upon the request of the City or Landowner, grant and convey to the City or Landowner and its contractors, materialmen and workmen a temporary license and/or easement, as appropriate, to construct the Authorized Improvements on the Landowner Parcel within the District, to stage on the Landowner Parcel within the District construction trailers, building materials and equipment to be used in connection with such construction of the Authorized

Improvements and for passage and use over and across parts of the property within the District as shall be reasonably necessary during the construction of the Authorized Improvements. Any subsequent owner of an Assessed Property may require that each contractor constructing the Authorized Improvements cause such owner of the Assessed Property to be indemnified and/or named as an additional insured under liability insurance reasonably acceptable to such owner of the Assessed Property. The right to use and enjoy any easement and license provided above shall continue until the construction of the Authorized Improvements is complete; provided, however, any such license or easement shall automatically terminate upon the recording of the final plat for the Landowner's Parcel in the real property records of Collin County, Texas.

(ii) Landowner hereby agrees that any right or condition imposed by the Improvement Agreement, or other agreement, with respect to the Assessment has been satisfied, and that Landowner shall not have any rights or remedies against the City under the Sherley Tract Subdivision Improvement Agreement, or other agreement, with respect to the Assessments has been satisfied, and that Landowner shall not have any rights or remedies against the City under any law or principles of equity concerning the Assessments, with respect to the formation of the District, approval of the Service and Assessment Plan and the City's levy and collection of the Assessments.

III. COVENANTS AND WARRANTIES; MISCELLANEOUS

A. Special Covenants and Warranties of Landowner.

Landowner represents and warrants to the City as follows:

(i) Landowner is duly organized, validly existing and, as applicable, in good standing under the laws of the state of its organization and has the full right, power and authority to enter into this Agreement, and to perform all the obligations required to be performed by Landowner hereunder.

(ii) This Agreement has been duly and validly executed and delivered by, and on behalf of, Landowner and, assuming the due authorization, execution and delivery thereof by and on behalf of the City and the Landowner, constitutes a valid, binding and enforceable obligation of such party enforceable in accordance with its terms. This representation and warranty is qualified to the extent the enforceability of this Agreement may be limited by applicable bankruptcy, insolvency, moratorium, reorganization or other similar laws of general application affecting the rights of creditors in general.

(iii) Neither the execution and delivery hereof, nor the taking of any actions contemplated hereby, will conflict with or result in a breach of any of the provisions of, or constitute a default, event of default or event creating a right of acceleration, termination

or cancellation of any obligation under, any instrument, note, mortgage, contract, judgment, order, award, decree or other agreement or restriction to which Landowner is a party, or by which Landowner or Landowner's Parcel is otherwise bound.

(iv) Landowner is, subject to all matters of record in the Collin County, Texas Real Property Records, the sole owner of the Landowner's Parcel.

(v) The Landowner's Parcel owned by Landowner is not subject to, or encumbered by, any covenant, lien, encumbrance or agreement which would prohibit (i) the creation of the District, (ii) the levy of the Assessments, or (iii) the construction of the Authorized Improvements on those portions of the property within the District which are to be owned by the City, as generally described on the current plats of the property within the District (or, if subject to any such prohibition, the approval or consent of all necessary parties thereto has been obtained).

(vi) Landowner covenants and agrees to execute any and all documents necessary, appropriate or incidental to the purposes of this Agreement, as long as such documents are consistent with this Agreement and do not create additional liability of any type to, or reduce the rights of, such Landowner by virtue of execution thereof.

B. Waiver of Claims Concerning Authorized Improvements. The Landowner, with full knowledge of the provisions, and the rights thereof pursuant to such provisions, of applicable law, waives any claims against the City and its successors, assigns and agents, pertaining to the installation of the Authorized Improvements.

C. Notices.

Any notice or other communication to be given to the City or Landowner under this Agreement shall be given by delivering the same in writing to:

To the City:	City of Anna, Texas Attn: City Manager 111 N. Powell Parkway Anna, Texas 75409
With a copy to:	Wolfe, Tidwell & McCoy, LLP Attn: Clark McCoy 2591 Dallas Parkway, Suite 300 Frisco, Texas 75034
To the Developer:	MM Anna 325, LLC Attn: Mehrdad Moayed 1800 Valley View Lane, Suite 300 Farmers Branch, Texas 75234

With a copy to: Miklos Cinclair, PLLC
Attn: Robert Miklos
1800 Valley View Lane, Suite 360
Farmers Branch, Texas 75234

Any notice sent under this Agreement (except as otherwise expressly required) shall be written and mailed, or sent by electronic or facsimile transmission confirmed by mailing written confirmation at substantially the same time as such electronic or facsimile transmission, or personally delivered to an officer of the recipient as the address set forth herein.

Each recipient may change its address by written notice in accordance with this Section. Any communication addressed and mailed in accordance with this provision shall be deemed to be given when so mailed, any notice so sent by electronic or facsimile transmission shall be deemed to be given when receipt of such transmission is acknowledged, and any communication so delivered in person shall be deemed to be given when receipted for, or actually received by, the addressee.

D. Parties in Interest.

This Agreement is made solely for the benefit of the City and the Landowner and is not assignable, except, in the case of Landowner, in connection with the sale or disposition of all or substantially all of the parcels which constitute the Landowner's Parcel. However, the parties expressly agree and acknowledge that the City, the Landowner, each current owner of any parcel which constitutes the Landowner's Parcel, and the holders of or trustee for any bonds secured by Assessment Revenues of the City or any part thereof to finance the costs of the Authorized Improvements, are express beneficiaries of this Agreement and shall be entitled to pursue any and all remedies at law or in equity to enforce the obligations of the parties hereto. This Agreement shall be recorded in the real property records of Collin County, Texas.

E. Amendments.

This Agreement may be amended only by written instrument executed by the City and the Landowner. No termination or amendment shall be effective until a written instrument setting forth the terms thereof has been executed by the then-current owners of the property within the District and recorded in the Real Property Records of Collin County, Texas.

F. Effective Date.

This Agreement shall become and be effective (the "Effective Date") upon the date of final execution by the latter of the City and the Landowner and shall be valid and enforceable on said date and thereafter.

G. Estoppels.

Within 10 days after written request from a party hereto, the other party shall provide a written certification, indicating whether this Agreement remains in effect as to an Assessed Property, and whether any party is then in default hereunder.

H. Termination.

This Agreement shall terminate and be of no further force and effect as to the Assessed Property upon payment in full of the Assessment(s) against such Assessed Property.

[Signature pages to follow]

[Signature Page Landowner Agreement]

EXECUTED by the City and Landowner on the Effective Date.

Date: _____

CITY OF ANNA, TEXAS

By: _____
Mayor

STATE OF TEXAS §
 §
COUNTY OF COLLIN §

 This instrument was acknowledged before me on the ____ day of _____, 20____ by
_____, Mayor of the City of Anna, Texas on behalf of said City.

(SEAL)

Notary Public, State of Texas

Name printed or typed

Commission Expires: _____

Date: _____

LANDOWNER

a Texas _____,

By: _____
_____,
its manager

STATE OF TEXAS)
)
COUNTY OF _____)

This instrument was acknowledged before me on the ____ day of _____, 20____, by _____ in his capacity as Manager of _____, known to be the person whose name is subscribed to the foregoing instrument, and that he executed the same on behalf of and as the act of Manager of _____.

Notary Public, State of Texas

My Commission Expires:

LANDOWNER AGREEMENT - EXHIBIT I

METES AND BOUNDS DESCRIPTION OF LANDOWNER PARCEL

LANDOWNER AGREEMENT - EXHIBIT II

DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS

This **DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS** (as it may be amended from time to time, this "Declaration") is made as of _____ by _____ a Texas _____ (the "Landowner").

RECITALS:

- A. The Landowner holds record title to that portion of the real property located in Collin County, Texas, which is described in the attached Exhibit I (the "Landowner's Parcel").
- B. The City Council of the City of Anna (the "City Council") upon a petition requesting the establishment of a public improvement district covering the property within the District to be known as the Sherley Tract Public Improvement District (the "District") by the then current owners of 100% of the appraised value of the taxable real property and 100% of the area of all taxable real property within the area requested to be included in the District created such District, in accordance with the Public Improvement District Assessment Act, Chapter 372, Texas Local Government Code, as amended (the "PID Act").
- C. The City Council has adopted an assessment ordinance to levy assessments for certain public improvements (including all exhibits and attachments thereto, the "Assessment Ordinance") and the Service and Assessment Plan included as an exhibit to the Assessment Ordinance (as amended from time to time, the "Service and Assessment Plan"), and has levied the assessments (the "Assessments") on property in the District.
- D. The statutory notification required by Texas Property Code, Section 5.014, as amended, to be provided by the seller of residential property that is located in a public improvement district established under Chapter 372 of the Texas Local Government Code, as amended, to the purchaser, is incorporated into this Declaration.

DECLARATIONS:

NOW, THEREFORE, the Landowner hereby declares that the Landowner's Parcel is and shall be subject to, and hereby imposes on the Landowner's Parcel, the following covenants, conditions and restrictions:

1. Acceptance and Approval of Assessments and Lien on Property:

- (a) Landowner accepts each Assessment levied on the Landowner's Parcel owned by such Landowner.
- (b) The Assessment (including any reassessment, the expense of collection, and reasonable attorney's fees, if incurred) is (a) a first and prior lien (the "Assessment Lien") against the property assessed, superior to all other liens or claims except for liens or claims for state, county, school district or municipality ad valorem property taxes whether now or hereafter payable, and (b) a personal liability of and charge against the owners of the property to the extent of their ownership regardless of whether the owners are named. The Assessment Lien is effective from the date of

the Assessment Ordinance until the Assessments are paid and may be enforced by the City in the same manner as an ad valorem property tax levied against real property that may be enforced by the City. The owner of any assessed property may pay, at any time, the entire Assessment levied against any such property. Foreclosure of an ad valorem property tax lien on property within the District will not extinguish the Assessment or any unpaid but not yet due Annual Installments of the Assessment, and will not accelerate the due date for any unpaid and not yet due Annual Installments of the Assessment.

It is the clear intention of all parties to this Declaration, that the Assessments, including any Annual Installments of the Assessments (as such Annual Installments may be adjusted, decreased or extended), are covenants that run with the Landowner's Parcel and specifically binds the Landowner, its successors and assigns.

In the event of delinquency in the payment of any Annual Installment of the Assessment, the City is empowered to order institution of an action in district court to foreclose the related Assessment Lien, to enforce personal liability against the owner of the real property for the Assessment, or both. In such action the real property subject to the delinquent Assessment may be sold at judicial foreclosure sale for the amount of such delinquent property taxes and Assessment, plus penalties, interest and costs of collection.

2. Landowner or any subsequent owner of the Landowner's Parcel waives:

- (a) any and all defects, irregularities, illegalities or deficiencies in the proceedings establishing the District and levying and collecting the Assessments or the annual installments of the Assessments;
- (b) any and all notices and time periods provided by the PID Act including, but not limited to, notice of the establishment of the District and notice of public hearings regarding the levy of Assessments by the City Council concerning the Assessments;
- (c) any and all defects, irregularities, illegalities or deficiencies in, or in the adoption of, the Assessment Ordinance by the City Council;
- (d) any and all actions and defenses against the adoption or amendment of the Service and Assessment Plan, the City's finding of a 'special benefit' pursuant to the PID Act and the Service and Assessment Plan, and the levy of the Assessments; and
- (e) any right to object to the legality of any of the Assessments or the Service and Assessment Plan or to any of the previous proceedings connected therewith which occurred prior to, or upon, the City Council's levy of the Assessments.

3. Amendments: This Declaration may be terminated or amended only by a document duly executed and acknowledged by the then-current owner(s) of the Landowner's Parcel and the City. No such termination or amendment shall be effective until a written instrument setting forth the terms thereof has been executed by the parties by whom approval is

required as set forth above and recorded in the real Property Records of Collin County, Texas.

4. **Third Party Beneficiary:** The City is a third party beneficiary to this Declaration and may enforce the terms hereof.
5. **Notice to Subsequent Purchasers:** Upon the sale of a dwelling unit within the District, the purchaser of such property shall be provided a written notice that reads substantially similar to the following:

TEXAS PROPERTY CODE SECTION 5.014

NOTICE OF OBLIGATION TO PAY PUBLIC IMPROVEMENT DISTRICT ASSESSMENT TO THE CITY OF ANNA, COLLIN COUNTY, TEXAS CONCERNING THE PROPERTY AT [Street Address]

As the purchaser of this parcel of real property, you are obligated to pay an assessment to the City of Anna, Texas, for improvement projects undertaken by a public improvement district under Chapter 372 of the Texas Local Government Code, as amended. The assessment may be due in periodic installments.

The amount of the assessment against your property may be paid in full at any time together with interest to the date of payment. If you do not pay the assessment in full, it will be due and payable in annual installments (including interest and collection costs). More information concerning the amount of the assessment and the due dates of that assessment may be obtained from the City of Anna, 111 N. Powell Parkway, Anna, Texas 75409

Your failure to pay the assessment or the annual installments could result in a lien and in the foreclosure of your property.

Signature of Purchaser(s) _____

Date: _____

The seller shall deliver this notice to the purchaser before the effective date of an executory contract binding the purchaser to purchase the property. The notice may be given separately, as part of the contract during negotiations, or as part of any other notice the seller delivers to the purchaser. If the notice is included as part of the executory contract or another notice, the title of the notice prescribed by this section, the references to the street address and date in the notice, and the purchaser's signature on the notice may be omitted.

EXECUTED by the undersigned on the date set forth below to be effective as of the date first above written.

LANDOWNER

a Texas _____,

By: _____
_____,
its manager

STATE OF TEXAS)
)
COUNTY OF _____)

This instrument was acknowledged before me on the ___ day of _____, 20____, by
_____ in his capacity as Manager of _____, known to
be the person whose name is subscribed to the foregoing instrument, and that he executed the same
on behalf of and as the act of Manager of _____.

Notary Public, State of Texas

My Commission Expires:

LANDOWNER AGREEMENT - EXHIBIT III

HOMEBUYER EDUCATION PROGRAM

As used in this **Exhibit III**, the recorded Notice of the Authorization and Establishment of the Sherley Tract Public Improvement District and the Declaration of Covenants, Conditions and Restrictions in **Exhibit II** of this Agreement are referred to as the "Recorded Notices."

1. Any Landowner who is a Builder shall attach the Recorded Notices and the final Assessment Roll for such Assessed Property (or if the Assessment Roll is not available for such Assessed Property, then a schedule showing the maximum 30 year payment for such Assessed Property) as an addendum to any residential homebuyer's contract.
2. Any Landowner who is a Builder shall provide evidence of compliance with Paragraph 1 above, signed by such residential homebuyer, to the City, upon the City's request.
3. Any Landowner who is a Builder shall prominently display signage in its model homes, if any, substantially in the form of the Recorded Notices.
4. If prepared and provided by the City, any Landowner who is a Builder shall distribute informational brochures about the existence and effect of the District in prospective homebuyer sales packets.
5. Any Landowner who is a Builder shall include Assessments in estimated property taxes, if such Builder estimates monthly ownership costs for prospective homebuyers.

Exhibit H
CITY PID BOND FINANCING AND TIRZ CONTRIBUTION ANALYSIS –
DRAFT FOR ILLUSTRATION PURPOSES ONLY

City of Anna, Texas
Sherley Tract Public Improvement District
Development Plan

DRAFT for discussion purposes only

TOTAL SHERLEY TRACT PROJECT							
		Expected Paper Lot	Expected Finished Lot	Expected Build Out	Expected Project Paper	Expected Project Finished	Expected Project Build Out
Category	No. of Units	Unit Value	Unit Value	Unit Value	Value	Lots Value	Value
Type 1 (40')	143	\$ 19,152	\$ 48,000	\$ 240,000	\$ 2,738,705	\$ 6,864,000	\$ 34,320,000
Type 2 (50')	241	21,845	54,750	273,750	5,264,645	13,194,750	65,973,750
Type 3 (60')	139	26,214	65,700	328,500	3,643,746	9,132,300	45,661,500
Type 4 (70')	61	22,775	68,250	341,250	1,389,271	4,163,250	20,816,250
Type 5 (80')	20	26,028	78,000	390,000	520,570	1,560,000	7,800,000
Type 6 (TH)	190	17,955	45,000	225,000	3,411,450	8,550,000	42,750,000
Type 7 (SL)	27	45,080	120,600	603,000	1,217,168	3,256,200	16,281,000
	821				\$ 18,185,554	\$ 46,720,500	\$ 233,602,500

Notes:

As reported by the Developer on May 5, 2020. Subject to change. Expected Paper Lot Value calculated at 33.37% to 39.9% of the Expected Finished Lot Value as per previous ratios provided by the Developer.
 "SL" is a fourplex - one lot produces one fourplex at \$120,000 per subunit or \$600,000 per fourplex.

Internet use decreases as age increases

i

2 tablets.

City of Anna, Texas
 Shirley Tract Public Improvement District
 PROJECTED TAX STATEMENT

DRAFT for discussion purposes only

Projected Tax Statement									
	2019 Tax Rate	Tax Levy on 40' Home	Tax Levy on 50' Home	Tax Levy on 60' Home	Tax Levy on 70' Home	Tax Levy on 80' Home	Tax Levy on Townhome	Tax Levy on SL Fourplex	
City of Anna	\$ 0.5913	\$ 1,419.09	\$ 1,618.65	\$ 1,942.38	\$ 2,017.77	\$ 2,306.02	\$ 1,380.40	\$ 3,565.47	
Collin County	0.1750	419.88	478.93	574.71	597.02	682.31	393.64	1,054.95	
Collin County Community College District	0.0812	194.93	222.35	266.81	277.17	316.77	182.75	489.77	
Anna Independent School District	1.5684	3,764.04	4,293.36	5,152.03	5,351.99	6,116.57	3,528.79	9,457.15	
Total Tax Rate	<u>\$ 2.4158</u>	<u>\$ 5,797.95</u>	<u>\$ 6,613.28</u>	<u>\$ 7,935.94</u>	<u>\$ 8,243.96</u>	<u>\$ 9,421.66</u>	<u>\$ 5,435.57</u>	<u>\$ 14,567.36</u>	
GROSS Avg. Annual Insurment as a Tax Rate/Levy Equivalent	\$ 0.9587	\$ 2,300.88	\$ 2,624.44	\$ 3,149.33	\$ 3,271.57	\$ 3,738.93	\$ 2,157.08	\$ 5,780.97	
Total GROSS Overlapping Tax Rate/Levy plus Special Assessment	<u>\$ 3.3745</u>	<u>\$ 8,098.83</u>	<u>\$ 9,237.73</u>	<u>\$ 11,085.27</u>	<u>\$ 11,515.52</u>	<u>\$ 13,160.60</u>	<u>\$ 7,592.65</u>	<u>\$ 20,348.31</u>	
<i>Projected TRZ Credit as Tax Rate/Levy Equivalent⁽¹⁾</i>	<u>\$ (0.2853)</u>	<u>\$ (685.65)</u>	<u>\$ (782.07)</u>	<u>\$ (938.48)</u>	<u>\$ (974.91)</u>	<u>\$ (1,114.28)</u>	<u>\$ (642.80)</u>	<u>\$ (1,772.70)</u>	
Total Overlapping Tax Rate/Levy after Projected TRZ Credit ⁽¹⁾	<u>\$ 3.0888</u>	<u>\$ 7,413.18</u>	<u>\$ 8,455.66</u>	<u>\$ 10,146.79</u>	<u>\$ 10,540.61</u>	<u>\$ 12,046.42</u>	<u>\$ 6,949.86</u>	<u>\$ 18,625.61</u>	
Net Avg. Annual Insurment as Tax Rate/Levy Equivalent	\$ 0.6730	\$ 1,615.23	\$ 1,842.38	\$ 2,210.85	\$ 2,296.66	\$ 2,624.75	\$ 1,514.28	\$ 4,058.27	

SECOND AMENDED SHERLEY TRACT SUBDIVISION IMPROVEMENT AGREEMENT

This Second Amended Sherley Tract Subdivision Improvement Agreement (this "Second Amendment") is entered into between the **CITY OF ANNA, TEXAS**, (the "City"), and **MM ANNA 325, LLC**, a Texas limited liability company ("Developer").

RECITALS

WHEREAS, the Developer and the City are sometimes individually referred to as a "Party" and collectively as the "Parties"; and

WHEREAS, this Second Amendment amends that certain Sherley Tract Subdivision Improvement Agreement entered into between the City and Developer, effective as of June 9, 2020, as amended by that certain First Amended Sherley Tract Subdivision Improvement Agreement entered into between the City and Developer, effective as of July 14, 2020 (as amended the "Original Agreement"); and

WHEREAS, the Original Agreement is only modified as expressly set forth in this Second Amendment and the Original Agreement otherwise remains in full force and effect,

WHEREAS, the Parties desire to remove the requirements that (1) Developer commence construction of the Restaurant and Water Feature on or before the City's issuance of a building permit for any for any multiple-family residential structure greater than 275 units to be located on the In-City Property (the "Multifamily Structure"), and (2) complete construction of the Restaurant and Water Feature before the City issues a certificate of occupancy for any Multifamily Structure.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the City and the Developer agree as follows:

AMENDMENT

1. **Amendment to Section 5.9.** The Parties agree that Section 5.9 of the Original Agreement is hereby deleted in its entirety and replaced with the revised Section 5.9 below:

"5.9 Restaurant and Water Feature. The Developer shall apply for and obtain the building permits necessary to commence construction of a restaurant ~~and a water feature~~ (respectively, "Restaurant~~-and Water Feature~~") to be located on the In-City Property and shall commence construction of the Restaurant ~~and Water Feature~~ before the earlier of the following occurrences: (1) the expiration of five (5) years of the Effective Date; or (2) the City's issuance of a building permit for the 301st single-family residential building permit as pertains to residences on the Property. The Developer shall complete construction of the Restaurant ~~and Water Feature~~ within one (1) year and six (6) months of commencing construction of same. The Restaurant building shall be a minimum of 5,000 square feet of airconditioned space. ~~The Water Feature shall be a minimum of 20,000 square feet in size.~~ Developer shall also apply for and obtain the building permits necessary to commence

construction and commence construction of a minimum of 10,000 square feet of additional non-residential space to be located on the In-City Property within six (6) years of the Effective Date. This is in addition to the 5,000 square foot Restaurant referenced above.

The Water Feature must be constructed prior to or simultaneously with the Multifamily Structure. The Water Feature shall be a minimum of 20,000 square feet in size.

This Second Amendment amends the Original Agreement in no other manner except as expressly set forth herein. All capitalized terms used in this Second Amendment, to the extent not otherwise expressly defined herein, shall have the meanings ascribed to them in the Original Agreement. The Developer and the City further agree that all other terms and provisions of the Original Agreement that are not modified hereby shall remain in full force and effect.

EXECUTED BY THE PARTIES TO BE EFFECTIVE ON _____:

CITY OF ANNA

By: _____
Name: _____
Title: _____
Date: _____

STATE OF TEXAS §
 §
COUNTY OF COLLIN §

This instrument was acknowledged before me on the ____ day of _____ 2022 by _____, the _____ of the City of Anna, Texas on behalf of the City.

Notary Public, State of Texas

[DEVELOPER SIGNATURE LOCATED ON FOLLOWING PAGE]

DEVELOPER:

MM Anna 325, LLC,
a Texas limited liability company

By: MMM Ventures, LLC,
a Texas limited liability company
Its Manager

By: 2M Ventures, LLC,
a Delaware limited liability company
Its Manager

By: _____
Name: Mehrdad Moayed
Its: Manager

STATE OF TEXAS §
 §
COUNTY OF DALLAS §

This instrument was acknowledged before me on the ____ day of _____,
2022 by Mehrdad Moayed, Manager of 2M Ventures, LLC, as Manager of MMM Ventures, LLC,
as Manager of MM Anna 325, LLC, a Texas limited liability company on behalf of said company.

Notary Public, State of Texas



Item No. 6.a.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022

Staff Contact:

AGENDA ITEM:

Approve City Council Meeting Minutes for July 12, 2022 and July 13, 2022. (City Secretary Carrie Land)

SUMMARY:

FINANCIAL IMPACT:

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

STAFF RECOMMENDATION:

ATTACHMENTS:

1. CCmin2012-07-13 Draft
2. CCmin2022-07-12 Draft

APPROVALS:

Carrie Land, City Secretary
Jim Proce, City Manager

Created/Initiated - 7/21/2022
Final Approval - 7/21/2022

**Regular City Council Meeting
Meeting Minutes**



Wednesday, July 13, 2022 @ 6:00 PM

**Central Fire Station, Ashmore Room
305 S. Powell Parkway
Anna, Texas 75409**

The City Council of the City of Anna met at 6:00 PM, on July 13, 2022, at the Central Fire Station, Ashmore Room, located at 305 S. Powell Parkway, to consider the following items.

1. Call to Order, Roll Call, and Establishment of Quorum.

Mayor Pike called the meeting to order at 6:08 PM.

2. Invocation and Pledge of Allegiance.

Mayor Pike led the Invocation and Pledge of Allegiance.

3. Neighbor Comments.

No public comments.

4. Work Session.

a. Budget Work Shop

City Manager Proce reviewed the draft tax numbers and budget with the City Council.

5. Adjourn.

Mayor Pike adjourned the meeting at 9:31 PM.

**Regular City Council Meeting
Meeting Minutes**

Tuesday, July 12, 2022 @ 6:30 PM



**Anna ISD Board Room
201 E. 7th Street
Anna, Texas 75409**

The City Council of the City of Anna met at 6:30 PM, on Tuesday, July 12, 2022, at the Anna ISD Board Room located at 201 E. 7th Street, Anna, Texas, to consider the following items.

1. Call to Order, Roll Call, and Establishment of Quorum.

Mayor Pike called the meeting to order at 6:30 PM.

All City Council Members were present.

2. Invocation and Pledge of Allegiance.

Council Member Carver led the Invocation. Mayor Pike led the Pledge of Allegiance.

3. Neighbor Comments.

Mr. Bryan Nichols, representing Juba Pizza, requested the City Council allow a late night permit to be open past 12:00 AM.

4. Reports.

- a. Proclamation Declaring July as Park and Recreation Month. (Director of Neighborhood Services Marc Marchand)

Designation of July as Park and Recreation Month

- b. Recognition of Landon Mullin Johnson. (Council Member Kevin Toten)

City Council recognized Landon Mullin Johnson and his video promoting Anna and the Anna Historical Depot.

5. **Work Session.**

- a. Update on Municipal Complex. (Director of Public Works Greg Peters, P.E.)

Representing Lee Lewis Construction, Mr. Anthony Lewis, ~~representing Lee Lewis Construction~~, provided City Council with a brief update and timeline on the Municipal Complex.

- b. Zoning Discussion - Leonard Trails. (Director of Development Services Ross Altobelli)

Zoning discussion and direction for a tract of land that is primarily located within a Catalyst Area as identified within the Anna2050 Downtown Master Plan.

- c. FY22/23 Budget Update. (City Manager Jim Proce)

City Manager Proce provided City Council with a brief presentation on the draft FY 22/23 Budget.

- d. Update on the Splash Pad and Next Steps. (Director of Neighborhood Services Marc Marchand)

Director of Neighborhood Services Marc Marchand provided City Council with an update on the maintenance issues involving the Splash Pad ~~splash pad~~ and suggested rehab efforts. The consensus of the City Council was to replace the Splash Pads ~~splash pad~~ for safety of neighbors.

6. **Consent Items.**

MOTION: Council Member Toten moved to approve Consent Items 6.a. through 6.i. Council Member Ussery seconded. Motion carried 7-0.

- a. Approve the City Council Meeting Minutes for June 28, 2022. (City Secretary Carrie Land)
- b. Review Minutes of the June 6, 2022, Planning & Zoning Commission Meeting. (Director of Development Services Ross Altobelli)

- c. Approve a Resolution regarding the Garner Tres, Block A, Lot 1, Final Plat. (Director of Development Services Ross Altobelli)

One lot on 3.2± acres located on the north side of County Road 513, 2,385± feet west of County Road 577. Zoned: Extraterritorial Jurisdiction (ETJ).

The purpose of the Final Plat is to dedicate the lot and block boundaries and right-of-way necessary for future development.

The Final Plat is in conformance with the City's Subdivision Regulations and recommended for approval subject to the on-site sewage facilities review by Collin County Development Services.

The Planning & Zoning Commission recommended approval.

A RESOLUTION OF THE CITY OF ANNA, TEXAS APPROVING GARNER TRES, BLOCK A, LOT 1, FINAL PLAT.

- d. Approve a Resolution regarding the Avery Pointe Commercial, Block A, Lots 1R, 4, & 5, Replat. (Director of Development Services Ross Altobelli)

Restaurant and retail on three lots on 2.1± acres located at the northeast corner of W. White Street and Ferguson Parkway. Zoned: Planned Development (Ord. No. 964- 2022, Ord. No. 709-2015, and Ord. No. 179-2005).

The purpose of the Replat is to dedicate lot and block boundaries and easements necessary for the construction of the restaurant and retail site improvements and to subdivide the property.

The Replat is in conformance with the city's Subdivision Regulations and Zoning Ordinances and is subject to additions and/or alterations to the engineering plans as required by the Public Works Department.

The Planning & Zoning Commission recommended approval.

A RESOLUTION OF THE CITY OF ANNA, TEXAS APPROVING AVERY POINTE COMMERCIAL, BLOCK A, LOTS 1R, 4, & 5, REPLAT.

- e. Approve a Resolution regarding the Avery Pointe Commercial, Block A, Lots 1R, 4, & 5, Site Plan. (Director of Development Services Ross Altobelli)

Restaurant and retail on three lots on 2.1± acres located at the northeast corner of W. White Street and Ferguson Parkway. Zoned: Planned Development (Ord. No. 964- 2022, Ord. No. 709-2015, and Ord. No. 179-2005).

The purpose of the Site Plan is to show the proposed restaurant and retail development site improvements.

The Site Plan is in conformance with the City's Subdivision Regulations and Zoning Ordinances and is subject to additions and/or alterations to the engineering plans as required by the Public Works Department.

The Planning & Zoning Commission recommended approval.

A RESOLUTION OF THE CITY OF ANNA, TEXAS APPROVING AVERY
POINTE COMMERCIAL, BLOCK A, LOTS 1R, 4, & 5, SITE PLAN.

- f. Approve a Resolution regarding the Villages of Waters Creek, Block B, Lot 1, Preliminary Plat. (Director of Development Services Ross Altobelli)

Multiple-family residence on one lot on 19.5± acres located on the west side of future Persimmon Drive, 350± feet south of W. White Street. Zoned: Planned Development (Ord. No. 978-2022 & Ord. No. 861-2020).

The purpose of the Preliminary Plat is to propose rights-of-way, lot and block boundaries, and easements necessary for the creation of a multiple-family development.

The Preliminary Plat is in conformance with the adopted Planned Development standards and with the City's Subdivision Regulations and Zoning Ordinances and is subject to additions and/or alterations to the engineering plans as required by the Public Works Department.

The Planning & Zoning Commission recommended approval.

A RESOLUTION OF THE CITY OF ANNA, TEXAS APPROVING VILLAGES OF
WATERS CREEK, BLOCK B, LOT 1, PRELIMINARY PLAT.

- g. Approve a Resolution authorizing the City Manager to execute a task order amendment with Birkhoff Hendricks & Carter for the easement acquisition phase of the SH5 Utility Relocation project. (Director of Public Works Greg Peters, P.E.)

Birkhoff Hendricks and Carter, LLC, was selected for the design of the utility relocations along State Highway 5. The project is required for the TxDOT widening of State Highway 5, and includes expansions to the water and sewer system based upon the Anna 2050 Comprehensive Plan's land use assumptions. The project has passed the 60% design level, and the City is now ready to begin the easement acquisition process.

This item will approve an amendment to the original task order (Approved by City Council in April of 2021 via Resolution 2021-04-894), to authorize funding of easement acquisition costs, including consultant costs. The project is funded through Water and Sanitary Sewer Impact Fees, and is eligible for TxDOT partial reimbursement. Once the plans are finalized, the City will enter into an agreement with TxDOT for reimbursement of a portion of the City's costs. We expect this agreement to come before the City Council by the end of the calendar year. Currently, the reimbursement is expected to be approximately 40%.

A RESOLUTION OF THE CITY OF ANNA, TEXAS APPROVING AND
AUTHORIZING THE CITY MANAGER TO EXECUTE AN AMENDMENT TO AN
EXISTING TASK ORDER WITH BIRKHOFF HENDRICKS AND CARTER, LLC,
FOR THE STATE HIGHWAY 5 UTILITY RELOCATION PROJECT, FOR

EASEMENT ACQUISITION SERVICES, AS SHOWN IN EXHIBIT "A" ATTACHED HERETO, AND PROVIDING FOR AN EFFECTIVE DATE.

- h. Approve a Resolution approving an Amended and Restated Development Agreement with Bloomfield Homes, LP for the Crystal Park Development. (Director of Economic Development Joey Grisham)

This amended version extends the timeline to October 2023 for PID bonds to be issued.

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS APPROVING AND AUTHORIZING THE MAYOR TO ACT ON THE CITY'S BEHALF IN EXECUTING AN AMENDED CRYSTAL PARK DEVELOPMENT AGREEMENT WITH BLOOMFIELD HOMES, LP .

- i. Approve meeting attendance for City Council, EDC/CDC Boards, Parks Advisory Board, Planning and Zoning Commission, Board of Adjustment and Diversity and Inclusion Commission. (City Secretary Carrie Land)

7. **Items For Individual Consideration.**

- a. Consider/Discuss/Action on the Drought Contingency Plan. (Director of Public Works Greg Peters)

The City of Anna has an existing Drought Contingency Plan which provides for specific steps for the City to take based on weather conditions and water usage. We have recently ended one of the hottest June's on record with very little rainfall. Staff will present the City Council with weather and water usage data, along with the adopted Drought Contingency Plan for discussion. Staff is seeking feedback on entering a voluntary Stage 1 Drought Stage, along with proposed ways the City can work with large water users and the construction industry to provide for more efficient and planned water usage.

MOTION: Mayor Pike moved to implement Stage 1 Drought restriction on a voluntary basis. City Council is to receive updates, construction management is also voluntary. Council Member Toten seconded. Motion carried 7-0.

- b. Conduct a Public Hearing/Consider/Discuss/Action on a Resolution regarding the 75 North Addition, Lots 14R & 15R, Residential Replat. (Director of Development Services Ross Altobelli)

Two single-family residences, detached on two lots on 0.3± acre, located on the west side of N Riggins Street, 560± feet north of Anthony Street. Zoned: S-1 Single-Family Residential District.

The purpose of the Replat is to modify the lot line between Lots 14R and 15R due to an encroachment of the existing house on Lot 15R onto Lot 14R.

The Planning & Zoning Commission recommended approval subject to the Board

of Adjustment granting two (2) variances to the City of Anna Zoning Ordinance associated with:

1. Minimum lot area requirement for Lot 14R
2. Minimum side yard, interior setback requirement for Lot 15R

Mayor Pike opened the ~~P~~ublic ~~H~~earing at 8:22 PM.

No public comments.

Mayor Pike closed the ~~P~~-public ~~H~~earing at 8:23 PM.

A RESOLUTION OF THE CITY OF ANNA, TEXAS APPROVING 75 NORTH ADDITION, LOTS 14R & 15R, REPLAT.

MOTION: Council Member Atchley moved to approve. Council Member Toten seconded. Motion carried 7-0.

- c. Consider/Discuss/Action on a Resolution regarding Anacapri, Phase 2, Final Plat. (Director of Development Services Ross Altobelli)

Mayor Pike recused himself.

139 SF-60 lots and 98 SF-Z lots and seven common area lots on 66.3± acres located on the south side of Mantua Road (County Road 371), 160± feet west of Thousand Oaks Drive. Zoned: Planned Development (Ord. No. 887-2020).

The purpose for the Final Plat is to dedicate rights-of-way, lot and block boundaries, and easements necessary for the creation of a single-family residential development.

The Final Plat is in conformance with the ~~C~~ity's Subdivision Regulations and Zoning Ordinances and is subject to additions and/or alterations to the engineering plans as required by the Public Works Department.

The Planning & Zoning Commission recommended approval.

A RESOLUTION OF THE CITY OF ANNA, TEXAS APPROVING ANACAPRI, PHASE 2, FINAL PLAT.

MOTION: Council Member Toten moved to approve. Council Member Carver seconded. Motion carried 6-0.

8. **Closed Session (Exceptions).**

Under Tex. Gov't Code Chapter 551, the City Council may enter into Closed Session to discuss any items listed or referenced on this Agenda under the following exceptions:

- a. Consult with legal counsel regarding pending or contemplated litigation and/or on matters in which the duty of the attorney to the governmental body under the Texas Disciplinary Rules of Professional Conduct of the State Bar of Texas clearly conflicts with Chapter 551 of the Government Code (Tex. Gov't Code §551.071).

- b. Discuss or deliberate the purchase, exchange, lease, or value of real property (Tex. Gov't Code §551.072).
- c. Discuss or deliberate Economic Development Negotiations: (1) To discuss or deliberate regarding commercial or financial information that the City has received from a business prospect that the City seeks to have locate, stay, or expand in or near the territory of the City of Anna and with which the City is conducting economic development negotiations; or (2) To deliberate the offer of a financial or other incentive to a business prospect described by subdivision (1). (Tex. Gov't Code §551.087).
- d. Discuss or deliberate personnel matters (Tex. Gov't Code §551.074).

MOTION: Council Member Cain moved to enter Closed Session. Council Member Atchley seconded. Motion carried 6-0.

Mayor Pro Tem Miller recessed the meeting at 8:27 PM.

Mayor Pike reconvened the meeting at 8:49 PM.

- 9. Consider/Discuss/Action on any items listed on any agenda - work session, regular meeting, or closed session - that is duly posted by the City of Anna for any City Council meeting occurring on the same date as the meeting noticed in this agenda.

No action was taken.

10. **Adjourn.**

Mayor Pike adjourned the meeting at 8:49 PM.

Approved on July 26, 2022.

Mayor Nate Pike

ATTEST:

City Secretary Carrie L. Land



Item No. 6.b.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022

Staff Contact:

AGENDA ITEM:

Approve Minutes of the June 9, 2022, Joint City Council, Community Development Corporation and Economic Development Corporation Board Meetings. (Director of Economic Development Joey Grisham).

SUMMARY:

FINANCIAL IMPACT:

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

STAFF RECOMMENDATION:

ATTACHMENTS:

1. June 9 2022 Joint City Council CDC EDC Meeting Minutes FINAL_Signed

APPROVALS:

Kimberly Garduno, Economic Development Coordinator	Created/Initiated - 7/21/2022
Jim Proce, City Manager	Final Approval - 7/21/2022



**Anna City Council / Anna Community Development Corporation and Anna
Economic Development Corporation Joint Meeting**

Minutes

**Thursday, June 9, 2022, at 6:30 pm
City of Anna Fire Station EOC Conference Room
305 S. Powell Parkway, Anna, Texas 75409**

The Anna City Council and Anna Community Development Corporation and the Anna Economic Development Corporation conducted a meeting at 6:30 p.m. on Thursday, June 9, 2022, at the Anna Fire Station EOC Conference Room, located at 305 S. Powell Parkway (Highway 5) Anna, Texas 75409.

A video recording of the open session portions of the meeting may be viewed online at the City of Anna's website: <https://www.annatexas.gov/962/AgendasMinutes>

City Council Members Present: Mayor Nate Pike, Pete Cain, Stan Carver, Randy Atchley, Danny Ussery and Lee Miller

City Council Members Absent: Kevin Toten

CDC and EDC Board Members Present: Michelle Hawkins, Rocio Gonzalez, Kylee Kelley, and Gina Maria-Ottavio

CDC and EDC Board Members Absent: Bruce Norwood, Shane Williams and Ronald Kerr

Staff Present: Joey Grisham (Director of Economic Development), Kimberly Garduno (Economic Development Coordinator), Greg Peters (Director of Public Works) and Chris Talbot (IT Systems Administrator)

1. Call to Order. Roll Call and Establishment of Quorum.

Mayor Nate Pike called the meeting to order at 6:45 p.m. on behalf of the City Council.

Board Secretary Rocio Gonzalez called the meeting to order at 6:45 p.m. on behalf of the Anna Community Development Corporation and the Anna Economic Development Corporation.

2. Invocation and Pledge of Allegiance.

Invocation and Pledge of Allegiance were led by Mayor Nate Pike.

3. Neighbor Comments.

None.

4. **Consent Agenda.**

- a. Consider/Discuss/Act on approving minutes from the May 5, 2022, Joint Community Development Corporation and Economic Development Corporation Special-Called Meeting. (CDC)
- b. Consider/Discuss/Act on approving minutes from the May 5, 2022, Joint Community Development Corporation and Economic Development Corporation Special-Called Meeting. (EDC)

Gina Maria-Ottavio made a motion on behalf of the CDC and EDC to approve the consent agenda. Kylee Kelley seconded the motion. All were in favor. Motion passed.

5. **Individual Consideration**

- a. Presentation on Background and Sale of Anna Business Park

Joey Grisham provided an overview of the Type A and B Corporation structure and funding mechanisms as defined under state law. He explained that the CDC/EDC Boards adopted an Economic Development Strategic Plan in 2020 that was based on the City Council Strategic Plan from 2019. The plan focused on recruiting new companies, attracting retail, and creating a vibrant Downtown district among other priorities. Since the Business Park sold, it is time to identify which projects the Board and Council would like to fund with the proceeds of the sale.

- b. Presentation on Anna CDC Financial Position and Project Considerations

Jim Sabonis and Andre Ayala with Hilltop Securities provided a presentation and overview of Anna Community Development Corporation's existing debt, financial considerations and current debt capacity.

Mayor Nate Pike asked if interest rates will continue to rise or level off in the future. Jim Sabonis explained rates may fluctuate as the economy deals with inflation and primary elections, however the City's strong bond rating helps secure a good interest rate.

Joey Grisham introduced Greg Peters, Public Works Director, to discuss the Downtown Drainage, Water and Wastewater Study being funded by the CDC, gateway/wayfinding signage, considerations of burying franchise utilities, current and planned street projects, and water/wastewater upgrades. Since Anna's Downtown does not currently have an underground storm system, the CDC retained engineering firm Teague, Nall and Perkins to conduct a comprehensive drainage study of the downtown area. Funding from the federal American Rescue Plan Act will also be used to help upgrade the area's aging underground infrastructure. The City's Capital Improvement Plan identified multiple areas in Downtown's core in need of street and parking enhancements. Before maintenance work can begin, staff must work with multiple agencies, including DART and TxDOT, for Right-of-Way approvals.

Stan Carver inquired about the level of communication between the City and DART. Greg explained despite DART's turnover, staff discovered a contact with DART and

communication is much better. Stan expressed concerns about detention ponds in Downtown to prevent runoff. Greg emphasized there are several viable options, although costs of construction, land value and FEMA regulations should be considered. Greg stated he will work with TNP to identify a cost-effective solution.

Randy Atchley asked the timeline and completion date of the Water/Wastewater study. Greg mentioned the timeline and completion date can be adjusted if certain phases are condensed.

Gina Maria-Ottavio asked what specific sections of Downtown will be covered utilizing American Rescue Plan Act COVID funds and if future design plans include vertical parking structures. Greg stated current funding covers improvements in Anna's Downtown Core and Phase I will focus on improving street-level parking. Jim Proce reminded Council that DART has the option to end the City's lease agreement for parking in their right-of-way. DART adheres to a minimum of five years advance notification which gives staff time to reconfigure parking options if the agreement is terminated.

Joey Grisham described additional programs to spur Downtown investment, including an incentive program for businesses and trail connections. He will continue to work with staff to implement Gateway Signage and the Wayfinding Master Plan.

Mayor Nate Pike commended staff for their work on the sale of the business park and wayfinding and signage plan. He stated the importance of prioritizing infrastructure and utility projects to incentivize commercial and retail developments in Downtown.

Lee Miller discussed the history of previous Downtown Revitalization plans and the importance of signage to distinguish Downtown's core.

Stan Carver asked about funding mechanisms for trail connections in Downtown. Joey mentioned multiple funding options including Parks and Recreation and the County's participation in Tax Increment Reinvestment Zone (TIRZ) Number 6. He further stated projects should focus on public infrastructure to create catalyst projects.

6. Director's Report

a. Development Forum – July 21

The 2nd Development Forum will take place on Wednesday, July 21 at the new City Hall. This year staff anticipates over 100 attendees. Staff will send out notifications to Council and the Board.

b. ICSC Las Vegas Updates

ICSC Las Vegas was a success; Joey Grisham, Shane Williams, Lee Miller and Bruce Norwood met with many developers, retailers, and retail brokers interested in Anna.

c. Strategic Plan Update

Collin County Commissioner's Court unanimously approved participation in the Downtown TIRZ Number 6. EDC Director Joey Grisham served as a guest contributor for D CEO Commercial Real Estate Newsletter. He presented to Anna's Leadership

Class sponsored by the Chamber and staff met with several breweries and conducted tours of the Police and Finance building.

7. JOINT CLOSED SESSION (exceptions):

- a. Deliberate regarding the purchase, exchange, lease or value of real property.** (Tex. Gov't Code §551.072) possible property acquisition; possible land sale/purchase; Anna Business Park.
- b. Consult with legal counsel on matters in which the duty of the attorney to the governmental body under the Texas Disciplinary Rules of Professional Conduct of the State Bar of Texas clearly conflicts with Chapter 551 of the Government Code** (Tex. Gov't Code §551.071); Grant program; Lease agreement and professional services contract.
- c. Discuss or deliberate Economic Development Negotiations:**
 - (1) To discuss or deliberate regarding commercial or financial information that the Board of Directors has received from a business prospect that the Board of Directors seeks to have locate, stay, or expand in or near the territory of the City of Anna and with which the Board is conducting economic development negotiations; or,
 - (2) To deliberate the offer of a financial or other incentive to a business prospect described by subdivision (1). (Tex. Gov't Code §551.087) Anna Business Park Property; potential retail and medical projects.

Mayor Nate Pike made a motion to enter closed session at 8:34 p.m.

Rocio Gonzalez made a motion on behalf of the CDC and EDC to enter closed session at 8:34 p.m.

8. Reconvene into open session and take any action on closed session items.

Mayor Nate Pike made a motion to reconvene into open session at 9:08 p.m.

9. Receive reports from Council, Board Members, or staff about items of community interest.

Joey Grisham stated that the Parmore Anna Senior Living Groundbreaking to be held on Tuesday, June 14th at 1:00 p.m.

10. Adjourn.

Rocio Gonzalez made a motion on behalf of the CDC and EDC to adjourn the meeting at 9:08 p.m.

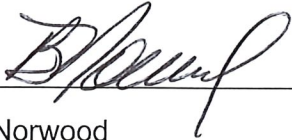
APPROVED:

ATTESTED:

Nate Pike
Mayor

Carrie Land
City Secretary

APPROVED:

A handwritten signature in black ink, appearing to read "B. Norwood", written over a horizontal line.

Bruce Norwood
President of CDC/EDC

ATTESTED:

A handwritten signature in blue ink, appearing to read "R. Gonzalez", written over a horizontal line.

Rocio Gonzalez
Secretary of CDC/EDC



Item No. 6.c.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022
Staff Contact: Taylor Lough

AGENDA ITEM:

Approve a Resolution approving a Downtown Anna Economic Development Incentive Policy. (Assistant Director of Economic Development Taylor Lough)

SUMMARY:

The Downtown Master Plan that was adopted by the City Council on April 27, 2021 calls for "the creation and promotion of an incentivized process/program for Downtown development." In conjunction with the creation of the Downtown Anna TIRZ that was adopted by the City Council on December 8, 2021, the Downtown Anna Economic Development Incentive Policy will provide tools to work towards the City Council's vision for a "Vibrant Downtown." The policy provides guidelines for incentives and outlines the approval process. The CDC and EDC Boards unanimously adopted the policy on July 7, 2022.

FINANCIAL IMPACT:

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:
Goal 1: Growing Anna Economy

STAFF RECOMMENDATION:

Approve the resolution.

ATTACHMENTS:

1. Council Res Downtown Incentive Policy
2. Exhibit A Downtown Anna Incentive Program 2022
3. CDC Resolution Downtown Anna Incentive Policy_Signed
4. EDC Resolution Downtown Anna Incentive Policy_Signed

APPROVALS:

Taylor Lough, Economic Development Administrator
Jim Proce, City Manager

Created/Initiated - 7/21/2022
Final Approval - 7/21/2022

RESOLUTION NO. _____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS APPROVING A DOWNTOWN ANNA ECONOMIC DEVELOPMENT INCENTIVE POLICY TO PROMOTE ECONOMIC DEVELOPMENT AND STIMULATE BUSINESS AND COMMERCIAL ACTIVITY WITHIN THE DOWNTOWN NEIGHBORHOOD OF THE CITY OF ANNA; ESTABLISHING GUIDELINES AND CRITERIA; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City desires to attract high-quality developments and the creation of new jobs to stimulate business and commercial activity in the Downtown Neighborhood of the City of Anna, and

WHEREAS, the City recognizes that it may be necessary to provide economic development incentives, and

WHEREAS, the Anna Economic and Community Development Corporation Boards approved and adopted the Downtown Anna Economic Development Incentive Policy at a meeting on July 7, 2022, and

WHEREAS, upon full review and consideration, the City wishes to adopt a Downtown Anna Economic Development Incentive Policy, attached hereto as Exhibit A, to stimulate business and commercial activity and attract new jobs to the City of Anna;

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS, THAT:

Section 1. **Recitals Incorporated**

Section 2. **Adoption of Policy**

The recitals set forth above are incorporated herein for all purposes as if set forth in full. The City Council of the City of Anna hereby approves and adopts the Downtown Anna Economic Development Incentive Policy attached hereto as Exhibit A.

CONSIDERED, PASSED AND APPROVED by the City Council of the City of Anna at a regular meeting on the 26th day of July 2022.

APPROVED:

Nate Pike, Mayor

ATTEST:

Carrie L. Land

Exhibit A

Downtown Anna Economic Development Incentive Program Guidelines

In 2019, the Anna City Council adopted a new strategic plan that heavily focused on economic development, including making Downtown Anna a vibrant destination. In April 2021, the Anna City Council adopted a new Downtown Master Plan that identified action steps to help achieve success. To help foster and promote such development and redevelopment in the heart of Downtown Anna, the following policy was created.

Each application for an incentive will be evaluated on a case-by-case basis by the Economic Development Corporation (EDC), Community Development Corporation (CDC), and the City of Anna. Incentive funds may be granted from all, some, or one of the entities listed above depending on the request.

All projects must be located within the Downtown Neighborhood District as defined by the City of Anna Downtown Master Plan. Application is not a guarantee of award. Those receiving incentives will also be required to enter into a performance agreement.

Existing Building Matching Grants

The purpose of this grant is to encourage property owners and tenants to improve the interior and exterior of existing buildings, the overall appearance of the Downtown core, and contribute meaningful additions to the public realm.

This grant matches 50% of approved project costs, not to exceed \$10,000 for exterior projects and matches 25% of approved project costs, not to exceed \$10,000 for interior projects.

Applications and awards may be made for any of the reimbursable **exterior** activities listed below and may be combined for any single property or project:

- Improvements to an existing exterior structure
- Improvements to public facing façade(s)
- Signage
- Public art
- Seating
- Utility relocation
- General building/property beautification including landscaping

Applications and awards may be made for any of the reimbursable **interior** activities listed below and may be combined for any single property or project:

- Remodeling for the public benefit
- General maintenance such as HVAC, plumbing, electrical, etc. is ineligible.

Applications must be made prior to work beginning. No grants will be awarded for work that has already been started, in progress, or completed.

Work must begin within eight months from the date of award (two months for permitting and six months for construction).

Grant funds are paid out on a reimbursement basis once completed work has been verified by City staff as compliant with the plans proposed in the approved application.

Any deviation from the approved grant project may result in the total or partial withdrawal of the grant. Grants are awarded as a single payment to the applicant. If an applicant is awarded a grant for any work performed pursuant to this program and the work is altered for any reason within one year from the date of construction, the applicant may be required to reimburse the City of Anna immediately for the full amount of the grant. Further, if a property is listed for sale and/or leased to a tenant for a purpose not originally intended by the grant application within one year of reimbursement, the applicant may be required to reimburse the City of Anna immediately for the full amount of the grant.

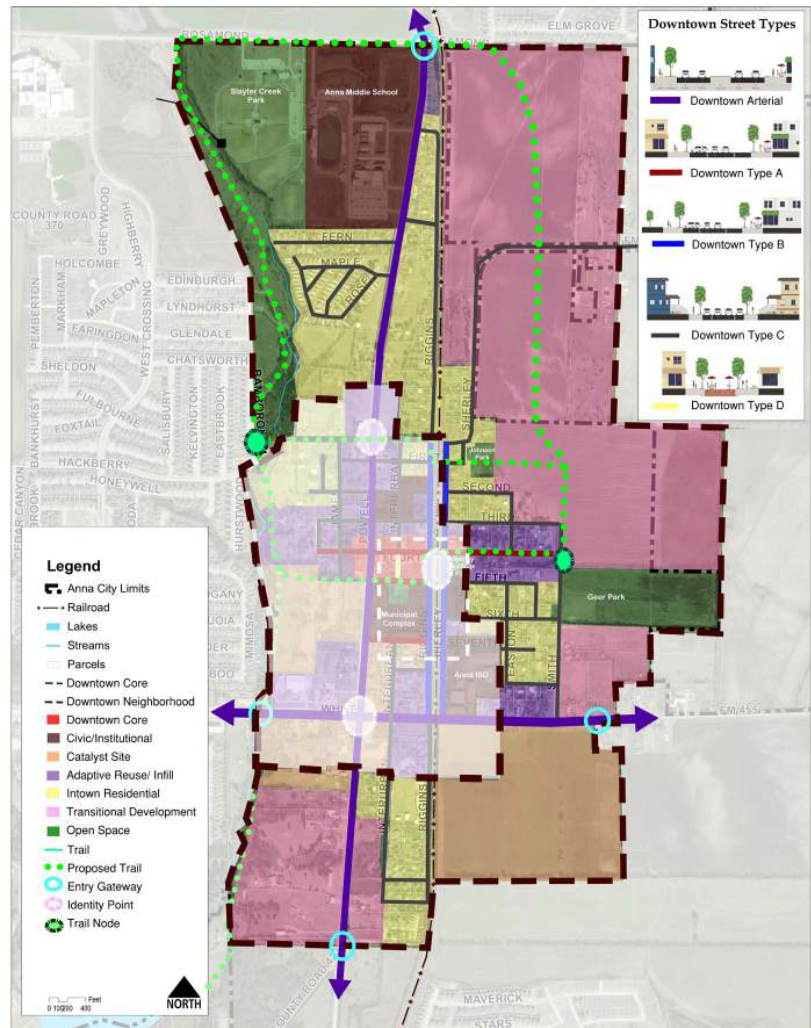
New Development and Redevelopment Grants

The purpose of this grant is to incentivize major enhancements within the Downtown Neighborhood with the construction of (a) new structure(s) or redevelopment beyond the scope of the Existing Building Matching Grant. Development and redevelopment projects are reviewed on a case-by-case basis. Chapter 380 of the Texas Local Government Code gives municipalities the authority to make enter into agreements to further economic development. These agreements may include grants of property, fee and permit waivers or reductions, infrastructure assistance, rent subsidies, cash reimbursements, etc. Special weight will be given to projects that meet the intent of the Downtown Master Plan and further the vision.

Grease Trap Rebate

The City, CDC, and/or EDC may consider a rebate equal to 50% of the cost to purchase and install or upgrade an existing grease trap up to a maximum of \$7,500 per project.

Downtown Neighborhood District



ANNA COMMUNITY DEVELOPMENT CORPORATION

RESOLUTION NO. 7.08.2022

A RESOLUTION OF THE ANNA COMMUNITY DEVELOPMENT CORPORATION APPROVING A DOWNTOWN ANNA ECONOMIC DEVELOPMENT INCENTIVE POLICY TO PROMOTE ECONOMIC DEVELOPMENT AND STIMULATE BUSINESS AND COMMERCIAL ACTIVITY IN THE CITY OF ANNA DOWNTOWN NEIGHBORHOOD; ESTABLISHING GUIDELINES AND CRITERIA; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the Texas Development Corporation Act ("the Act"), now codified in Chapters 501-505 of the Texas Local Government Code, authorizes communities to collect Type A and/or Type B economic development sales and use taxes, and

WHEREAS, the residents of the City of Anna "City" passed an election approving the collection of sales and use tax for the benefit of a Type B Corporation called the Anna Community Development Corporation ("CDC"), and

WHEREAS, the Anna City Council, with input and guidance from Anna neighbors, adopted a Downtown Master Plan to provide a vision and implementation of investment in the Downtown Anna Neighborhood, and

WHEREAS, the CDC desires to attract high-quality developments and the creation of new jobs to stimulate business and commercial activity in the Downtown Anna neighborhood, and

WHEREAS, the CDC recognizes that it may be necessary to provide economic development incentives, and

WHEREAS, upon full review and consideration, the CDC wishes to adopt a Downtown Anna Economic Development Incentive Policy, attached hereto as Exhibit A, to stimulate business and commercial activity and attract new jobs to Downtown Anna;

NOW THEREFORE, BE IT RESOLVED BY THE ANNA ECONOMIC DEVELOPMENT CORPORATION, THAT:

Section 1. Recitals Incorporated

The recitals set forth above are incorporated herein for all purposes as if set forth in full.

Section 2. Adoption of Policy

The Board of Directors of the Anna Community Development Corporation hereby approve and adopt the Downtown Anna Economic Development Incentive Policy.

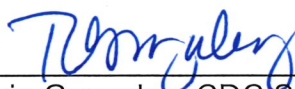
PASSED AND APPROVED by the Anna Community Development Corporation this
7th day of July 2022.

APPROVED:



Bruce Norwood, CDC President

ATTEST:



Rocio Gonzalez, CDC Secretary

ANNA ECONOMIC DEVELOPMENT CORPORATION

RESOLUTION NO. 7.09.2022

A RESOLUTION OF THE ANNA ECONOMIC DEVELOPMENT CORPORATION APPROVING A DOWNTOWN ANNA ECONOMIC DEVELOPMENT INCENTIVE POLICY TO PROMOTE ECONOMIC DEVELOPMENT AND STIMULATE BUSINESS AND COMMERCIAL ACTIVITY IN THE CITY OF ANNA DOWNTOWN NEIGHBORHOOD; ESTABLISHING GUIDELINES AND CRITERIA; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the Texas Development Corporation Act ("the Act"), now codified in Chapters 501-505 of the Texas Local Government Code, authorizes communities to collect Type A and/or Type B economic development sales and use taxes, and

WHEREAS, the Anna City Council, with input and guidance from Anna neighbors, adopted a Downtown Master Plan to provide a vision and implementation of investment in the Downtown Anna Neighborhood, and

WHEREAS, the EDC desires to attract high-quality developments and the creation of new jobs to stimulate business and commercial activity in the Downtown Anna neighborhood, and

WHEREAS, the EDC recognizes that it may be necessary to provide economic development incentives, and

WHEREAS, upon full review and consideration, the EDC wishes to adopt a Downtown Anna Economic Development Incentive Policy, attached hereto as Exhibit A, to stimulate business and commercial activity and attract new jobs to Downtown Anna;

NOW THEREFORE, BE IT RESOLVED BY THE ANNA ECONOMIC DEVELOPMENT CORPORATION, THAT:

Section 1. Recitals Incorporated

The recitals set forth above are incorporated herein for all purposes as if set forth in full.

Section 2. Adoption of Policy

The Board of Directors of the Anna Economic Development Corporation hereby approve and adopt the Downtown Anna Economic Development Incentive Policy.

PASSED AND APPROVED by the Anna Economic Development Corporation this 7th day of July 2022.

APPROVED:



Bruce Norwood, EDC President

ATTEST:



Rocio Gonzalez, EDC Secretary



Item No. 6.d.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022
Staff Contact: Joey Grisham

AGENDA ITEM:

Approve an Ordinance adopting the 2022 Annual Service Plan Update to the Service and Assessment Plan and Assessment Roll, including the collection for the 2022-2023 annual installments for the Hurricane Creek Public Improvement District (PID). (Director of Economic Development Joey Grisham)

SUMMARY:

The Hurricane Creek Public Improvement District was created pursuant to the Public Improvement District (PID) Act and a resolution of the Anna City Council on November 13, 2018. Anna has contracted with P3 Works to provide administrative and management support services associated with Hurricane Creek Public Improvement District.

The P3 Works scope of services includes the annual determination of the special assessments to be collected from the property within the PID boundaries, as well as updating the service and assessment plan and special assessment roll. In compliance with Chapter 372, Texas Local Government Code, the Service and Assessment Plan must be reviewed and updated annually.

This document is the annual update of the Service and Assessment Plan for 2022-2023. This Annual Service Plan update is related to the annual budget for the payment of PID obligations.

FINANCIAL IMPACT:

N/A

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

Goal 1: Growing Anna Economy

Goal 2: Sustainable Anna Community Through Planned Managed Growth

STAFF RECOMMENDATION:

Approve.

ATTACHMENTS:

1. 2022-07-18_ANN_Hurricane Creek_SAPupdate_Ord
2. 2022-07-18_ANN_Hurricane Creek_2022 SAP Update_final

APPROVALS:

Joey Grisham, Director Economic Development
Jim Proce, City Manager

Created/Initiated - 7/21/2022
Final Approval - 7/21/2022

CITY OF ANNA

ORDINANCE NO. _____

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS APPROVING THE 2022 ANNUAL SERVICE PLAN UPDATE TO THE SERVICE AND ASSESSMENT PLAN, INCLUDING THE ASSESSMENT ROLL, FOR THE HURRICANE CREEK PUBLIC IMPROVEMENT DISTRICT IN ACCORDANCE WITH CHAPTER 372, TEXAS LOCAL GOVERNMENT CODE, AS AMENDED; AND PROVIDING AN EFFECTIVE DATE.

RECITALS

WHEREAS, on November 13, 2018, after notice and a public hearing in the manner required by law, the City Council (the "City Council") of the City of Anna, Texas (the "City") passed and approved Resolution No. 2018-11-506 authorizing the creation of Hurricane Creek Public Improvement District (the "District"); and

WHEREAS, on March 12, 2019, after notice and a public hearing in the manner required by law, the City Council passed an Ordinance approving the "Hurricane Creek Public Improvement District Service and Assessment Plan," including the Assessment Roll attached to the Service and Assessment Plan (the "Assessment Roll"), (the "Service and Assessment Plan") and levied the Assessments on property within District in accordance with the Assessment Roll for the purposes of financing the public improvements (the "Authorized Improvements") undertaken for the benefit of such property; and

WHEREAS, Chapter 372, Texas Local Government Code (as amended, the "PID Act") requires the Service and Assessment Plan to be reviewed and updated annually for the purposes of determining the annual budget for the Authorized Improvements; and

WHEREAS, the City Council has received the "Hurricane Creek Public Improvement District 2022 Annual Service Plan Update" (the "Annual Service Plan Update") which includes the updated Assessment Roll and now desires to proceed with the adoption of this Ordinance which approves and adopts the Annual Service Plan Update and updated Assessment Roll for District as required by the PID Act.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS:

Section 1. Terms. Terms not otherwise defined herein are defined in the Service and Assessment Plan.

Section 2. Findings. That the recitals and findings in the Recitals of this Ordinance are hereby found and determined to be true and correct and constitute the legislative findings and determinations of the City Council.

Section 3. Assessment Plan. The Annual Service Plan Update, including the updated Assessment Roll contained therein, in the form attached as **Exhibit A** is hereby approved and the same is incorporated as part of this Ordinance as if fully set forth in the body of this Ordinance.

Section 4. Severability. If any provision, section, subsection, sentence, clause, or phrase of this Ordinance, or the application of same to any person or set of circumstances is for any reason held to be unconstitutional, void, or invalid, the validity of the remaining portions of this Ordinance or the application to other persons or sets of circumstances shall not be affected thereby, it being the intent of the governing body of the City in adopting this Ordinance that no portion hereof, or provision or regulation contained herein shall become inoperative or fail by reason of any unconstitutionality, voidness, or invalidity of any other portion hereof, and all provisions of this Ordinance are declared to be severable for that purpose.

Section 5. Filing in Land Records. The City Secretary is directed to cause a copy of this Ordinance, including the 2022 Annual Service Plan Update, to be recorded in the real property records of Collin County, Texas, on or before August 8, 2022. The City Secretary is further directed to similarly file each Annual Service Plan Update approved by the City Council, with each such filing to occur within seven days of the date each respective Annual Service Plan Update is approved.

Section 6. Effective Date. This Ordinance shall take effect immediately from and after its passage in accordance with applicable law.

PASSED by the City Council of the City of Anna, Texas this 26th day of July 2022.

ATTESTED:

APPROVED:

Carrie L. Land, City Secretary

Nate Pike, Mayor

Exhibit A

2022 Annual Service Plan Update

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HURRICANE CREEK PUBLIC IMPROVEMENT DISTRICT 2022 ANNUAL SERVICE PLAN UPDATE

JULY 26, 2022

INTRODUCTION

Capitalized terms used in this Annual Service Plan Update shall have the meanings set forth in the original Service and Assessment Plan (the “SAP”).

The District was created pursuant to the PID Act by Resolution No. 2018-11-506 on November 13, 2018, by the City Council to finance certain Authorized Improvements for the benefit of the property in the District.

On March 12, 2019, the City Council approved an Ordinance which approved the SAP for the District and levied Assessments to finance the Authorized Improvements to be constructed for the benefit of the Assessed Property within the District. The SAP also set forth the costs of the Authorized Improvements, the indebtedness to be incurred for such Authorized Improvements, and the manner of assessing the property in the District for the costs of such Authorized Improvements based on the benefit provided to the Assessed Property.

On July 14, 2020, the City Council approved the 2020 Annual Service Plan Update by adopting Resolution 2020-07-763, which updated the Assessment Rolls for 2020.

On July 27, 2021, the City Council approved the 2021 Annual Service Plan Update by adopting Ordinance 929-2021, which updated the Assessment Rolls for 2021.

Pursuant to the PID Act, the SAP must be reviewed and updated annually. This document is the 2022 Annual Service Plan Update. This 2022 Annual Service Plan Update also updates the Assessment Rolls for 2022.

PARCEL SUBDIVISION

Improvement Area #1

The final plat of The Villages of Hurricane Creek Phase 1, attached hereto as **Exhibit B**, was filed and recorded with the County on October 15, 2020. Improvement Area #1 consists of 220 residential Lots and 10 Lots of Non-Benefited Property.

Please see **Exhibit D** for the Lot Type Classification Map.

Major Improvement Area

No plats have been filed in the Major Improvement Area.

LOT & HOME SALES UPDATE

Improvement Area #1

Per the Quarterly Report dated March 31, 2022, a total of 30 homes have been built, 161 homes are under construction, and 55 homes have been sold to end-users.

See **Appendix 1** for Homebuyer Disclosures.

Major Improvement Area

Per the Quarterly Report dated March 31, 2022, no Lots have been sold, and construction has not started on any homes.

OUTSTANDING ASSESSMENT

Improvement Area #1

Improvement Area #1 has an outstanding Assessment of \$7,089,909.47.

Major Improvement Area

The Major Improvement Area has an outstanding Assessment of \$3,480,000.00.

TIRZ NO. 2 ANNUAL CREDIT

Improvement Area #1

The City Council, in accordance with the TIRZ No. 2 TIRZ Agreement, has agreed to use a portion of TIRZ No. 2 TIRZ Revenues generated to reduce the Improvement Area #1 Annual Installment for all Improvement Area #1 Assessed Property so that the Improvement Area #1 Annual Installment minus the TIRZ No. 2 Annual Credit Amount for each Lot Type does not produce an equivalent tax rate which exceeds the competitive composite ad valorem equivalent tax rate taking into consideration the tax rates of all applicable taxing units and the equivalent tax rate of the Improvement Area #1 Annual Installments. The resulting Maximum TIRZ No. 2 Annual Credit Amount for each Lot Type is shown below.

Lot Type	Maximum Annual TIRZ No. 2 Credit
<i>Improvement Area #1</i>	
Lot Type 1	\$ 1,151
Lot Type 2	\$ 1,316

Major Improvement Area

Per the SAP, TIRZ No. 2 Revenues shall not be used to reduce the Major Improvement Area Annual Installment.

ANNUAL INSTALLMENT DUE 1/31/2023

Improvement Area #1

- ***Principal and Interest*** – The total principal and interest required for the Annual Installment is \$573,125.00.
- ***TIRZ No. 2 Annual Credit Amount*** – The total TIRZ No. 2 Annual Credit Amount, credited against the principal and interest required for the Annual Installment, is \$28,668.01.
- ***Annual Collection Costs*** – The cost of administering the District and collecting the Annual Installments shall be paid for on a pro rata basis by each Parcel based on the amount of outstanding Assessment remaining on the Parcel. The total Annual Collection Costs budgeted for the Annual Installment for Improvement Area #1 is \$58,309.04.

Annual Collection Costs Breakdown Improvement Area #1	
Administration	\$ 31,500.87
City Auditor	\$ 1,009.25
Filing Fees	\$ 672.84
County Collection	\$ 134.57
Miscellaneous	\$ 672.84
PID Trustee Fees	\$ 4,000.00
Dissemination Agent	\$ 1,500.00
	<u>\$ 39,490.37</u>
Past Due Invoices	\$ 18,818.67
Total Administrative Costs	\$ 58,309.04

- **Additional Interest** – Additional Interest is collected to fund the Additional Interest Reserve Account. The Additional Interest Reserve Requirement, as defined in the Improvement Area #1 Indenture, has not been met. As such, the Additional Interest Reserve Account will be funded with Additional Interest on the outstanding Assessment, resulting in an Additional Interest for Improvement Area #1 of \$35,800.

Improvement Area #1	
Due January 31, 2023	
Principal	\$ 115,000.00
Interest	\$ 458,125.00
TIRZ No. 2 Annual Credit Amount	\$ (28,668.01)
Annual Collection Costs	\$ 58,309.04
Additional Interest	\$ 35,800.00
Total Annual Installment	\$ 638,566.03

See **Exhibit C-1** for the debt service schedule for the Improvement Area #1 PID Bonds as shown in the official statement.

Major Improvement Area

- **Principal and Interest** – The total principal and interest required for the Annual Installment for the Major Improvement Area is \$291,300.00.
- **Annual Collection Costs** – The cost of administering the District and collecting the Annual Installments shall be paid for on a pro rata basis by each Parcel based on the amount of outstanding Assessment remaining on the Parcel. The total Annual Collection Costs budgeted for the Annual Installment for the Major Improvement Area is \$22,027.63.

Annual Collection Costs Breakdown Major Improvement Area	
Administration	\$ 15,317.13
City Auditor	\$ 490.75
Filing Fees	\$ 327.16
County Collection	\$ 65.43
Miscellaneous	\$ 327.16
PID Trustee Fees	\$ 4,000.00
Dissemination Agent	\$ 1,500.00
	<u>\$ 22,027.63</u>
Total Administrative Costs	\$ 22,027.63

- **Additional Interest** – Additional Interest is collected to fund the Additional Interest Reserve Account. The Additional Interest Reserve Requirement, as defined in the Major Improvement Area Indenture, has not been met. As such, the Additional Interest Reserve Account will be funded with Additional Interest on the outstanding Assessment, resulting in an Additional Interest for the Major Improvement Area of \$17,400.00.

Major Improvement Area	
Due January 31, 2023	
Principal	\$ 60,000.00
Interest	\$ 231,300.00
Annual Collection Costs	\$ 22,027.63
Additional Interest	\$ 17,400.00
Total Annual Installment	\$ 330,727.63

See **Exhibit C-2** for the debt service schedule for the Major Improvement Area PID Bonds as shown in the official statement.

PREPAYMENT OF ASSESSMENT IN FULL

Improvement Area #1

The following is a list of all Improvement Area #1 Lots that have been paid in full:

Improvement Area #1				
Property ID	Address	Lot Type	Prepayment Date	Recorded Lien Release Number
2822115	3208 Lakeshore Dr	2	10/12/2021	In Progress
2822017	3032 Lakeshore Dr	1	4/18/2022	In Progress

Major Improvement Area

No full prepayments have occurred within the Major Improvement Area.

PARTIAL PREPAYMENT OF ASSESSMENTS

Improvement Area #1

The following is a list of all Improvement Area #1 Lots that have partially prepaid their assessment:

Improvement Area #1				
Property ID	Address	Lot Type	Prepayment Date	Prepayment Amount
2821998	3128 Lakeshore Dr	1	11/23/2021	\$ 3,500
2821998	3128 Lakeshore Dr	1	N/A ^a	\$ 166

Notes:

[a] Cumulative additional reduction in outstanding Assessment due to interest savings from partial prepayments.

Major Improvement Area

No partial prepayments have occurred within the Major Improvement Area.

EXTRAORDINARY OPTIONAL REDEMPTIONS

Improvement Area #1

No Extraordinary Optional Redemptions have taken place within Improvement Area #1.

Major Improvement Area

No Extraordinary Optional Redemptions have taken place within the Major Improvement Area.

BUDGET FOR CONSTRUCTION OF AUTHORIZED IMPROVEMENTS

Improvement Area #1

Per the Quarterly Report for Improvement Area #1 dated March 31, 2022, the Authorized Improvements were completed in the second quarter of 2021. The budget for the Authorized Improvements remains unchanged. See below for a table depicting the budgets of Improvement Area #1 Projects, and Actual Costs spent to date.

Authorized Improvements	Improvement Area #1		
	Budget	Spent to Date ¹	% Complete
Street	\$ 2,766,012	\$ 2,849,182	103%
Water	\$ 826,874	\$ 769,578	93%
Sanitary Sewer	\$ 919,336	\$ 864,366	94%
Developer District Formation Expenses	\$ 188,224	\$ 162,892	87%
Geotechnical testing, SWPPP, Flood Study	\$ 41,311	\$ 41,311	100%
Storm Drainage	\$ 570,170	\$ 682,436	120%
Street Lights/Hike & Bike Trail	\$ 408,270	\$ 408,270	100%
Engineering	\$ 754,360	\$ 609,001	81%
	\$ 6,474,557	\$ 6,387,035	99%

Notes:

1) Per the Quarterly Report for Improvement Area #1 dated March 31, 2022.

Major Improvement Area

Per the Quarterly Report for the Major Improvement Area dated March 31, 2022, the Authorized Improvements were completed in the second quarter of 2021. The budget for the Authorized Improvements remains unchanged. See below for a table depicting the budgets of the Major Improvement Area Projects, and Actual Costs spent to date.

Authorized Improvements	Major Improvement Area		
	Budget	Spent to Date ¹	% Complete
Street	\$ 844,355	\$ 988,929	117%
Water	\$ 193,828	\$ 218,641	113%
Sanitary Sewer	\$ 631,238	\$ 606,424	96%
Developer District Formation Expenses	\$ 409,126	\$ 354,060	87%
Geotechnical testing, SWPPP, Flood Study	\$ 89,795	\$ 89,795	100%
Storm Drainage	\$ -	\$ -	0%
Street Lights/Hike & Bike Trail	\$ -	\$ -	0%
Engineering	\$ 239,893	\$ 166,496	69%
	\$ 2,408,235	\$ 2,424,345	101%

Notes:

1) Per the Quarterly Report for the Major Improvement Area dated March 31, 2022.

SERVICE PLAN - FIVE YEAR BUDGET FORECAST

The Act requires the annual indebtedness and projected costs for the Authorized Improvements to be reviewed and updated in the Annual Service Plan Update, and the projection shall cover a period of not less than five years.

Improvement Area #1						
Annual Installment Due		1/31/2023	1/31/2024	1/31/2025	1/31/2026	1/31/2027
Principal		\$ 115,000.00	\$ 125,000.00	\$ 130,000.00	\$ 135,000.00	\$ 145,000.00
Interest		458,125.00	451,512.50	444,325.00	436,850.00	429,087.50
TIRZ No. 2 Annual Credit Amount ¹		(28,668.01)	-	-	-	-
	(1)	\$ 544,456.99	\$ 576,512.50	\$ 574,325.00	\$ 571,850.00	\$ 574,087.50
Annual Collection Costs	(2)	\$ 58,309.04	\$ 59,475.22	\$ 60,664.73	\$ 61,878.02	\$ 63,115.58
Additional Interest	(3)	\$ 35,800.00	\$ 35,225.00	\$ 34,600.00	\$ 33,950.00	\$ 33,275.00
Total Annual Installment	(4) = (1) + (2) + (3)	\$ 638,566.03	\$ 671,212.72	\$ 669,589.73	\$ 667,678.02	\$ 670,478.08

Major Improvement Area						
Annual Installment Due		1/31/2023	1/31/2024	1/31/2025	1/31/2026	1/31/2027
Principal		\$ 60,000.00	\$ 60,000.00	\$ 65,000.00	\$ 70,000.00	\$ 70,000.00
Interest		231,300.00	227,700.00	224,100.00	220,200.00	216,000.00
	(1)	\$ 291,300.00	\$ 287,700.00	\$ 289,100.00	\$ 290,200.00	\$ 286,000.00
Annual Collection Costs	(2)	\$ 22,027.63	\$ 22,468.18	\$ 22,917.55	\$ 23,375.90	\$ 23,843.42
Additional Interest	(3)	\$ 17,400.00	\$ 17,100.00	\$ 16,800.00	\$ 16,475.00	\$ 16,125.00
Total Annual Installment	(4) = (1) + (2) + (3)	\$ 330,727.63	\$ 327,268.18	\$ 328,817.55	\$ 330,050.90	\$ 325,968.42

Notes:

1) The TIRZ No. 2 Revenue generated by the Improvement Area #1 Assessed Property for the previous Tax Year shall be applied pro rata based on the outstanding Assessment of each Lot to reduce the principal required for the Improvement Area #1 Annual Installment due January 31, 2023. The TIRZ No. 2 Annual Credit Amount shall be updated each year in the Annual Service Plan Update as TIRZ No. 2 Revenue is generated.

ASSESSMENT ROLL

The list of current Parcels within the District, the corresponding total Assessments, and current Annual Installment are shown on the Assessment Roll attached hereto as **Exhibit A-1** and **Exhibit A-2** for Improvement Area #1 and the Major Improvement Area, respectively. The Parcels shown on the Assessment Rolls will receive the bills for the 2022 Annual Installments which will be delinquent if not paid by January 31, 2023.

EXHIBIT A-1 – IMPROVEMENT AREA #1 ASSESSMENT ROLL

Property ID	Lot Type	Improvement Area #1 ^[a]			
		Outstanding Assessment	Annual Installment before TIRZ	Annual TIRZ#1 Credit	Annual Installment Due 1/31/2023 ^{[b],[c]}
2821896	1	\$ 30,990.86	\$ 2,890.51	\$ (139.26)	\$ 2,751.25
2821897	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821898	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821899	1	\$ 30,990.86	\$ 2,890.51	\$ (139.26)	\$ 2,751.25
2821900	1	\$ 30,990.86	\$ 2,890.51	\$ (139.26)	\$ 2,751.25
2821901	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821902	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821903	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821904	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821905	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821906	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821907	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821908	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821909	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821910	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821911	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821912	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821913	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821914	1	\$ 30,990.86	\$ 2,890.51	\$ (139.26)	\$ 2,751.25
2821915	1	\$ 30,990.86	\$ 2,890.51	\$ (139.26)	\$ 2,751.25
2821916	1	\$ 30,990.86	\$ 2,890.51	\$ (139.26)	\$ 2,751.25
2821918	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821919	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821920	1	\$ 30,990.86	\$ 2,890.51	\$ (139.26)	\$ 2,751.25
2821921	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821922	1	\$ 30,990.86	\$ 2,890.51	\$ (139.26)	\$ 2,751.25
2821923	1	\$ 30,990.86	\$ 2,890.51	\$ (145.58)	\$ 2,744.93
2821924	1	\$ 30,990.86	\$ 2,890.51	\$ (151.91)	\$ 2,738.60
2821925	1	\$ 30,990.86	\$ 2,890.51	\$ (139.26)	\$ 2,751.25
2821926	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821927	1	\$ 30,990.86	\$ 2,890.51	\$ (139.26)	\$ 2,751.25
2821928	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821929	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821930	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821931	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821932	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821933	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821934	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821935	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821936	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59

Property ID	Lot Type	Improvement Area #1 ^[a]				Annual Installment Due 1/31/2023 ^{[b],[c]}
		Outstanding Assessment	Annual Installment before TIRZ	Annual TIRZ#1 Credit		
2821937	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)		\$ 2,757.59
2821938	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821939	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821940	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821941	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821942	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821943	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821944	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821945	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821946	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821947	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821948	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821949	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821950	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821951	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821952	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821953	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821954	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821955	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821956	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821957	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821958	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821959	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)		\$ 2,757.59
2821960	1	\$ 30,990.86	\$ 2,890.51	\$ (139.26)		\$ 2,751.25
2821961	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)		\$ 2,757.59
2821962	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)		\$ 2,757.59
2821963	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)		\$ 2,757.59
2821964	1	\$ 30,990.86	\$ 2,890.51	\$ (99.05)		\$ 2,791.46
2821965	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)		\$ 2,757.59
2821966	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)		\$ 2,757.59
2821967	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)		\$ 2,757.59
2821968	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821969	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821970	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821971	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821972	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)		\$ 2,763.91
2821973	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)		\$ 2,757.59
2821974	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)		\$ 2,757.59
2821975	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)		\$ 2,757.59
2821976	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)		\$ 2,757.59

Property ID	Lot Type	Improvement Area #1 ^[a]				Annual Installment Due 1/31/2023 ^{[b],[c]}
		Outstanding Assessment	Annual Installment before TIRZ	Annual TIRZ#1 Credit		
2821977	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$	2,757.59
2821978	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$	2,757.59
2821979	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$	2,757.59
2821980	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$	2,757.59
2821981	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$	2,757.59
2821982	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2821984	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2821985	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2821986	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2821987	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2821988	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2821989	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2821990	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2821991	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$	2,757.59
2821992	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$	2,757.59
2821993	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2821994	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2821995	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2821996	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2821997	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2821998	1	\$ 27,324.41	\$ 2,548.54	\$ (126.60)	\$	2,421.94
2821999	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822000	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822001	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822002	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$	2,757.59
2822003	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822004	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822005	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822006	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822007	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822008	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822009	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$	2,757.59
2822010	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$	2,757.59
2822011	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822012	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822013	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822014	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822015	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822016	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$	2,763.91
2822017	1	\$ -	\$ -	\$ -	\$	-

Property ID	Lot Type	Improvement Area #1 ^[a]			
		Outstanding Assessment	Annual Installment before TIRZ	Annual TIRZ#1 Credit	Annual Installment Due 1/31/2023 ^{[b],[c]}
2821977	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821978	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821979	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821980	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821981	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821982	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821984	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821985	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821986	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821987	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821988	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821989	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821990	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821991	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821992	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2821993	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821994	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821995	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821996	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821997	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2821998	1	\$ 27,324.41	\$ 2,548.54	\$ (126.60)	\$ 2,421.94
2821999	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822000	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822001	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822002	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822003	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822004	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822005	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822006	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822007	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822008	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822009	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822010	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822011	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822012	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822013	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822014	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822015	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822016	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822017	1	\$ -	\$ -	\$ -	\$ -

Property ID	Lot Type	Improvement Area #1 ^[a]			
		Outstanding Assessment	Annual Installment before TIRZ	Annual TIRZ#1 Credit	Annual Installment Due 1/31/2023 ^{[b],[c]}
2822018	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822019	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822020	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822021	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822022	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822023	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822024	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822025	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822026	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822027	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822028	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822029	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822031	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822032	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822033	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822034	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822035	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822036	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822037	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822038	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822039	2	\$ 35,432.55	\$ 3,304.78	\$ (139.26)	\$ 3,165.52
2822040	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822041	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822042	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822043	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822044	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822045	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822046	2	\$ 35,432.55	\$ 3,304.78	\$ (145.58)	\$ 3,159.20
2822047	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822048	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822049	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822050	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822051	2	\$ 35,432.55	\$ 3,304.78	\$ -	\$ 3,304.78
2822052	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822053	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822054	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822055	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822056	2	\$ 35,432.55	\$ 3,304.78	\$ (139.26)	\$ 3,165.52
2822057	Non-Benefited Property	\$ -	\$ -	\$ -	\$ -
2822059	2	\$ 35,432.55	\$ 3,304.78	\$ (145.58)	\$ 3,159.20

Property ID	Lot Type	Improvement Area #1 ^[a]			
		Outstanding Assessment	Annual Installment before TIRZ	Annual TIRZ#1 Credit	Annual Installment Due 1/31/2023 ^{[b],[c]}
2822060	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822061	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822062	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822063	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822064	2	\$ 35,432.55	\$ 3,304.78	\$ (139.26)	\$ 3,165.52
2822065	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822066	1	\$ 30,990.86	\$ 2,890.51	\$ (126.60)	\$ 2,763.91
2822067	1	\$ 30,990.86	\$ 2,890.51	\$ (132.92)	\$ 2,757.59
2822078	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822079	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822080	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822081	2	\$ 35,432.55	\$ 3,304.78	\$ (145.58)	\$ 3,159.20
2822082	2	\$ 35,432.55	\$ 3,304.78	\$ (145.58)	\$ 3,159.20
2822083	2	\$ 35,432.55	\$ 3,304.78	\$ (151.91)	\$ 3,152.87
2822084	2	\$ 35,432.55	\$ 3,304.78	\$ (139.26)	\$ 3,165.52
2822085	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822086	2	\$ 35,432.55	\$ 3,304.78	\$ (145.58)	\$ 3,159.20
2822087	2	\$ 35,432.55	\$ 3,304.78	\$ (145.58)	\$ 3,159.20
2822088	2	\$ 35,432.55	\$ 3,304.78	\$ (145.58)	\$ 3,159.20
2822090	2	\$ 35,432.55	\$ 3,304.78	\$ (139.26)	\$ 3,165.52
2822091	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822092	2	\$ 35,432.55	\$ 3,304.78	\$ (139.26)	\$ 3,165.52
2822093	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822094	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822095	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822097	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822098	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822099	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822100	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822101	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822102	2	\$ 35,432.55	\$ 3,304.78	\$ (150.20)	\$ 3,154.58
2822103	2	\$ 35,432.55	\$ 3,304.78	\$ (150.20)	\$ 3,154.58
2822104	2	\$ 35,432.55	\$ 3,304.78	\$ (139.26)	\$ 3,165.52
2822105	2	\$ 35,432.55	\$ 3,304.78	\$ (139.26)	\$ 3,165.52
2822106	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822107	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822108	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822109	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822110	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822111	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86

Property ID	Lot Type	Improvement Area #1 ^[a]			
		Outstanding Assessment	Annual Installment before TIRZ	Annual TIRZ#1 Credit	Annual Installment Due 1/31/2023 ^{[b],[c]}
2822112	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822113	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822114	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822115	2	\$ -	\$ -	\$ -	\$ -
2822116	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822117	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822118	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822119	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822120	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822121	2	\$ 35,432.55	\$ 3,304.78	\$ (145.58)	\$ 3,159.20
2822123	2	\$ 35,432.55	\$ 3,304.78	\$ (139.26)	\$ 3,165.52
2822124	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822125	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822126	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822127	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822128	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822129	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822130	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822131	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822132	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822133	2	\$ 35,432.55	\$ 3,304.78	\$ (132.92)	\$ 3,171.86
2822134	Non-Benefited Property	\$ -	\$ -	\$ -	\$ -
2822136	Non-Benefited Property	\$ -	\$ -	\$ -	\$ -
2822137	Non-Benefited Property	\$ -	\$ -	\$ -	\$ -
2822138	Non-Benefited Property	\$ -	\$ -	\$ -	\$ -
2822139	Non-Benefited Property	\$ -	\$ -	\$ -	\$ -
2822140	Non-Benefited Property	\$ -	\$ -	\$ -	\$ -
2822141	Non-Benefited Property	\$ -	\$ -	\$ -	\$ -
2822142	Non-Benefited Property	\$ -	\$ -	\$ -	\$ -
2822143	Non-Benefited Property	\$ -	\$ -	\$ -	\$ -
Total		\$ 7,089,909.47	\$ 661,273.22	\$ (28,668.01)	\$ 632,605.72

Notes:

[a] Totals may not match the outstanding Assessment or Annual Installment due to rounding.

[b] The Annual Installment covers the period September 1, 2022 to August 31, 2023 and is due by January 31, 2023.

[c] Cumulative of TIRZ No. 2 Annual Credit Amount.

EXHIBIT A-2 – MAJOR IMPROVEMENT AREA ASSESSMENT ROLL

		Major Improvement Area ^[a]	
Property ID	Lot Type	Outstanding Assessment	Annual Installment Due 1/31/2023 ^{[b],[c]}
1001356	Major Improvement Area Initial Parcel	\$ 414,274.17	\$ 39,371.24
1007412	Major Improvement Area Initial Parcel	\$ 730,397.97	\$ 69,414.59
2518072	Major Improvement Area Initial Parcel	\$ 615,871.57	\$ 58,530.39
2719039	Major Improvement Area Initial Parcel	\$ 1,572,525.41	\$ 149,447.59
2719040	Major Improvement Area Initial Parcel	\$ 146,930.88	\$ 13,963.82
Total		\$ 3,480,000.00	\$ 330,727.63

Notes:

[a] Totals may not match the outstanding Assessment or Annual Installment due to rounding.

[b] For billing purposes, the outstanding Assessment and Annual Installments due 1/31/2023 are allocated pro rata to the Property IDs based on acreage.

[c] The Annual Installment covers the period September 1, 2022 to August 31, 2023 and is due by January 31, 2023.

HURRICANE CREEK PUBLIC IMPROVEMENT DISTRICT 2022 ANNUAL SERVICE PLAN UPDATE



EXHIBIT C-1 – DEBT SERVICE SCHEDULE – IMPROVEMENT AREA #1

DEBT SERVICE REQUIREMENTS

The following table sets forth the anticipated debt service requirements for the Bonds:

<u>Year Ending (September 1)</u>	<u>Principal</u>	<u>Interest</u>	<u>Total</u>
2019		\$ 199,957.19	\$ 199,957.19
2020		470,487.50	470,487.50
2021	\$ 105,000.00	470,487.50	575,487.50
2022	110,000.00	464,450.00	574,450.00
2023	115,000.00	458,125.00	573,125.00
2024	125,000.00	451,512.50	576,512.50
2025	130,000.00	444,325.00	574,325.00
2026	135,000.00	436,850.00	571,850.00
2027	145,000.00	429,087.50	574,087.50
2028	155,000.00	420,750.00	575,750.00
2029	165,000.00	411,837.50	576,837.50
2030	170,000.00	402,350.00	572,350.00
2031	185,000.00	391,300.00	576,300.00
2032	195,000.00	379,275.00	574,275.00
2033	210,000.00	366,600.00	576,600.00
2034	220,000.00	352,950.00	572,950.00
2035	235,000.00	338,650.00	573,650.00
2036	250,000.00	323,375.00	573,375.00
2037	270,000.00	307,125.00	577,125.00
2038	285,000.00	289,575.00	574,575.00
2039	305,000.00	271,050.00	576,050.00
2040	325,000.00	251,225.00	576,225.00
2041	350,000.00	230,100.00	580,100.00
2042	370,000.00	207,350.00	577,350.00
2043	395,000.00	183,300.00	578,300.00
2044	425,000.00	157,625.00	582,625.00
2045	450,000.00	130,000.00	580,000.00
2046	485,000.00	100,750.00	585,750.00
2047	515,000.00	69,225.00	584,225.00
2048	<u>550,000.00</u>	<u>35,750.00</u>	<u>585,750.00</u>
Total	<u>\$7,375,000.00</u>	<u>\$9,445,444.69</u>	<u>\$16,820,444.69</u>

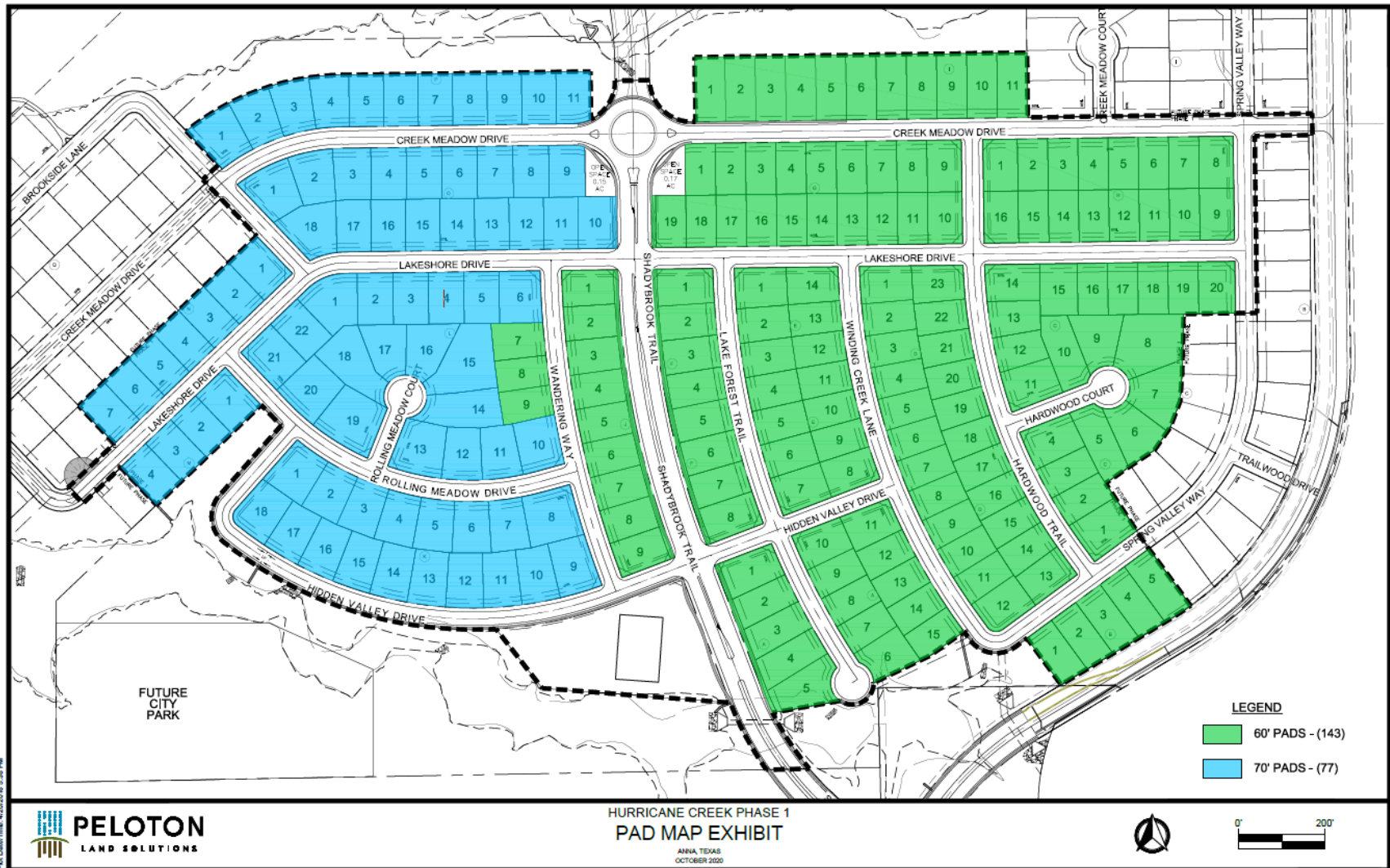
EXHIBIT C-2 – DEBT SERVICE SCHEDULE – MAJOR IMPROVEMENT AREA

DEBT SERVICE REQUIREMENTS

The following table sets forth the anticipated debt service requirements for the Bonds:

<u>Year Ending (September 1)</u>	<u>Principal</u>	<u>Interest</u>	<u>Total</u>
2019	--	\$ 99,705.00	\$ 99,705.00
2020	--	234,600.00	234,600.00
2021	--	234,600.00	234,600.00
2022	\$ 55,000.00	234,600.00	289,600.00
2023	60,000.00	231,300.00	291,300.00
2024	60,000.00	227,700.00	287,700.00
2025	65,000.00	224,100.00	289,100.00
2026	70,000.00	220,200.00	290,200.00
2027	70,000.00	216,000.00	286,000.00
2028	75,000.00	211,800.00	286,800.00
2029	80,000.00	207,300.00	287,300.00
2030	85,000.00	202,500.00	287,500.00
2031	90,000.00	196,762.50	286,762.50
2032	95,000.00	190,687.50	285,687.50
2033	100,000.00	184,275.00	284,275.00
2034	105,000.00	177,525.00	282,525.00
2035	115,000.00	170,437.50	285,437.50
2036	120,000.00	162,675.00	282,675.00
2037	130,000.00	154,575.00	284,575.00
2038	140,000.00	145,800.00	285,800.00
2039	150,000.00	136,350.00	286,350.00
2040	155,000.00	126,225.00	281,225.00
2041	170,000.00	115,762.50	285,762.50
2042	180,000.00	104,287.50	284,287.50
2043	190,000.00	92,137.50	282,137.50
2044	205,000.00	79,312.50	284,312.50
2045	220,000.00	65,475.00	285,475.00
2046	235,000.00	50,625.00	285,625.00
2047	250,000.00	34,762.50	284,762.50
2048	265,000.00	17,887.50	282,887.50
Total	<u>\$3,535,000.00</u>	<u>\$4,749,967.50</u>	<u>\$8,284,967.50</u>

EXHIBIT D – LOT TYPE CLASSIFICATION MAP



APPENDIX 1 – BUYER DISCLOSURES

Homebuyer Disclosures for the following Lot Types are found in this Appendix:

- Improvement Area #1
 - Lot Type 1
 - Lot Type 2
 - Lot Type 1 – Partial Prepayment – Property ID 28219998
- Major Improvement Area
 - Initial Parcel

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CITY OF ANNA – HURRICANE CREEK PID – IMPROVEMENT AREA #1 – LOT TYPE 1
BUYER DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.0035), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

- 1) under a court order or foreclosure sale;
- 2) by a trustee in bankruptcy;
- 3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
- 4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
- 5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
- 6) from one co-owner to another co-owner of an undivided interest in the real property;
- 7) to a spouse or a person in the lineal line of consanguinity of the seller;
- 8) to or from a governmental entity; or
- 9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING¹ RETURN TO:

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF ANNA, TEXAS
CONCERNING THE FOLLOWING PROPERTY

PROPERTY ADDRESS

IMPROVEMENT AREA #1 LOT TYPE 1 PRINCIPAL ASSESSMENT: \$30,990.86

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Anna, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within *Hurricane Creek Public Improvement District* (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Anna. The exact amount of each annual installment will be approved each year by the Anna City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Anna.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

¹ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County when updating for the Current Information of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER]²

² To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE:

DATE:

SIGNATURE OF
PURCHASER

SIGNATURE OF PURCHASER

STATE OF TEXAS

§

§

COUNTY OF _____

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]³

³ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER

STATE OF TEXAS

§

§

COUNTY OF _____

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]⁴

⁴ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

ANNUAL INSTALLMENTS - LOT TYPE 1

Annual Installment Due January 31,	Principal	Interest ^[a]	Annual Collection	Additional Interest	Total Annual Installment ^{[b],[c]}
2023	\$ 497.76	\$ 1,982.92	\$ 254.88	\$ 154.95	\$ 2,890.51
2024	\$ 541.04	\$ 1,954.30	\$ 259.97	\$ 152.47	\$ 2,907.78
2025	\$ 562.68	\$ 1,923.19	\$ 265.17	\$ 149.76	\$ 2,900.80
2026	\$ 584.32	\$ 1,890.83	\$ 270.48	\$ 146.95	\$ 2,892.58
2027	\$ 627.61	\$ 1,857.23	\$ 275.89	\$ 144.03	\$ 2,904.75
2028	\$ 670.89	\$ 1,821.15	\$ 281.40	\$ 140.89	\$ 2,914.33
2029	\$ 714.17	\$ 1,782.57	\$ 287.03	\$ 137.53	\$ 2,921.31
2030	\$ 735.82	\$ 1,741.50	\$ 292.77	\$ 133.96	\$ 2,904.06
2031	\$ 800.74	\$ 1,693.68	\$ 298.63	\$ 130.28	\$ 2,923.33
2032	\$ 844.02	\$ 1,641.63	\$ 304.60	\$ 126.28	\$ 2,916.53
2033	\$ 908.95	\$ 1,586.77	\$ 310.69	\$ 122.06	\$ 2,928.47
2034	\$ 952.23	\$ 1,527.69	\$ 316.91	\$ 117.51	\$ 2,914.34
2035	\$ 1,017.16	\$ 1,465.79	\$ 323.24	\$ 112.75	\$ 2,918.95
2036	\$ 1,082.08	\$ 1,399.67	\$ 329.71	\$ 107.67	\$ 2,919.13
2037	\$ 1,168.65	\$ 1,329.34	\$ 336.30	\$ 102.26	\$ 2,936.55
2038	\$ 1,233.57	\$ 1,253.38	\$ 343.03	\$ 96.41	\$ 2,926.39
2039	\$ 1,320.14	\$ 1,173.19	\$ 349.89	\$ 90.25	\$ 2,933.47
2040	\$ 1,406.71	\$ 1,087.39	\$ 356.89	\$ 83.65	\$ 2,934.63
2041	\$ 1,514.92	\$ 995.95	\$ 364.03	\$ 76.61	\$ 2,951.50
2042	\$ 1,601.48	\$ 897.48	\$ 371.31	\$ 69.04	\$ 2,939.31
2043	\$ 1,709.69	\$ 793.38	\$ 378.73	\$ 61.03	\$ 2,942.84
2044	\$ 1,839.54	\$ 682.25	\$ 386.31	\$ 52.48	\$ 2,960.58
2045	\$ 1,947.75	\$ 562.68	\$ 394.03	\$ 43.28	\$ 2,947.75
2046	\$ 2,099.24	\$ 436.08	\$ 401.91	\$ 33.54	\$ 2,970.78
2047	\$ 2,229.09	\$ 299.63	\$ 409.95	\$ 23.05	\$ 2,961.72
2048	\$ 2,380.58	\$ 154.74	\$ 418.15	\$ 11.90	\$ 2,965.37
Total	\$ 30,990.86	\$ 33,934.40	\$ 8,581.90	\$ 2,620.59	\$ 76,127.76

Notes:

[a] Interest is calculated at a 6.46% rate.

[b] The figures shown above are estimates only and subject to change in Annual Service Plan Updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

[c] The projected Annual Installment does not include the Maximum TIRZ No. 2 Annual Credit Amount of \$1,151 for Lot Type 1. The Assessment Roll shall be updated in each Annual Service Plan Update to include the actual TIRZ No. 2 Annual Credit Amount applicable to each Lot.

CITY OF ANNA – HURRICANE CREEK PID – IMPROVEMENT AREA #1 – LOT TYPE 2
BUYER DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.0035), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

- 1) under a court order or foreclosure sale;
- 2) by a trustee in bankruptcy;
- 3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
- 4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
- 5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
- 6) from one co-owner to another co-owner of an undivided interest in the real property;
- 7) to a spouse or a person in the lineal line of consanguinity of the seller;
- 8) to or from a governmental entity; or
- 9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING¹ RETURN TO:

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF ANNA, TEXAS
CONCERNING THE FOLLOWING PROPERTY

PROPERTY ADDRESS

IMPROVEMENT AREA #1 LOT TYPE 2 PRINCIPAL ASSESSMENT: \$35,432.55

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Anna, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within *Hurricane Creek Public Improvement District* (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Anna. The exact amount of each annual installment will be approved each year by the Anna City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Anna.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

¹ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County when updating for the Current Information of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER]²

² To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE:

DATE:

SIGNATURE OF
PURCHASER

SIGNATURE OF PURCHASER

STATE OF TEXAS

§

§

COUNTY OF _____

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]³

³ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER

STATE OF TEXAS

§

§

COUNTY OF _____

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]⁴

⁴ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

ANNUAL INSTALLMENTS - LOT TYPE 2

Annual Installment Due January 31,	Principal	Interest ^[a]	Annual Collection	Additional Interest	Total Annual Installment ^{[b],[c]}
2023	\$ 569.10	\$ 2,267.11	\$ 291.41	\$ 177.16	\$ 3,304.78
2024	\$ 618.59	\$ 2,234.39	\$ 297.23	\$ 174.32	\$ 3,324.53
2025	\$ 643.33	\$ 2,198.82	\$ 303.18	\$ 171.22	\$ 3,316.55
2026	\$ 668.07	\$ 2,161.83	\$ 309.24	\$ 168.01	\$ 3,307.15
2027	\$ 717.56	\$ 2,123.42	\$ 315.43	\$ 164.67	\$ 3,321.07
2028	\$ 767.05	\$ 2,082.16	\$ 321.74	\$ 161.08	\$ 3,332.02
2029	\$ 816.53	\$ 2,038.05	\$ 328.17	\$ 157.24	\$ 3,340.00
2030	\$ 841.28	\$ 1,991.10	\$ 334.73	\$ 153.16	\$ 3,320.27
2031	\$ 915.51	\$ 1,936.42	\$ 341.43	\$ 148.96	\$ 3,342.31
2032	\$ 964.99	\$ 1,876.91	\$ 348.26	\$ 144.38	\$ 3,334.54
2033	\$ 1,039.22	\$ 1,814.19	\$ 355.22	\$ 139.55	\$ 3,348.18
2034	\$ 1,088.71	\$ 1,746.64	\$ 362.33	\$ 134.36	\$ 3,332.03
2035	\$ 1,162.94	\$ 1,675.87	\$ 369.57	\$ 128.91	\$ 3,337.30
2036	\$ 1,237.17	\$ 1,600.28	\$ 376.96	\$ 123.10	\$ 3,337.51
2037	\$ 1,336.14	\$ 1,519.86	\$ 384.50	\$ 116.91	\$ 3,357.42
2038	\$ 1,410.37	\$ 1,433.01	\$ 392.19	\$ 110.23	\$ 3,345.81
2039	\$ 1,509.35	\$ 1,341.34	\$ 400.04	\$ 103.18	\$ 3,353.90
2040	\$ 1,608.32	\$ 1,243.23	\$ 408.04	\$ 95.63	\$ 3,355.22
2041	\$ 1,732.04	\$ 1,138.69	\$ 416.20	\$ 87.59	\$ 3,374.52
2042	\$ 1,831.01	\$ 1,026.11	\$ 424.52	\$ 78.93	\$ 3,360.57
2043	\$ 1,954.73	\$ 907.09	\$ 433.01	\$ 69.78	\$ 3,364.61
2044	\$ 2,103.19	\$ 780.04	\$ 441.67	\$ 60.00	\$ 3,384.90
2045	\$ 2,226.91	\$ 643.33	\$ 450.51	\$ 49.49	\$ 3,370.23
2046	\$ 2,400.11	\$ 498.58	\$ 459.52	\$ 38.35	\$ 3,396.56
2047	\$ 2,548.57	\$ 342.57	\$ 468.71	\$ 26.35	\$ 3,386.20
2048	\$ 2,721.77	\$ 176.92	\$ 478.08	\$ 13.61	\$ 3,390.38
Total	\$ 35,432.55	\$ 38,797.96	\$ 9,811.88	\$ 2,996.18	\$ 87,038.58

Notes:

[a] Interest is calculated at a 6.46% rate.

[b] The figures shown above are estimates only and subject to change in Annual Service Plan Updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

[c] The projected Annual Installment does not include the Maximum TIRZ No. 2 Annual Credit Amount of \$1,316 for Lot Type 2. The Assessment Roll shall be updated in each Annual Service Plan Update to include the actual TIRZ No. 2 Annual Credit Amount applicable to each Lot.

**CITY OF ANNA – HURRICANE CREEK PID – IMPROVEMENT AREA #1 – LOT TYPE 1 –
PARTIAL PREPAYMENT – PROPERTY ID 2821998 BUYER DISCLOSURE**

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.0035), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

- 1) under a court order or foreclosure sale;
- 2) by a trustee in bankruptcy;
- 3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
- 4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
- 5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
- 6) from one co-owner to another co-owner of an undivided interest in the real property;
- 7) to a spouse or a person in the lineal line of consanguinity of the seller;
- 8) to or from a governmental entity; or
- 9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING¹ RETURN TO:

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF ANNA, TEXAS
CONCERNING THE FOLLOWING PROPERTY

PROPERTY ADDRESS

**IMPROVEMENT AREA #1 LOT TYPE 1 – PARTIAL PREPAYMENT – PROPERTY ID
2821998
PRINCIPAL ASSESSMENT: \$27,324.41**

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Anna, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Hurricane Creek Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Anna. The exact amount of each annual installment will be approved each year by the Anna City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Anna.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

¹ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County when updating for the Current Information of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER]²

² To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE:

DATE:

SIGNATURE OF
PURCHASER

SIGNATURE OF PURCHASER

STATE OF TEXAS

§

§

COUNTY OF _____

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]³

³ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER

STATE OF TEXAS

§

§

COUNTY OF _____

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]⁴

⁴ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

**ANNUAL INSTALLMENTS – LOT TYPE 1 – PARTIAL PREPAYMENT – PROPERTY ID
2821998**

Annual Installment Due January 31,	Principal	Interest ^[a]	Annual Collection Costs	Additional Interest	Total Annual Installment ^{[b],[c]}
2023	\$ 438.87	\$ 1,748.32	\$ 224.72	\$ 136.62	\$ 2,548.54
2024	\$ 477.03	\$ 1,723.09	\$ 229.22	\$ 134.43	\$ 2,563.76
2025	\$ 496.11	\$ 1,695.66	\$ 233.80	\$ 132.04	\$ 2,557.62
2026	\$ 515.19	\$ 1,667.13	\$ 238.48	\$ 129.56	\$ 2,550.37
2027	\$ 553.36	\$ 1,637.51	\$ 243.25	\$ 126.99	\$ 2,561.10
2028	\$ 591.52	\$ 1,605.69	\$ 248.11	\$ 124.22	\$ 2,569.54
2029	\$ 629.68	\$ 1,571.68	\$ 253.07	\$ 121.26	\$ 2,575.70
2030	\$ 648.76	\$ 1,535.47	\$ 258.14	\$ 118.11	\$ 2,560.48
2031	\$ 706.01	\$ 1,493.30	\$ 263.30	\$ 114.87	\$ 2,577.48
2032	\$ 744.17	\$ 1,447.41	\$ 268.56	\$ 111.34	\$ 2,571.48
2033	\$ 801.41	\$ 1,399.04	\$ 273.94	\$ 107.62	\$ 2,582.01
2034	\$ 839.58	\$ 1,346.95	\$ 279.41	\$ 103.61	\$ 2,569.55
2035	\$ 896.82	\$ 1,292.38	\$ 285.00	\$ 99.41	\$ 2,573.61
2036	\$ 954.06	\$ 1,234.08	\$ 290.70	\$ 94.93	\$ 2,573.78
2037	\$ 1,030.39	\$ 1,172.07	\$ 296.52	\$ 90.16	\$ 2,589.13
2038	\$ 1,087.63	\$ 1,105.09	\$ 302.45	\$ 85.01	\$ 2,580.18
2039	\$ 1,163.96	\$ 1,034.40	\$ 308.50	\$ 79.57	\$ 2,586.42
2040	\$ 1,240.28	\$ 958.74	\$ 314.67	\$ 73.75	\$ 2,587.44
2041	\$ 1,335.69	\$ 878.12	\$ 320.96	\$ 67.55	\$ 2,602.32
2042	\$ 1,412.02	\$ 791.30	\$ 327.38	\$ 60.87	\$ 2,591.56
2043	\$ 1,507.42	\$ 699.52	\$ 333.93	\$ 53.81	\$ 2,594.68
2044	\$ 1,621.91	\$ 601.54	\$ 340.60	\$ 46.27	\$ 2,610.32
2045	\$ 1,717.32	\$ 496.11	\$ 347.42	\$ 38.16	\$ 2,599.01
2046	\$ 1,850.89	\$ 384.49	\$ 354.36	\$ 29.58	\$ 2,619.31
2047	\$ 1,965.37	\$ 264.18	\$ 361.45	\$ 20.32	\$ 2,611.33
2048	\$ 2,098.94	\$ 136.43	\$ 368.68	\$ 10.49	\$ 2,614.55
Total	\$ 27,324.41	\$ 29,919.70	\$ 7,566.60	\$ 2,310.55	\$ 67,121.26

Notes:

[a] Interest is calculated at a 6.46% rate.

[b] The figures shown above are estimates only and subject to change in Annual Service Plan Updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

[c] The projected Annual Installment does not include the Maximum TIRZ No. 2 Annual Credit Amount of \$1,151 for Lot Type 1. The Assessment Roll shall be updated in each Annual Service Plan Update to include the actual TIRZ No. 2 Annual Credit Amount applicable to each Lot.

CITY OF ANNA – HURRICANE CREEK PID – MAJOR IMPROVEMENT AREA – INITIAL PARCEL BUYER DISCLOSURE

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.0035), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

- 1) under a court order or foreclosure sale;
- 2) by a trustee in bankruptcy;
- 3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
- 4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
- 5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
- 6) from one co-owner to another co-owner of an undivided interest in the real property;
- 7) to a spouse or a person in the lineal line of consanguinity of the seller;
- 8) to or from a governmental entity; or
- 9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING¹ RETURN TO:

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF ANNA, TEXAS
CONCERNING THE FOLLOWING PROPERTY

PROPERTY ADDRESS

MAJOR IMPROVEMENT AREA INITIAL PARCEL PRINCIPAL ASSESSMENT:
\$3,480,000

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Anna, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Hurricane Creek Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Anna. The exact amount of each annual installment will be approved each year by the Anna City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Anna.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

¹ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County when updating for the Current Information of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER]²

² To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE:

DATE:

SIGNATURE OF
PURCHASER

SIGNATURE OF PURCHASER

STATE OF TEXAS

§

§

COUNTY OF _____

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]³

³ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER

STATE OF TEXAS

§

§

COUNTY OF _____

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]⁴

⁴ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

ANNUAL INSTALLMENTS - MAJOR IMPROVEMENT AREA INITIAL PARCEL

Annual Installment Due January 31,	Principal	Interest (a)	Annual Collection Costs	Additional Interest	Reserve Fund	Total Annual Installment
2023	\$ 60,000.00	\$ 231,300.00	\$ 22,027.63	\$ 17,400.00	\$ -	\$ 330,727.63
2024	\$ 60,000.00	\$ 227,700.00	\$ 22,468.18	\$ 17,100.00	\$ -	\$ 327,268.18
2025	\$ 65,000.00	\$ 224,100.00	\$ 22,917.55	\$ 16,800.00	\$ -	\$ 328,817.55
2026	\$ 70,000.00	\$ 220,200.00	\$ 23,375.90	\$ 16,475.00	\$ -	\$ 330,050.90
2027	\$ 70,000.00	\$ 216,000.00	\$ 23,843.42	\$ 16,125.00	\$ -	\$ 325,968.42
2028	\$ 75,000.00	\$ 211,800.00	\$ 24,320.28	\$ 15,775.00	\$ -	\$ 326,895.28
2029	\$ 80,000.00	\$ 207,300.00	\$ 24,806.69	\$ 15,400.00	\$ -	\$ 327,506.69
2030	\$ 85,000.00	\$ 202,500.00	\$ 25,302.82	\$ 15,000.00	\$ -	\$ 327,802.82
2031	\$ 90,000.00	\$ 196,762.50	\$ 25,808.88	\$ 14,575.00	\$ -	\$ 327,146.38
2032	\$ 95,000.00	\$ 190,687.50	\$ 26,325.06	\$ 14,125.00	\$ -	\$ 326,137.56
2033	\$ 100,000.00	\$ 184,275.00	\$ 26,851.56	\$ 13,650.00	\$ -	\$ 324,776.56
2034	\$ 105,000.00	\$ 177,525.00	\$ 27,388.59	\$ 13,150.00	\$ -	\$ 323,063.59
2035	\$ 115,000.00	\$ 170,437.50	\$ 27,936.36	\$ 12,625.00	\$ -	\$ 325,998.86
2036	\$ 120,000.00	\$ 162,675.00	\$ 28,495.09	\$ 12,050.00	\$ -	\$ 323,220.09
2037	\$ 130,000.00	\$ 154,575.00	\$ 29,064.99	\$ 11,450.00	\$ -	\$ 325,089.99
2038	\$ 140,000.00	\$ 145,800.00	\$ 29,646.29	\$ 10,800.00	\$ -	\$ 326,246.29
2039	\$ 150,000.00	\$ 136,350.00	\$ 30,239.22	\$ 10,100.00	\$ -	\$ 326,689.22
2040	\$ 155,000.00	\$ 126,225.00	\$ 30,844.00	\$ 9,350.00	\$ -	\$ 321,419.00
2041	\$ 170,000.00	\$ 115,762.50	\$ 31,460.88	\$ 8,575.00	\$ -	\$ 325,798.38
2042	\$ 180,000.00	\$ 104,287.50	\$ 32,090.10	\$ 7,725.00	\$ -	\$ 324,102.60
2043	\$ 190,000.00	\$ 92,137.50	\$ 32,731.90	\$ 6,825.00	\$ -	\$ 321,694.40
2044	\$ 205,000.00	\$ 79,312.50	\$ 33,386.54	\$ 5,875.00	\$ -	\$ 323,574.04
2045	\$ 220,000.00	\$ 65,475.00	\$ 34,054.27	\$ 4,850.00	\$ -	\$ 324,379.27
2046	\$ 235,000.00	\$ 50,625.00	\$ 34,735.35	\$ 3,750.00	\$ -	\$ 324,110.35
2047	\$ 250,000.00	\$ 34,762.50	\$ 35,430.06	\$ 2,575.00	\$ -	\$ 322,767.56
2048	\$ 265,000.00	\$ 17,887.50	\$ 36,138.66	\$ 1,325.00	\$ (291,300.00)	\$ 320,351.16
Total	\$ 3,480,000.00	\$ 3,946,462.50	\$ 741,690.25	\$ 293,450.00	\$ (291,300.00)	\$ 8,461,602.75

(a) Interest is calculated at a 6.46% rate.

Note: The figures shown above are estimates only and subject to change in Annual Service Plan Updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.



Item No. 6.e.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022
Staff Contact: Joey Grisham

AGENDA ITEM:

Approve an Ordinance adopting the 2022 Annual Service Plan Update to the Service and Assessment Plan and Assessment Roll, including the collection for the 2022-2023 annual installments for the Sherley Tract Public Improvement District (PID). (Director of Economic Development Joey Grisham)

SUMMARY:

The Sherley Tract Public Improvement District Number Two was created pursuant to the Public Improvement District (PID) Act and a resolution of the Anna City Council on December 8, 2020. Anna has contracted with P3 Works to provide administrative and management support services associated with Sherley Tract Public Improvement District Number Two.

The P3 Works scope of services includes the annual determination of the special assessments to be collected from the property within the PID boundaries, as well as updating the service and assessment plan and special assessment roll. In compliance with Chapter 372, Texas Local Government Code, the Service and Assessment Plan must be reviewed and updated annually.

This document is the annual update of the Service and Assessment Plan for 2022-2023. This Annual Service Plan update is related to the annual budget for the payment of PID obligations.

FINANCIAL IMPACT:

N/A

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

Goal 1: Growing Anna Economy

Goal 2: Sustainable Anna Community Through Planned Managed Growth

STAFF RECOMMENDATION:

Approve.

ATTACHMENTS:

1. 2022-07-18_ANN_SherleyTract_SAPupdate_Ord
2. 2022-07-18_ANN_SherleyTract_2022 SAP Update_final

APPROVALS:

Joey Grisham, Director Economic Development
Jim Proce, City Manager

Created/Initiated - 7/21/2022
Final Approval - 7/21/2022

CITY OF ANNA

ORDINANCE NO. _____

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS APPROVING THE 2022 ANNUAL SERVICE PLAN UPDATE TO THE SERVICE AND ASSESSMENT PLAN, INCLUDING THE ASSESSMENT ROLL, FOR THE SHERLEY TRACT PUBLIC IMPROVEMENT DISTRICT NO. 2 IN ACCORDANCE WITH CHAPTER 372, TEXAS LOCAL GOVERNMENT CODE, AS AMENDED; AND PROVIDING AN EFFECTIVE DATE.

RECITALS

WHEREAS, on December 8, 2020, after notice and a public hearing in the manner required by law, the City Council (the "City Council") of the City of Anna, Texas (the "City") passed and approved Resolution No. 20-12-839 authorizing the creation of Sherley Tract Public Improvement District No. 2 (the "District"); and

WHEREAS, on July 27, 2021, after notice and a public hearing in the manner required by law, the City Council passed an Ordinance approving the "Sherley Tract Public Improvement District No. 2 Service and Assessment Plan," including the Assessment Roll attached to the Service and Assessment Plan (the "Assessment Roll"), (the "Service and Assessment Plan") and levied the Assessments on property within District in accordance with the Assessment Roll for the purposes of financing the public improvements (the "Authorized Improvements") undertaken for the benefit of such property; and

WHEREAS, Chapter 372, Texas Local Government Code (as amended, the "PID Act") requires the Service and Assessment Plan to be reviewed and updated annually for the purposes of determining the annual budget for the Authorized Improvements; and

WHEREAS, the City Council has received the "Sherley Tract Public Improvement District No. 2 2022 Annual Service Plan Update" (the "Annual Service Plan Update") which includes the updated Assessment Roll and now desires to proceed with the adoption of this Ordinance which approves and adopts the Annual Service Plan Update and updated Assessment Roll for District as required by the PID Act.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS:

Section 1. Terms. Terms not otherwise defined herein are defined in the Service and Assessment Plan.

Section 2. Findings. That the recitals and findings in the Recitals of this Ordinance are hereby found and determined to be true and correct and constitute the legislative findings and determinations of the City Council.

Section 3. Assessment Plan. The Annual Service Plan Update, including the updated Assessment Roll contained therein, in the form attached as **Exhibit A** is hereby approved and the same is incorporated as part of this Ordinance as if fully set forth in the body of this Ordinance.

Section 4. Severability. If any provision, section, subsection, sentence, clause, or phrase of this Ordinance, or the application of same to any person or set of circumstances is for any reason held to be unconstitutional, void, or invalid, the validity of the remaining portions of this Ordinance or the application to other persons or sets of circumstances shall not be affected thereby, it being the intent of the governing body of the City in adopting this Ordinance that no portion hereof, or provision or regulation contained herein shall become inoperative or fail by reason of any unconstitutionality, voidness, or invalidity of any other portion hereof, and all provisions of this Ordinance are declared to be severable for that purpose.

Section 5. Filing in Land Records. The City Secretary is directed to cause a copy of this Ordinance, including the 2022 Annual Service Plan Update, to be recorded in the real property records of Collin County, Texas, on or before August 8, 2022. The City Secretary is further directed to similarly file each Annual Service Plan Update approved by the City Council, with each such filing to occur within seven days of the date each respective Annual Service Plan Update is approved.

Section 6. Effective Date. This Ordinance shall take effect immediately from and after its passage in accordance with applicable law.

PASSED by the City Council of the City of Anna, Texas this 26th day of July 2022.

ATTESTED:

APPROVED:

Carrie L. Land, City Secretary

Nate Pike, Mayor

Exhibit A

2022 Annual Service Plan Update

[Remainder of page left intentionally blank.]



SHERLEY TRACT
PUBLIC IMPROVEMENT DISTRICT
2022 ANNUAL SERVICE PLAN UPDATE

JULY 26, 2022

INTRODUCTION

Capitalized terms used in this Annual Service Plan Update shall have the meanings set forth in the original Service and Assessment Plan (the “SAP”).

The District was created pursuant to the PID Act by Resolution No. 2020-12-839 on December 8, 2020, by the City Council to finance certain Authorized Improvements for the benefit of the property in the District.

On July 27, 2021, the City Council approved Ordinance No. 925-2021 which approved the SAP for the District and levied Assessments to finance the Authorized Improvements to be constructed for the benefit of the Assessed Property within the District. The SAP also set forth the costs of the Authorized Improvements, the indebtedness to be incurred for such Authorized Improvements, and the manner of assessing the property in the District for the costs of such Authorized Improvements based on the benefit provided to the Assessed Property.

Pursuant to the PID Act, the SAP must be reviewed and updated annually. This document is the 2022 Annual Service Plan Update. This 2022 Annual Service Plan Update also updates the Assessment Rolls for 2022.

PARCEL SUBDIVISION

Improvement Area #1

No plats have been filed in Improvement Area #1.

Major Improvement Area

No plats have been filed in the Major Improvement Area.

LOT & HOME SALES UPDATE

Improvement Area #1

Per the Quarterly Report dated March 31, 2022, Improvement Area #1 is anticipated to be developed into 499 residential Lots. 420 residential Lots are under contract with homebuilders, but no Lots have been sold to homebuilders, and construction has not started on any homes.

See **Exhibit C** for Homebuyer Disclosures.

Major Improvement Area

Per the Quarterly Report dated March 31, 2022, the Major Improvement Area is anticipated to be developed into 412 residential Lots. 191 residential Lots are under contract with homebuilders, but no Lots have been sold to homebuilders, and construction has not started on any homes.

OUTSTANDING ASSESSMENT

Improvement Area #1

Improvement Area #1 has an outstanding Assessment of \$13,557,015.95.

Major Improvement Area

The Major Improvement Area has an outstanding Assessment of \$2,896,000.00.

TIRZ NO. 3 ANNUAL CREDIT

Improvement Area #1

The City Council, in accordance with the TIRZ No. 3 TIRZ Agreement, has agreed to use a portion of TIRZ No. 3 TIRZ Revenues generated to reduce the Improvement Area #1 Annual Installment for all Improvement Area #1 Assessed Property so that the Improvement Area #1 Annual Installment minus the TIRZ No. 3 Annual Credit Amount for each Lot Type does not produce an equivalent tax rate which exceeds the competitive composite ad valorem equivalent tax rate taking into consideration the tax rates of all applicable taxing units and the equivalent tax rate of the Improvement Area #1 Annual Installments. The resulting Maximum TIRZ No. 3 Annual Credit Amount for each Lot Type is shown below.

Lot Type	TIRZ No. 3 Maximum Annual Credit Amount per Unit
<i>Improvement Area #1</i>	
Lot Type 1 (40')	\$0.00
Lot Type 2 (50')	\$0.00
Lot Type 3 (60')	\$0.00
Lot Type 4 (Townhomes)	\$0.00

Major Improvement Area

Per the SAP, TIRZ No. 3 Revenues shall not be used to reduce the Major Improvement Area Annual Installment.

ANNUAL INSTALLMENT DUE 1/31/2023

Improvement Area #1

- **Improvement Area #1 Bond – Principal and Interest** – The total principal and interest required for the Annual Installment is \$558,015.00.
- **Additional Interest** – Additional Interest is collected to fund the Additional Interest Reserve Account. The Additional Interest Reserve Requirement, as defined in the Improvement Area #1 Indenture, has not been met. As such, the Additional Interest Reserve Account will be funded with Additional Interest on the outstanding Assessment, resulting in an Additional Interest for Improvement Area #1 of \$47,000.00.

- **Improvement Area #1 Reimbursement Obligation – Principal and Interest** – The total principal and interest required for the Annual Installment is \$279,824.45
- **Annual Collection Costs** – The cost of administering the District and collecting the Annual Installments shall be paid for on a pro rata basis by each Parcel based on the amount of outstanding Assessment remaining on the Parcel. The total Annual Collection Costs budgeted for the Annual Installment for Improvement Area #1 is \$44,817.02.

Improvement Area #1	
Due January 31, 2023	
Improvement Area #1 Bond	
Principal	\$ 179,000.00
Interest	\$ 379,015.00
Additional Interest	\$ 47,000.00
	<u>\$ 605,015.00</u>
Improvement Area #1 Reimbursement Obligation	
Principal	\$ 57.28
Interest	\$ 279,767.17
	<u>\$ 279,824.45</u>
Annual Collection Costs	\$ 44,817.02
Total Annual Installment	\$ 929,656.47

See **Exhibit B-1** for the debt service schedule for the Improvement Area #1 PID Bonds as shown in the official statement.

Major Improvement Area

- **Principal and Interest** – The total principal and interest required for the Annual Installment for the Major Improvement Area is \$142,230.00.
- **Capitalized Interest** – The total capitalized interest required for the Annual Installment for the Major Improvement Area is \$142,230.00.
- **Additional Interest** – Additional Interest is collected to fund the Additional Interest Reserve Account. The Additional Interest Reserve Requirement, as defined in the Major Improvement Area Indenture, has not been met. As such, the Additional Interest Reserve Account will be funded with Additional Interest on the outstanding Assessment, resulting in an Additional Interest for the Major Improvement Area of \$14,480.00.
- **Annual Collection Costs** – The cost of administering the District and collecting the Annual Installments shall be paid for on a pro rata basis by each Parcel based on the amount of

outstanding Assessment remaining on the Parcel. The total Annual Collection Costs budgeted for the Annual Installment for the Major Improvement Area is \$17,612.98.

Major Improvement Area	
Due January 31, 2023	
Major Improvement Area Bond	
Principal	\$ -
Interest	\$ 142,230.00
Capitalized Interest	\$ (142,230.00)
Additional Interest	\$ 14,480.00
Annual Collection Costs	\$ 17,612.98
Total Annual Installment	\$ 32,092.98

See **Exhibit B-2** for the debt service schedule for the Major Improvement Area PID Bonds as shown in the official statement.

PREPAYMENT OF ASSESSMENT IN FULL

Improvement Area #1

No full prepayments have occurred within Improvement Area #1.

Major Improvement Area

No full prepayments have occurred within the Major Improvement Area.

PARTIAL PREPAYMENT OF ASSESSMENTS

Improvement Area #1

No partial prepayments have occurred within the Improvement Area #1.

Major Improvement Area

No partial prepayments have occurred within the Major Improvement Area.

BUDGET FOR CONSTRUCTION OF AUTHORIZED IMPROVEMENTS

Improvement Area #1

Per the Quarterly Report for Improvement Area #1 dated March 31, 2022, the Authorized Improvements are currently under construction and projected to be completed in the fourth quarter of 2022. The budget for the Authorized Improvements remains unchanged. See below

for a table depicting the budgets of Improvement Area #1 Projects, and Actual Costs spent to date.

Authorized Improvements	Improvement Area #1		
	Budget	Spent to Date ¹	% Complete
Water	\$ 1,447,847		0%
Sanitary Sewer	\$ 1,659,106	\$ 409,179	25%
Storm Drainage	\$ 1,261,600	\$ -	0%
Streets	\$ 4,973,783	\$ 232,240	5%
Soft Costs	\$ 2,075,749	\$ 1,193,421	57%
Contingency	\$ 246,572	\$ -	0%
	\$ 11,664,657	\$ 1,834,840	16%

Notes:

1) Per the Quarterly Report for Improvement Area #1 dated March 31, 2022.

Major Improvement Area

Per the Quarterly Report for the Major Improvement Area dated March 31, 2022, the Authorized Improvements are currently under construction and projected to be completed in the fourth quarter of 2022. The budget for the Authorized Improvements remains unchanged. See below for a table depicting the budgets of the Major Improvement Area Projects, and Actual Costs spent to date.

Authorized Improvements	Major Improvement Area		
	Budget	Spent to Date ¹	% Complete
Water	\$ 304,913	\$ -	0%
Sanitary Sewer	\$ 137,815	\$ -	0%
Storm Drainage	\$ 320,574	\$ -	0%
Streets	\$ 820,783	\$ 49,312	6%
Soft Costs	\$ 620,219	\$ 459,158	74%
Contingency	\$ 55,000	\$ -	0%
	\$ 2,259,304	\$ 508,470	23%

Notes:

1) Per the Quarterly Report for the Major Improvement Area dated March 31, 2022.

Private Costs

Per the Quarterly Reports for Improvement Area #1 and the Major Improvement Area dated March 31, 2022, the Private Improvements are currently under construction and projected to be completed in the first quarter of 2023. The budget for the Authorized Improvements has changed from the listing in the SAP, per information from the Developer. See below for a table depicting the original budget and the new budget of the Private Improvement Costs, and Actual Costs spent to date.

Private Costs

Earthwork
Retaining Walls
Screen Walls and Entry Monument
Landscaping and Irrigation
Miscellaneous

Private Costs				
Original Budget	New Budget	Spent to Date ¹	% Complete	
\$ 586,134	\$ 1,100,000	\$ 727,564	66%	
\$ 803,340	\$ 800,000	\$ -	0%	
\$ 486,550	\$ 500,000	\$ -	0%	
\$ 807,180	\$ 800,000	\$ 43,280	5%	
\$ 281,895	\$ 1,443,640	\$ 475,176	33%	
\$ 2,965,099	\$ 4,643,640	\$ 1,246,020	27%	

Notes:

1) Per the Quarterly Reports for Improvement Area #1 and the Major Improvement Area dated March 31, 2022.

SERVICE PLAN - FIVE YEAR BUDGET FORECAST

The Act requires the annual indebtedness and projected costs for the Authorized Improvements to be reviewed and updated in the Annual Service Plan Update, and the projection shall cover a period of not less than five years.

Improvement Area #1						
Annual Installment Due	1/31/2023	1/31/2024	1/31/2025	1/31/2026	1/31/2027	
IA#1 PID Bond						
Principal	\$ 179,000.00	\$ 185,000.00	\$ 191,000.00	\$ 197,000.00	\$ 204,000.00	
Interest	379,015.00	373,197.50	367,185.00	360,977.50	354,575.00	
Additional Interest	\$ 47,000.00	\$ 46,105.00	\$ 45,180.00	\$ 44,225.00	\$ 43,240.00	
(1)	\$ 605,015.00	\$ 604,302.50	\$ 603,365.00	\$ 602,202.50	\$ 601,815.00	
IA#1 Reimbursement Obligation						
Principal	\$ 57.28	\$ 61.13	\$ 65.25	\$ 7,536.92	\$ 93,106.16	
Interest	\$ 279,767.17	\$ 279,763.32	\$ 279,759.20	\$ 272,287.53	\$ 186,718.29	
(2)	\$ 279,824.45	\$ 279,824.45	\$ 279,824.45	\$ 279,824.45	\$ 279,824.45	
Annual Collection Costs	(3)	\$ 44,817.02	\$ 45,713.36	\$ 46,627.63	\$ 47,560.18	\$ 48,511.38
Total Annual Installment	(4) = (1) + (2) + (3)	\$ 929,656.47	\$ 929,840.31	\$ 929,817.08	\$ 929,587.13	\$ 930,150.84

Major Improvement Area						
Annual Installment Due	1/31/2023	1/31/2024	1/31/2025	1/31/2026	1/31/2027	
Principal	\$ -	\$ 56,000.00	\$ 58,000.00	\$ 61,000.00	\$ 63,000.00	
Interest	142,230.00	142,230.00	139,710.00	137,100.00	134,355.00	
Capitalized Interest	(142,230.00)	-	-	-	-	
(1)	\$ -	\$ 198,230.00	\$ 197,710.00	\$ 198,100.00	\$ 197,355.00	
Annual Collection Costs	(2)	\$ 17,612.98	\$ 17,965.24	\$ 18,324.54	\$ 18,691.04	\$ 19,064.86
Additional Interest	(3)	\$ 14,480.00	\$ 14,480.00	\$ 14,200.00	\$ 13,910.00	\$ 13,605.00
Total Annual Installment	(4) = (1) + (2) + (3)	\$ 32,092.98	\$ 230,675.24	\$ 230,234.54	\$ 230,701.04	\$ 230,024.86

ASSESSMENT ROLL

The list of current Parcels within the District, the corresponding total Assessments, and current Annual Installment are shown on the Assessment Roll attached hereto as **Exhibit A-1** and **Exhibit A-2** for Improvement Area #1 and the Major Improvement Area, respectively. The Parcels shown on the Assessment Rolls will receive the bills for the 2023 Annual Installments which will be delinquent if not paid by January 31, 2023.

EXHIBIT A-1 – IMPROVEMENT AREA #1 ASSESSMENT ROLL

		Improvement Area #1 ^[b]	
Property ID ^[a]	Lot Type	Outstanding Assessment	Annual Installment Due 1/31/2023 ^[c]
2856586, 2856583, 2856587, 2828219, 2856585	Improvement Area #1 Initial Parcel	\$ 13,557,015.95	\$ 929,656.47
Total		\$ 13,557,015.95	\$ 929,656.47

Notes:

^[a] The Improvement Area #1 Initial Parcel consists of property tax IDs 2856586, 2856583, 2856587, 2828219, and 2856585. The Annual Installment Due 1/31/2023 will be allocated between the tax Parcels within the Improvement Area #1 Initial Parcel based on acreage.

^[b] Totals may not match the outstanding Assessment or Annual Installment due to rounding.

^[c] The Annual Installment covers the period September 1, 2022 to August 31, 2023 and is due by January 31, 2023.

EXHIBIT A-2 – MAJOR IMPROVEMENT AREA ASSESSMENT ROLL

Property ID ^[a]	Lot Type	Outstanding Assessment	Annual Installment Due 1/31/2023 ^{[b],[c]}
1007216, 2797551, 2797552, 2797418, 2797548	Major Improvement Area Initial Parcel	\$ 2,896,000.00	\$ 32,092.98
Total		\$ 2,896,000.00	\$ 32,092.98

Notes:

^[a] The Major Improvement Area Initial Parcel consists of property tax IDs 1007216, 2797551, 2797552, 2797418, and 2797548. The Annual Installment Due 1/31/2023 will be allocated between the tax Parcels within the Major Improvement Area Initial Parcel based on acreage.

^[b] Totals may not match the outstanding Assessment or Annual Installment due to rounding.

^[c] The Annual Installment covers the period September 1, 2022 to August 31, 2023 and is due by January 31, 2023.

EXHIBIT B-1 – DEBT SERVICE SCHEDULE – IMPROVEMENT AREA #1

DEBT SERVICE REQUIREMENTS

The following table sets forth the debt service requirements for the Bonds:

<u>Year Ending (September 1)</u>	<u>Principal</u>	<u>Interest</u>	<u>Total</u>
2022	-	\$409,546.76	\$409,546.76
2023	\$179,000.00	379,015.00	558,015.00
2024	185,000.00	373,197.50	558,197.50
2025	191,000.00	367,185.00	558,185.00
2026	197,000.00	360,977.50	557,977.50
2027	204,000.00	354,575.00	558,575.00
2028	212,000.00	346,925.00	558,925.00
2029	220,000.00	338,975.00	558,975.00
2030	228,000.00	330,725.00	558,725.00
2031	237,000.00	322,175.00	559,175.00
2032	247,000.00	313,287.50	560,287.50
2033	257,000.00	303,407.50	560,407.50
2034	268,000.00	293,127.50	561,127.50
2035	279,000.00	282,407.50	561,407.50
2036	290,000.00	271,247.50	561,247.50
2037	302,000.00	259,647.50	561,647.50
2038	315,000.00	247,567.50	562,567.50
2039	328,000.00	234,967.50	562,967.50
2040	342,000.00	221,847.50	563,847.50
2041	356,000.00	208,167.50	564,167.50
2042	372,000.00	193,927.50	565,927.50
2043	388,000.00	178,117.50	566,117.50
2044	405,000.00	161,627.50	566,627.50
2045	424,000.00	144,415.00	568,415.00
2046	443,000.00	126,395.00	569,395.00
2047	463,000.00	107,567.50	570,567.50
2048	483,000.00	87,890.00	570,890.00
2049	505,000.00	67,362.50	572,362.50
2050	528,000.00	45,900.00	573,900.00
2051	552,000.00	23,460.00	575,460.00
Total	<u>\$9,400,000.00</u>	<u>\$7,355,634.26</u>	<u>\$16,755,634.26</u>

EXHIBIT B-2 – DEBT SERVICE SCHEDULE – MAJOR IMPROVEMENT AREA

DEBT SERVICE REQUIREMENTS

The following table sets forth the debt service requirements for the Bonds:

<u>Year Ending</u> <u>(September 1)</u>	<u>Principal</u>	<u>Interest</u>	<u>Total</u>
2022	-	\$153,687.42	\$153,687.42
2023	-	142,230.00	142,230.00
2024	\$56,000.00	142,230.00	198,230.00
2025	58,000.00	139,710.00	197,710.00
2026	61,000.00	137,100.00	198,100.00
2027	63,000.00	134,355.00	197,355.00
2028	65,000.00	131,520.00	196,520.00
2029	68,000.00	128,595.00	196,595.00
2030	70,000.00	125,535.00	195,535.00
2031	73,000.00	122,385.00	195,385.00
2032	76,000.00	119,100.00	195,100.00
2033	79,000.00	115,300.00	194,300.00
2034	83,000.00	111,350.00	194,350.00
2035	86,000.00	107,200.00	193,200.00
2036	90,000.00	102,900.00	192,900.00
2037	94,000.00	98,400.00	192,400.00
2038	98,000.00	93,700.00	191,700.00
2039	103,000.00	88,800.00	191,800.00
2040	107,000.00	83,650.00	190,650.00
2041	112,000.00	78,300.00	190,300.00
2042	117,000.00	72,700.00	189,700.00
2043	123,000.00	66,850.00	189,850.00
2044	129,000.00	60,700.00	189,700.00
2045	135,000.00	54,250.00	189,250.00
2046	141,000.00	47,500.00	188,500.00
2047	147,000.00	40,450.00	187,450.00
2048	154,000.00	33,100.00	187,100.00
2049	162,000.00	25,400.00	187,400.00
2050	169,000.00	17,300.00	186,300.00
2051	177,000.00	8,850.00	185,850.00
Total	<u>\$2,896,000.00</u>	<u>\$2,783,147.42</u>	<u>\$5,679,147.42</u>

EXHIBIT C – BUYER DISCLOSURES

Homebuyer Disclosures for the following Lot Types are found in this Exhibit:

- Improvement Area #1
 - Initial Parcel
 - Lot Type 1
 - Lot Type 2
 - Lot Type 3
 - Lot Type 4
- Major Improvement Area
 - Initial Parcel

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SHERLEY TRACT PUBLIC IMPROVEMENT DISTRICT BUYER DISCLOSURE
IMPROVEMENT AREA #1 – INITIAL PARCEL

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

- 1) under a court order or foreclosure sale;
- 2) by a trustee in bankruptcy;
- 3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
- 4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
- 5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
- 6) from one co-owner to another co-owner of an undivided interest in the real property;
- 7) to a spouse or a person in the lineal line of consanguinity of the seller;
- 8) to or from a governmental entity; or
- 9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING¹ RETURN TO:

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF ANNA, TEXAS
CONCERNING THE FOLLOWING PROPERTY

PROPERTY ADDRESS

**IMPROVEMENT AREA #1 INITIAL PARCEL PRINCIPAL ASSESSMENT:
\$13,557,015.95**

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Anna, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Sherley Tract Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Anna. The exact amount of each annual installment will be approved each year by the Anna City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Anna.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

¹ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County when updating for the Current Information of Obligation to Pay Improvement District Assessment

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER]²

² To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

STATE OF TEXAS

§

§

COUNTY OF COLLIN

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]³

³ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER

STATE OF TEXAS

§

§

COUNTY OF COLLIN

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]⁴

⁴ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

ANNUAL INSTALLMENTS – IMPROVEMENT AREA #1 INITIAL PARCEL

Installment Due 1/31	Improvement Area #1 Bonds				Improvement Area #1 Reimbursement Obligation		Annual Collection Costs	Total Installment Due ^[c]
	Principal	Interest ^[a]	Additional Interest	Debt Service Reserve Release	Principal	Interest ^[b]		
2023	\$ 179,000.00	\$ 379,015.00	\$ 47,000.00	\$ -	\$ 57.28	\$ 279,767.17	\$ 44,817.02	\$ 929,656.47
2024	\$ 185,000.00	\$ 373,197.50	\$ 46,105.00	\$ -	\$ 61.13	\$ 279,763.32	\$ 45,713.36	\$ 929,840.31
2025	\$ 191,000.00	\$ 367,185.00	\$ 45,180.00	\$ -	\$ 65.25	\$ 279,759.20	\$ 46,627.63	\$ 929,817.08
2026	\$ 197,000.00	\$ 360,977.50	\$ 44,225.00	\$ -	\$ 7,536.92	\$ 272,287.53	\$ 47,560.18	\$ 929,587.13
2027	\$ 204,000.00	\$ 354,575.00	\$ 43,240.00	\$ -	\$ 93,106.16	\$ 186,718.29	\$ 48,511.38	\$ 930,150.84
2028	\$ 212,000.00	\$ 346,925.00	\$ 42,220.00	\$ -	\$ 97,295.93	\$ 182,528.51	\$ 49,481.61	\$ 930,451.06
2029	\$ 220,000.00	\$ 338,975.00	\$ 41,160.00	\$ -	\$ 101,674.25	\$ 178,150.20	\$ 50,471.24	\$ 930,430.69
2030	\$ 228,000.00	\$ 330,725.00	\$ 40,060.00	\$ -	\$ 106,249.59	\$ 173,574.86	\$ 51,480.67	\$ 930,090.11
2031	\$ 237,000.00	\$ 322,175.00	\$ 38,920.00	\$ -	\$ 111,030.82	\$ 168,793.62	\$ 52,510.28	\$ 930,429.73
2032	\$ 247,000.00	\$ 313,287.50	\$ 37,735.00	\$ -	\$ 116,027.21	\$ 163,797.24	\$ 53,560.49	\$ 931,407.44
2033	\$ 257,000.00	\$ 303,407.50	\$ 36,500.00	\$ -	\$ 121,248.43	\$ 158,576.01	\$ 54,631.70	\$ 931,363.64
2034	\$ 268,000.00	\$ 293,127.50	\$ 35,215.00	\$ -	\$ 126,704.61	\$ 153,119.83	\$ 55,724.33	\$ 931,891.28
2035	\$ 279,000.00	\$ 282,407.50	\$ 33,875.00	\$ -	\$ 132,406.32	\$ 147,418.13	\$ 56,838.82	\$ 931,945.76
2036	\$ 290,000.00	\$ 271,247.50	\$ 32,480.00	\$ -	\$ 138,364.61	\$ 141,459.84	\$ 57,975.59	\$ 931,527.55
2037	\$ 302,000.00	\$ 259,647.50	\$ 31,030.00	\$ -	\$ 144,591.01	\$ 135,233.43	\$ 59,135.11	\$ 931,637.05
2038	\$ 315,000.00	\$ 247,567.50	\$ 29,520.00	\$ -	\$ 151,097.61	\$ 128,726.84	\$ 60,317.81	\$ 932,229.76
2039	\$ 328,000.00	\$ 234,967.50	\$ 27,945.00	\$ -	\$ 157,897.00	\$ 121,927.45	\$ 61,524.16	\$ 932,261.11
2040	\$ 342,000.00	\$ 221,847.50	\$ 26,305.00	\$ -	\$ 165,002.36	\$ 114,822.08	\$ 62,754.65	\$ 932,731.59
2041	\$ 356,000.00	\$ 208,167.50	\$ 24,595.00	\$ -	\$ 172,427.47	\$ 107,396.98	\$ 64,009.74	\$ 932,596.69
2042	\$ 372,000.00	\$ 193,927.50	\$ 22,815.00	\$ -	\$ 180,186.71	\$ 99,637.74	\$ 65,289.94	\$ 933,856.89
2043	\$ 388,000.00	\$ 178,117.50	\$ 20,955.00	\$ -	\$ 188,295.11	\$ 91,529.34	\$ 66,595.73	\$ 933,492.68
2044	\$ 405,000.00	\$ 161,627.50	\$ 19,015.00	\$ -	\$ 196,768.39	\$ 83,056.06	\$ 67,927.65	\$ 933,394.60
2045	\$ 424,000.00	\$ 144,415.00	\$ 16,990.00	\$ -	\$ 205,622.97	\$ 74,201.48	\$ 69,286.20	\$ 934,515.65
2046	\$ 443,000.00	\$ 126,395.00	\$ 14,870.00	\$ -	\$ 214,876.00	\$ 64,948.45	\$ 70,671.93	\$ 934,761.37
2047	\$ 463,000.00	\$ 107,567.50	\$ 12,655.00	\$ -	\$ 224,545.42	\$ 55,279.03	\$ 72,085.36	\$ 935,132.31
2048	\$ 483,000.00	\$ 87,890.00	\$ 10,340.00	\$ -	\$ 234,649.96	\$ 45,174.48	\$ 73,527.07	\$ 934,581.51
2049	\$ 505,000.00	\$ 67,362.50	\$ 7,925.00	\$ -	\$ 245,209.21	\$ 34,615.23	\$ 74,997.61	\$ 935,109.56
2050	\$ 528,000.00	\$ 45,900.00	\$ 5,400.00	\$ -	\$ 256,243.63	\$ 23,580.82	\$ 76,497.57	\$ 935,622.02
2051	\$ 552,000.00	\$ 23,460.00	\$ 2,760.00	\$ (575,460.00)	\$ 267,774.59	\$ 12,049.86	\$ 78,027.52	\$ 360,611.96
Total	\$ 9,400,000.00	\$ 6,946,087.50	\$ 837,035.00	\$ (575,460.00)	\$ 4,157,015.95	\$ 3,957,893.02	\$ 1,738,552.35	\$ 26,461,123.82

Notes:

^[a]Interest on the Improvement Area #1 Bonds is calculated at 3.250%, 3.750%, 4.000%, and 4.250% rate for term bonds due 2026, 2031, 2041, and 2051 respectively.

^[b]Interest on the Improvement Area #1 Reimbursement Obligation is calculated at a 6.730% interest rate from 9/15/2022 to 8/16/2026, and 4.500% thereafter.

^[c]The figures shown above are estimates only and subject to change in Annual Service Plan Updates. Changes in Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

SHERLEY TRACT PUBLIC IMPROVEMENT DISTRICT BUYER DISCLOSURE
IMPROVEMENT AREA #1 – LOT TYPE 1

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

- 1) under a court order or foreclosure sale;
- 2) by a trustee in bankruptcy;
- 3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
- 4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
- 5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
- 6) from one co-owner to another co-owner of an undivided interest in the real property;
- 7) to a spouse or a person in the lineal line of consanguinity of the seller;
- 8) to or from a governmental entity; or
- 9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING¹¹ RETURN TO:

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF ANNA, TEXAS
CONCERNING THE FOLLOWING PROPERTY

PROPERTY ADDRESS

IMPROVEMENT AREA #1 LOT TYPE 1 PRINCIPAL ASSESSMENT: \$24,696.27

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Anna, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Sherley Tract Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Anna. The exact amount of each annual installment will be approved each year by the Anna City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Anna.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

¹ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County when updating for the Current Information of Obligation to Pay Improvement District Assessment

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER]²²

² To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

STATE OF TEXAS

§

§

COUNTY OF COLLIN

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]³³

³ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER

STATE OF TEXAS

§

§

COUNTY OF COLLIN

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]⁴

⁴ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

ANNUAL INSTALLMENTS – LOT TYPE 1

Installment Due 1/31	IA#1 Bonds				IA#1 Reimbursement Obligation		Annual Collection Costs	Total Installment Due ^[c]
	Principal	Interest ^[a]	Additional Interest	Debt Service Reserve Release	Principal	Interest ^[b]		
2023	\$ 326.08	\$ 690.44	\$ 85.62	\$ -	\$ 0.10	\$ 509.64	\$ 81.64	\$ 1,693.52
2024	\$ 337.01	\$ 679.84	\$ 83.99	\$ -	\$ 0.11	\$ 509.63	\$ 83.27	\$ 1,693.85
2025	\$ 347.94	\$ 668.89	\$ 82.30	\$ -	\$ 0.12	\$ 509.63	\$ 84.94	\$ 1,693.81
2026	\$ 358.87	\$ 657.58	\$ 80.56	\$ -	\$ 13.73	\$ 496.02	\$ 86.64	\$ 1,693.39
2027	\$ 371.62	\$ 645.91	\$ 78.77	\$ -	\$ 169.61	\$ 340.14	\$ 88.37	\$ 1,694.42
2028	\$ 386.19	\$ 631.98	\$ 76.91	\$ -	\$ 177.24	\$ 332.50	\$ 90.14	\$ 1,694.97
2029	\$ 400.77	\$ 617.50	\$ 74.98	\$ -	\$ 185.22	\$ 324.53	\$ 91.94	\$ 1,694.93
2030	\$ 415.34	\$ 602.47	\$ 72.98	\$ -	\$ 193.55	\$ 316.19	\$ 93.78	\$ 1,694.31
2031	\$ 431.73	\$ 586.89	\$ 70.90	\$ -	\$ 202.26	\$ 307.48	\$ 95.66	\$ 1,694.93
2032	\$ 449.95	\$ 570.70	\$ 68.74	\$ -	\$ 211.36	\$ 298.38	\$ 97.57	\$ 1,696.71
2033	\$ 468.17	\$ 552.71	\$ 66.49	\$ -	\$ 220.87	\$ 288.87	\$ 99.52	\$ 1,696.63
2034	\$ 488.20	\$ 533.98	\$ 64.15	\$ -	\$ 230.81	\$ 278.93	\$ 101.51	\$ 1,697.59
2035	\$ 508.24	\$ 514.45	\$ 61.71	\$ -	\$ 241.20	\$ 268.55	\$ 103.54	\$ 1,697.69
2036	\$ 528.28	\$ 494.12	\$ 59.17	\$ -	\$ 252.05	\$ 257.69	\$ 105.61	\$ 1,696.93
2037	\$ 550.14	\$ 472.99	\$ 56.53	\$ -	\$ 263.40	\$ 246.35	\$ 107.72	\$ 1,697.13
2038	\$ 573.82	\$ 450.98	\$ 53.78	\$ -	\$ 275.25	\$ 234.50	\$ 109.88	\$ 1,698.21
2039	\$ 597.50	\$ 428.03	\$ 50.91	\$ -	\$ 287.63	\$ 222.11	\$ 112.08	\$ 1,698.26
2040	\$ 623.01	\$ 404.13	\$ 47.92	\$ -	\$ 300.58	\$ 209.17	\$ 114.32	\$ 1,699.12
2041	\$ 648.51	\$ 379.21	\$ 44.80	\$ -	\$ 314.10	\$ 195.64	\$ 116.60	\$ 1,698.87
2042	\$ 677.66	\$ 353.27	\$ 41.56	\$ -	\$ 328.24	\$ 181.51	\$ 118.94	\$ 1,701.17
2043	\$ 706.80	\$ 324.47	\$ 38.17	\$ -	\$ 343.01	\$ 166.74	\$ 121.31	\$ 1,700.51
2044	\$ 737.77	\$ 294.43	\$ 34.64	\$ -	\$ 358.45	\$ 151.30	\$ 123.74	\$ 1,700.33
2045	\$ 772.38	\$ 263.07	\$ 30.95	\$ -	\$ 374.58	\$ 135.17	\$ 126.22	\$ 1,702.37
2046	\$ 807.00	\$ 230.25	\$ 27.09	\$ -	\$ 391.43	\$ 118.31	\$ 128.74	\$ 1,702.82
2047	\$ 843.43	\$ 195.95	\$ 23.05	\$ -	\$ 409.05	\$ 100.70	\$ 131.31	\$ 1,703.49
2048	\$ 879.86	\$ 160.11	\$ 18.84	\$ -	\$ 427.45	\$ 82.29	\$ 133.94	\$ 1,702.49
2049	\$ 919.94	\$ 122.71	\$ 14.44	\$ -	\$ 446.69	\$ 63.06	\$ 136.62	\$ 1,703.45
2050	\$ 961.84	\$ 83.61	\$ 9.84	\$ -	\$ 466.79	\$ 42.96	\$ 139.35	\$ 1,704.38
2051	\$ 1,005.56	\$ 42.74	\$ 5.03	\$ (1,048.29)	\$ 487.79	\$ 21.95	\$ 142.14	\$ 656.91
Total	\$ 17,123.60	\$ 12,653.41	\$ 1,524.79	\$ (1,048.29)	\$ 7,572.67	\$ 7,209.93	\$ 3,167.05	\$ 48,203.16

Notes:

^[a]Interest on the Improvement Area #1 Bonds is calculated at 3.250%, 3.750%, 4.000%, and 4.250% rate for term bonds due 2026, 2031, 2041, and 2051 respectively.

^[b]Interest on the Improvement Area #1 Reimbursement Obligation is calculated at a 6.730% interest rate from 9/15/2022 to 8/16/2026, and 4.500% thereafter.

^[c]The figures shown above are estimates only and subject to change in Annual Service Plan Updates. Changes in Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

SHERLEY TRACT PUBLIC IMPROVEMENT DISTRICT BUYER DISCLOSURE
IMPROVEMENT AREA #1 – LOT TYPE 2

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

- 1) under a court order or foreclosure sale;
- 2) by a trustee in bankruptcy;
- 3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
- 4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
- 5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
- 6) from one co-owner to another co-owner of an undivided interest in the real property;
- 7) to a spouse or a person in the lineal line of consanguinity of the seller;
- 8) to or from a governmental entity; or
- 9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING¹ RETURN TO:

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF ANNA, TEXAS
CONCERNING THE FOLLOWING PROPERTY

PROPERTY ADDRESS

IMPROVEMENT AREA #1 LOT TYPE 2 PRINCIPAL ASSESSMENT: \$28,169.18

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Anna, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Sherley Tract Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Anna. The exact amount of each annual installment will be approved each year by the Anna City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Anna.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

¹ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County when updating for the Current Information of Obligation to Pay Improvement District Assessment

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER]²

² To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

STATE OF TEXAS

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§

COUNTY OF COLLIN

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]³

³ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER

STATE OF TEXAS

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§

COUNTY OF COLLIN

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]⁴

⁴ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

ANNUAL INSTALLMENTS – LOT TYPE 2

Installment Due 1/31	IA#1 Bonds				IA#1 Reimbursement Obligation		Annual Collection Costs	Total Installment Due ^[c]
	Principal	Interest ^[a]	Additional Interest	Debt Service Reserve Release	Principal	Interest ^[b]		
2023	\$ 371.93	\$ 787.53	\$ 97.66	\$ -	\$ 0.12	\$ 581.31	\$ 93.12	\$ 1,931.67
2024	\$ 384.40	\$ 775.44	\$ 95.80	\$ -	\$ 0.13	\$ 581.30	\$ 94.98	\$ 1,932.05
2025	\$ 396.87	\$ 762.95	\$ 93.88	\$ -	\$ 0.14	\$ 581.29	\$ 96.88	\$ 1,932.00
2026	\$ 409.33	\$ 750.05	\$ 91.89	\$ -	\$ 15.66	\$ 565.77	\$ 98.82	\$ 1,931.52
2027	\$ 423.88	\$ 736.75	\$ 89.85	\$ -	\$ 193.46	\$ 387.97	\$ 100.80	\$ 1,932.70
2028	\$ 440.50	\$ 720.85	\$ 87.73	\$ -	\$ 202.16	\$ 379.26	\$ 102.81	\$ 1,933.32
2029	\$ 457.12	\$ 704.33	\$ 85.52	\$ -	\$ 211.26	\$ 370.17	\$ 104.87	\$ 1,933.28
2030	\$ 473.75	\$ 687.19	\$ 83.24	\$ -	\$ 220.77	\$ 360.66	\$ 106.97	\$ 1,932.57
2031	\$ 492.45	\$ 669.43	\$ 80.87	\$ -	\$ 230.70	\$ 350.72	\$ 109.11	\$ 1,933.28
2032	\$ 513.22	\$ 650.96	\$ 78.41	\$ -	\$ 241.08	\$ 340.34	\$ 111.29	\$ 1,935.31
2033	\$ 534.00	\$ 630.43	\$ 75.84	\$ -	\$ 251.93	\$ 329.49	\$ 113.52	\$ 1,935.22
2034	\$ 556.86	\$ 609.07	\$ 73.17	\$ -	\$ 263.27	\$ 318.16	\$ 115.79	\$ 1,936.31
2035	\$ 579.71	\$ 586.79	\$ 70.39	\$ -	\$ 275.12	\$ 306.31	\$ 118.10	\$ 1,936.43
2036	\$ 602.57	\$ 563.61	\$ 67.49	\$ -	\$ 287.50	\$ 293.93	\$ 120.46	\$ 1,935.56
2037	\$ 627.50	\$ 539.50	\$ 64.48	\$ -	\$ 300.44	\$ 280.99	\$ 122.87	\$ 1,935.78
2038	\$ 654.52	\$ 514.40	\$ 61.34	\$ -	\$ 313.96	\$ 267.47	\$ 125.33	\$ 1,937.02
2039	\$ 681.53	\$ 488.22	\$ 58.06	\$ -	\$ 328.08	\$ 253.34	\$ 127.84	\$ 1,937.08
2040	\$ 710.62	\$ 460.96	\$ 54.66	\$ -	\$ 342.85	\$ 238.58	\$ 130.39	\$ 1,938.06
2041	\$ 739.71	\$ 432.54	\$ 51.10	\$ -	\$ 358.28	\$ 223.15	\$ 133.00	\$ 1,937.78
2042	\$ 772.95	\$ 402.95	\$ 47.41	\$ -	\$ 374.40	\$ 207.03	\$ 135.66	\$ 1,940.40
2043	\$ 806.20	\$ 370.10	\$ 43.54	\$ -	\$ 391.25	\$ 190.18	\$ 138.37	\$ 1,939.64
2044	\$ 841.52	\$ 335.83	\$ 39.51	\$ -	\$ 408.85	\$ 172.58	\$ 141.14	\$ 1,939.44
2045	\$ 881.00	\$ 300.07	\$ 35.30	\$ -	\$ 427.25	\$ 154.18	\$ 143.96	\$ 1,941.77
2046	\$ 920.48	\$ 262.63	\$ 30.90	\$ -	\$ 446.48	\$ 134.95	\$ 146.84	\$ 1,942.28
2047	\$ 962.04	\$ 223.51	\$ 26.29	\$ -	\$ 466.57	\$ 114.86	\$ 149.78	\$ 1,943.05
2048	\$ 1,003.59	\$ 182.62	\$ 21.48	\$ -	\$ 487.56	\$ 93.86	\$ 152.78	\$ 1,941.90
2049	\$ 1,049.30	\$ 139.97	\$ 16.47	\$ -	\$ 509.50	\$ 71.92	\$ 155.83	\$ 1,943.00
2050	\$ 1,097.09	\$ 95.37	\$ 11.22	\$ -	\$ 532.43	\$ 49.00	\$ 158.95	\$ 1,944.06
2051	\$ 1,146.96	\$ 48.75	\$ 5.73	\$ (1,195.71)	\$ 556.39	\$ 25.04	\$ 162.13	\$ 749.29
Total	\$ 19,531.61	\$ 14,432.79	\$ 1,739.22	\$ (1,195.71)	\$ 8,637.57	\$ 8,223.83	\$ 3,612.42	\$ 54,981.73

Notes:

^[a]Interest on the Improvement Area #1 Bonds is calculated at 3.250%, 3.750%, 4.000%, and 4.250% rate for term bonds due 2026, 2031, 2041, and 2051 respectively.

^[b]Interest on the Improvement Area #1 Reimbursement Obligation is calculated at a 6.730% interest rate from 9/15/2022 to 8/16/2026, and 4.500% thereafter.

^[c]The figures shown above are estimates only and subject to change in Annual Service Plan Updates. Changes in Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

SHERLEY TRACT PUBLIC IMPROVEMENT DISTRICT BUYER DISCLOSURE
IMPROVEMENT AREA #1 – LOT TYPE 3

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

- 1) under a court order or foreclosure sale;
- 2) by a trustee in bankruptcy;
- 3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
- 4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
- 5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
- 6) from one co-owner to another co-owner of an undivided interest in the real property;
- 7) to a spouse or a person in the lineal line of consanguinity of the seller;
- 8) to or from a governmental entity; or
- 9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING¹ RETURN TO:

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF ANNA, TEXAS
CONCERNING THE FOLLOWING PROPERTY

PROPERTY ADDRESS

IMPROVEMENT AREA #1 LOT TYPE 3 PRINCIPAL ASSESSMENT: \$33,803.02

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Anna, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Sherley Tract Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Anna. The exact amount of each annual installment will be approved each year by the Anna City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Anna.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

¹ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County when updating for the Current Information of Obligation to Pay Improvement District Assessment

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER]²

² To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

STATE OF TEXAS

§

§

COUNTY OF COLLIN

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]³

³ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER

STATE OF TEXAS

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COUNTY OF COLLIN

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The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]⁴

⁴ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

ANNUAL INSTALLMENTS – LOT TYPE 3

Installment Due 1/31	IA#1 Bonds				IA#1 Reimbursement Obligation		Annual Collection Costs	Total Installment Due ^[c]
	Principal	Interest ^[a]	Additional Interest	Debt Service Reserve Release	Principal	Interest ^[b]		
2023	\$ 446.32	\$ 945.03	\$ 117.19	\$ -	\$ 0.14	\$ 697.57	\$ 111.75	\$ 2,318.00
2024	\$ 461.28	\$ 930.53	\$ 114.96	\$ -	\$ 0.15	\$ 697.56	\$ 113.98	\$ 2,318.46
2025	\$ 476.24	\$ 915.54	\$ 112.65	\$ -	\$ 0.16	\$ 697.55	\$ 116.26	\$ 2,318.40
2026	\$ 491.20	\$ 900.06	\$ 110.27	\$ -	\$ 18.79	\$ 678.92	\$ 118.59	\$ 2,317.83
2027	\$ 508.65	\$ 884.10	\$ 107.81	\$ -	\$ 232.15	\$ 465.56	\$ 120.96	\$ 2,319.23
2028	\$ 528.60	\$ 865.02	\$ 105.27	\$ -	\$ 242.60	\$ 455.12	\$ 123.38	\$ 2,319.98
2029	\$ 548.55	\$ 845.20	\$ 102.63	\$ -	\$ 253.51	\$ 444.20	\$ 125.84	\$ 2,319.93
2030	\$ 568.49	\$ 824.63	\$ 99.89	\$ -	\$ 264.92	\$ 432.79	\$ 128.36	\$ 2,319.08
2031	\$ 590.93	\$ 803.31	\$ 97.04	\$ -	\$ 276.84	\$ 420.87	\$ 130.93	\$ 2,319.93
2032	\$ 615.87	\$ 781.15	\$ 94.09	\$ -	\$ 289.30	\$ 408.41	\$ 133.55	\$ 2,322.37
2033	\$ 640.80	\$ 756.52	\$ 91.01	\$ -	\$ 302.32	\$ 395.39	\$ 136.22	\$ 2,322.26
2034	\$ 668.23	\$ 730.88	\$ 87.80	\$ -	\$ 315.92	\$ 381.79	\$ 138.94	\$ 2,323.57
2035	\$ 695.66	\$ 704.15	\$ 84.46	\$ -	\$ 330.14	\$ 367.57	\$ 141.72	\$ 2,323.71
2036	\$ 723.08	\$ 676.33	\$ 80.99	\$ -	\$ 345.00	\$ 352.72	\$ 144.56	\$ 2,322.67
2037	\$ 753.01	\$ 647.40	\$ 77.37	\$ -	\$ 360.52	\$ 337.19	\$ 147.45	\$ 2,322.94
2038	\$ 785.42	\$ 617.28	\$ 73.61	\$ -	\$ 376.75	\$ 320.97	\$ 150.40	\$ 2,324.42
2039	\$ 817.83	\$ 585.87	\$ 69.68	\$ -	\$ 393.70	\$ 304.01	\$ 153.40	\$ 2,324.50
2040	\$ 852.74	\$ 553.15	\$ 65.59	\$ -	\$ 411.42	\$ 286.30	\$ 156.47	\$ 2,325.67
2041	\$ 887.65	\$ 519.04	\$ 61.33	\$ -	\$ 429.93	\$ 267.78	\$ 159.60	\$ 2,325.33
2042	\$ 927.54	\$ 483.54	\$ 56.89	\$ -	\$ 449.28	\$ 248.44	\$ 162.79	\$ 2,328.48
2043	\$ 967.44	\$ 444.12	\$ 52.25	\$ -	\$ 469.49	\$ 228.22	\$ 166.05	\$ 2,327.57
2044	\$ 1,009.83	\$ 403.00	\$ 47.41	\$ -	\$ 490.62	\$ 207.09	\$ 169.37	\$ 2,327.32
2045	\$ 1,057.20	\$ 360.08	\$ 42.36	\$ -	\$ 512.70	\$ 185.01	\$ 172.76	\$ 2,330.12
2046	\$ 1,104.57	\$ 315.15	\$ 37.08	\$ -	\$ 535.77	\$ 161.94	\$ 176.21	\$ 2,330.73
2047	\$ 1,154.44	\$ 268.21	\$ 31.55	\$ -	\$ 559.88	\$ 137.83	\$ 179.74	\$ 2,331.66
2048	\$ 1,204.31	\$ 219.14	\$ 25.78	\$ -	\$ 585.08	\$ 112.64	\$ 183.33	\$ 2,330.28
2049	\$ 1,259.17	\$ 167.96	\$ 19.76	\$ -	\$ 611.40	\$ 86.31	\$ 187.00	\$ 2,331.60
2050	\$ 1,316.51	\$ 114.45	\$ 13.46	\$ -	\$ 638.92	\$ 58.80	\$ 190.74	\$ 2,332.88
2051	\$ 1,376.35	\$ 58.50	\$ 6.88	\$ (1,434.85)	\$ 667.67	\$ 30.05	\$ 194.55	\$ 899.15
Total	\$ 23,437.93	\$ 17,319.35	\$ 2,087.06	\$ (1,434.85)	\$ 10,365.09	\$ 9,868.60	\$ 4,334.90	\$ 65,978.07

Notes:

^[a]Interest on the Improvement Area #1 Bonds is calculated at 3.250%, 3.750%, 4.000%, and 4.250% rate for term bonds due 2026, 2031, 2041, and 2051 respectively.

^[b]Interest on the Improvement Area #1 Reimbursement Obligation is calculated at a 6.730% interest rate from 9/15/2022 to 8/16/2026, and 4.500% thereafter.

^[c]The figures shown above are estimates only and subject to change in Annual Service Plan Updates. Changes in Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

SHERLEY TRACT PUBLIC IMPROVEMENT DISTRICT BUYER DISCLOSURE
IMPROVEMENT AREA #1 – LOT TYPE 4

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

- 1) under a court order or foreclosure sale;
- 2) by a trustee in bankruptcy;
- 3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
- 4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
- 5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
- 6) from one co-owner to another co-owner of an undivided interest in the real property;
- 7) to a spouse or a person in the lineal line of consanguinity of the seller;
- 8) to or from a governmental entity; or
- 9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING¹ RETURN TO:

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF ANNA, TEXAS
CONCERNING THE FOLLOWING PROPERTY

PROPERTY ADDRESS

IMPROVEMENT AREA #1 LOT TYPE 4 PRINCIPAL ASSESSMENT: \$23,152.75

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Anna, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Sherley Tract Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Anna. The exact amount of each annual installment will be approved each year by the Anna City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Anna.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

¹ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County when updating for the Current Information of Obligation to Pay Improvement District Assessment

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER]²

² To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

STATE OF TEXAS

§

§

COUNTY OF COLLIN

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]³

³ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER

STATE OF TEXAS

§

§

COUNTY OF COLLIN

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]⁴

⁴ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

ANNUAL INSTALLMENTS – LOT TYPE 4

Installment Due 1/31	Bonds				IA#1 Reimbursement Obligation		Annual Collection Costs	Total Installment Due ^[c]
	Principal	Interest ^[a]	Additional Interest	Debt Service Reserve Release	Principal	Interest ^[b]		
2023	\$ 305.70	\$ 647.28	\$ 80.27	\$ -	\$ 0.10	\$ 477.79	\$ 76.54	\$ 1,587.67
2024	\$ 315.94	\$ 637.35	\$ 78.74	\$ -	\$ 0.10	\$ 477.78	\$ 78.07	\$ 1,587.99
2025	\$ 326.19	\$ 627.08	\$ 77.16	\$ -	\$ 0.11	\$ 477.77	\$ 79.63	\$ 1,587.95
2026	\$ 336.44	\$ 616.48	\$ 75.53	\$ -	\$ 12.87	\$ 465.01	\$ 81.22	\$ 1,587.55
2027	\$ 348.39	\$ 605.55	\$ 73.85	\$ -	\$ 159.01	\$ 318.88	\$ 82.85	\$ 1,588.52
2028	\$ 362.05	\$ 592.48	\$ 72.10	\$ -	\$ 166.16	\$ 311.72	\$ 84.50	\$ 1,589.03
2029	\$ 375.72	\$ 578.90	\$ 70.29	\$ -	\$ 173.64	\$ 304.25	\$ 86.20	\$ 1,588.99
2030	\$ 389.38	\$ 564.81	\$ 68.41	\$ -	\$ 181.45	\$ 296.43	\$ 87.92	\$ 1,588.41
2031	\$ 404.75	\$ 550.21	\$ 66.47	\$ -	\$ 189.62	\$ 288.27	\$ 89.68	\$ 1,588.99
2032	\$ 421.83	\$ 535.03	\$ 64.44	\$ -	\$ 198.15	\$ 279.73	\$ 91.47	\$ 1,590.66
2033	\$ 438.91	\$ 518.16	\$ 62.33	\$ -	\$ 207.07	\$ 270.82	\$ 93.30	\$ 1,590.59
2034	\$ 457.69	\$ 500.60	\$ 60.14	\$ -	\$ 216.39	\$ 261.50	\$ 95.17	\$ 1,591.49
2035	\$ 476.48	\$ 482.30	\$ 57.85	\$ -	\$ 226.12	\$ 251.76	\$ 97.07	\$ 1,591.58
2036	\$ 495.26	\$ 463.24	\$ 55.47	\$ -	\$ 236.30	\$ 241.59	\$ 99.01	\$ 1,590.87
2037	\$ 515.76	\$ 443.43	\$ 52.99	\$ -	\$ 246.93	\$ 230.95	\$ 100.99	\$ 1,591.06
2038	\$ 537.96	\$ 422.80	\$ 50.41	\$ -	\$ 258.05	\$ 219.84	\$ 103.01	\$ 1,592.07
2039	\$ 560.16	\$ 401.28	\$ 47.72	\$ -	\$ 269.66	\$ 208.23	\$ 105.07	\$ 1,592.12
2040	\$ 584.07	\$ 378.87	\$ 44.92	\$ -	\$ 281.79	\$ 196.09	\$ 107.17	\$ 1,592.92
2041	\$ 607.98	\$ 355.51	\$ 42.00	\$ -	\$ 294.47	\$ 183.41	\$ 109.32	\$ 1,592.69
2042	\$ 635.30	\$ 331.19	\$ 38.96	\$ -	\$ 307.72	\$ 170.16	\$ 111.50	\$ 1,594.85
2043	\$ 662.63	\$ 304.19	\$ 35.79	\$ -	\$ 321.57	\$ 156.31	\$ 113.73	\$ 1,594.22
2044	\$ 691.66	\$ 276.03	\$ 32.47	\$ -	\$ 336.04	\$ 141.84	\$ 116.01	\$ 1,594.06
2045	\$ 724.11	\$ 246.63	\$ 29.02	\$ -	\$ 351.16	\$ 126.72	\$ 118.33	\$ 1,595.97
2046	\$ 756.56	\$ 215.86	\$ 25.40	\$ -	\$ 366.97	\$ 110.92	\$ 120.69	\$ 1,596.39
2047	\$ 790.71	\$ 183.70	\$ 21.61	\$ -	\$ 383.48	\$ 94.41	\$ 123.11	\$ 1,597.02
2048	\$ 824.87	\$ 150.10	\$ 17.66	\$ -	\$ 400.74	\$ 77.15	\$ 125.57	\$ 1,596.08
2049	\$ 862.44	\$ 115.04	\$ 13.53	\$ -	\$ 418.77	\$ 59.12	\$ 128.08	\$ 1,596.99
2050	\$ 901.72	\$ 78.39	\$ 9.22	\$ -	\$ 437.61	\$ 40.27	\$ 130.64	\$ 1,597.86
2051	\$ 942.71	\$ 40.07	\$ 4.71	\$ (982.77)	\$ 457.31	\$ 20.58	\$ 133.26	\$ 615.86
Total	\$ 16,053.37	\$ 11,862.57	\$ 1,429.49	\$ (982.77)	\$ 7,099.38	\$ 6,759.31	\$ 2,969.11	\$ 45,190.46

Notes:

^[a]Interest on the Improvement Area #1 Bonds is calculated at 3.250%, 3.750%, 4.000%, and 4.250% rate for term bonds due 2026, 2031, 2041, and 2051 respectively.

^[b]Interest on the Improvement Area #1 Reimbursement Obligation is calculated at a 6.730% interest rate from 9/15/2022 to 8/16/2026, and 4.500% thereafter.

^[c]The figures shown above are estimates only and subject to change in Annual Service Plan Updates. Changes in Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.

SHERLEY TRACT PUBLIC IMPROVEMENT DISTRICT BUYER DISCLOSURE
MAJOR IMPROVEMENT AREA – INITIAL PARCEL

NOTICE OF OBLIGATIONS RELATED TO PUBLIC IMPROVEMENT DISTRICT

A person who proposes to sell or otherwise convey real property that is located in a public improvement district established under Subchapter A, Chapter 372, Local Government Code (except for public improvement districts described under Section 372.005), or Chapter 382, Local Government Code, shall first give to the purchaser of the property this written notice, signed by the seller.

For the purposes of this notice, a contract for the purchase and sale of real property having a performance period of less than six months is considered a sale requiring the notice set forth below.

This notice requirement does not apply to a transfer:

- 1) under a court order or foreclosure sale;
- 2) by a trustee in bankruptcy;
- 3) to a mortgagee by a mortgagor or successor in interest or to a beneficiary of a deed of trust by a trustor or successor in interest;
- 4) by a mortgagee or a beneficiary under a deed of trust who has acquired the land at a sale conducted under a power of sale under a deed of trust or a sale under a court-ordered foreclosure or has acquired the land by a deed in lieu of foreclosure;
- 5) by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust;
- 6) from one co-owner to another co-owner of an undivided interest in the real property;
- 7) to a spouse or a person in the lineal line of consanguinity of the seller;
- 8) to or from a governmental entity; or
- 9) of only a mineral interest, leasehold interest, or security interest

The following notice shall be given to a prospective purchaser before the execution of a binding contract of purchase and sale, either separately or as an addendum or paragraph of a purchase contract. In the event a contract of purchase and sale is entered into without the seller having provided the required notice, the purchaser, subject to certain exceptions, is entitled to terminate the contract.

A separate copy of this notice shall be executed by the seller and the purchaser and must be filed in the real property records of the county in which the property is located at the closing of the purchase and sale of the property.

AFTER RECORDING¹ RETURN TO:

NOTICE OF OBLIGATION TO PAY IMPROVEMENT DISTRICT ASSESSMENT TO
CITY OF ANNA, TEXAS
CONCERNING THE FOLLOWING PROPERTY

PROPERTY ADDRESS

MAJOR IMPROVEMENT AREA INITIAL PARCEL PRINCIPAL ASSESSMENT:
\$2,896,000.00

As the purchaser of the real property described above, you are obligated to pay assessments to the City of Anna, Texas, for the costs of a portion of a public improvement or services project (the "Authorized Improvements") undertaken for the benefit of the property within ***Sherley Tract Public Improvement District*** (the "District") created under Subchapter A, Chapter 372, Local Government Code.

AN ASSESSMENT HAS BEEN LEVIED AGAINST YOUR PROPERTY FOR THE AUTHORIZED IMPROVEMENTS, WHICH MAY BE PAID IN FULL AT ANY TIME. IF THE ASSESSMENT IS NOT PAID IN FULL, IT WILL BE DUE AND PAYABLE IN ANNUAL INSTALLMENTS THAT WILL VARY FROM YEAR TO YEAR DEPENDING ON THE AMOUNT OF INTEREST PAID, COLLECTION COSTS, ADMINISTRATIVE COSTS, AND DELINQUENCY COSTS.

The exact amount of the assessment may be obtained from the City of Anna. The exact amount of each annual installment will be approved each year by the Anna City Council in the annual service plan update for the district. More information about the assessments, including the amounts and due dates, may be obtained from the City of Anna.

Your failure to pay any assessment or any annual installment may result in penalties and interest being added to what you owe or in a lien on and the foreclosure of your property.

¹ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County when updating for the Current Information of Obligation to Pay Improvement District Assessment.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

The undersigned seller acknowledges providing this notice to the potential purchaser before the effective date of a binding contract for the purchase of the real property at the address described above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER]²

² To be included in copy of the notice required by Section 5.014, Tex. Prop. Code, to be executed by seller in accordance with Section 5.014(a-1), Tex. Prop. Code.

[The undersigned purchaser acknowledges receipt of this notice before the effective date of a binding contract for the purchase of the real property at the address described above. The undersigned purchaser acknowledged the receipt of this notice including the current information required by Section 5.0143, Texas Property Code, as amended.

DATE:

DATE:

SIGNATURE OF PURCHASER

SIGNATURE OF PURCHASER

STATE OF TEXAS

§

§

COUNTY OF COLLIN

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]³

³ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

[The undersigned seller acknowledges providing a separate copy of the notice required by Section 5.014 of the Texas Property Code including the current information required by Section 5.0143, Texas Property Code, as amended, at the closing of the purchase of the real property at the address above.

DATE:

DATE:

SIGNATURE OF SELLER

SIGNATURE OF SELLER

STATE OF TEXAS

§

§

COUNTY OF COLLIN

§

The foregoing instrument was acknowledged before me by _____ and _____, known to me to be the person(s) whose name(s) is/are subscribed to the foregoing instrument, and acknowledged to me that he or she executed the same for the purposes therein expressed.

Given under my hand and seal of office on this _____, 20__.

Notary Public, State of Texas]⁴

⁴ To be included in separate copy of the notice required by Section 5.0143, Tex. Prop. Code, to be executed at the closing of the purchase and sale and to be recorded in the deed records of Collin County.

ANNUAL INSTALLMENTS – MAJOR IMPROVEMENT AREA INITIAL PARCEL

Installment Due 1/31	Principal	Interest ^[a]	Additional Interest	Capitalized Interest	Debt Service Reserve Release	Annual Collection Costs	Total Installment Due ^[b]
2023	\$ -	\$ 142,230	\$ 14,480	\$ (142,230)	\$ -	\$ 17,613	\$ 32,093
2024	\$ 56,000.00	\$ 142,230.00	\$ 14,480.00	\$ -	\$ -	\$ 17,965.24	\$ 230,675.24
2025	\$ 58,000.00	\$ 139,710.00	\$ 14,200.00	\$ -	\$ -	\$ 18,324.54	\$ 230,234.54
2026	\$ 61,000.00	\$ 137,100.00	\$ 13,910.00	\$ -	\$ -	\$ 18,691.04	\$ 230,701.04
2027	\$ 63,000.00	\$ 134,355.00	\$ 13,605.00	\$ -	\$ -	\$ 19,064.86	\$ 230,024.86
2028	\$ 65,000.00	\$ 131,520.00	\$ 13,290.00	\$ -	\$ -	\$ 19,446.15	\$ 229,256.15
2029	\$ 68,000.00	\$ 128,595.00	\$ 12,965.00	\$ -	\$ -	\$ 19,835.08	\$ 229,395.08
2030	\$ 70,000.00	\$ 125,535.00	\$ 12,625.00	\$ -	\$ -	\$ 20,231.78	\$ 228,391.78
2031	\$ 73,000.00	\$ 122,385.00	\$ 12,275.00	\$ -	\$ -	\$ 20,636.41	\$ 228,296.41
2032	\$ 76,000.00	\$ 119,100.00	\$ 11,910.00	\$ -	\$ -	\$ 21,049.14	\$ 228,059.14
2033	\$ 79,000.00	\$ 115,300.00	\$ 11,530.00	\$ -	\$ -	\$ 21,470.12	\$ 227,300.12
2034	\$ 83,000.00	\$ 111,350.00	\$ 11,135.00	\$ -	\$ -	\$ 21,899.53	\$ 227,384.53
2035	\$ 86,000.00	\$ 107,200.00	\$ 10,720.00	\$ -	\$ -	\$ 22,337.52	\$ 226,257.52
2036	\$ 90,000.00	\$ 102,900.00	\$ 10,290.00	\$ -	\$ -	\$ 22,784.27	\$ 225,974.27
2037	\$ 94,000.00	\$ 98,400.00	\$ 9,840.00	\$ -	\$ -	\$ 23,239.95	\$ 225,479.95
2038	\$ 98,000.00	\$ 93,700.00	\$ 9,370.00	\$ -	\$ -	\$ 23,704.75	\$ 224,774.75
2039	\$ 103,000.00	\$ 88,800.00	\$ 8,880.00	\$ -	\$ -	\$ 24,178.85	\$ 224,858.85
2040	\$ 107,000.00	\$ 83,650.00	\$ 8,365.00	\$ -	\$ -	\$ 24,662.42	\$ 223,677.42
2041	\$ 112,000.00	\$ 78,300.00	\$ 7,830.00	\$ -	\$ -	\$ 25,155.67	\$ 223,285.67
2042	\$ 117,000.00	\$ 72,700.00	\$ 7,270.00	\$ -	\$ -	\$ 25,658.79	\$ 222,628.79
2043	\$ 123,000.00	\$ 66,850.00	\$ 6,685.00	\$ -	\$ -	\$ 26,171.96	\$ 222,706.96
2044	\$ 129,000.00	\$ 60,700.00	\$ 6,070.00	\$ -	\$ -	\$ 26,695.40	\$ 222,465.40
2045	\$ 135,000.00	\$ 54,250.00	\$ 5,425.00	\$ -	\$ -	\$ 27,229.31	\$ 221,904.31
2046	\$ 141,000.00	\$ 47,500.00	\$ 4,750.00	\$ -	\$ -	\$ 27,773.90	\$ 221,023.90
2047	\$ 147,000.00	\$ 40,450.00	\$ 4,045.00	\$ -	\$ -	\$ 28,329.37	\$ 219,824.37
2048	\$ 154,000.00	\$ 33,100.00	\$ 3,310.00	\$ -	\$ -	\$ 28,895.96	\$ 219,305.96
2049	\$ 162,000.00	\$ 25,400.00	\$ 2,540.00	\$ -	\$ -	\$ 29,473.88	\$ 219,413.88
2050	\$ 169,000.00	\$ 17,300.00	\$ 1,730.00	\$ -	\$ -	\$ 30,063.36	\$ 218,093.36
2051	\$ 177,000.00	\$ 8,850.00	\$ 885.00	\$ -	\$ (198,230.00)	\$ 30,664.62	\$ 19,169.62
Total	\$ 2,896,000.00	\$ 2,629,460.00	\$ 264,410.00	\$ (142,230.00)	\$ (198,230.00)	\$ 683,246.85	\$ 6,132,656.85

Notes:

^[a] Interest is calculated at a 4.500% rate for term bonds due 2031, and at a 5.000% rate for term bonds due 2051.

^[b] The figures shown above are estimates only and subject to change in Annual Service Plan Updates. Changes in Annual Collection Costs, reserve fund requirements, interest earnings, or other available offsets could increase or decrease the amounts shown.



Item No. 6.f.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022
Staff Contact: Terri Doby

AGENDA ITEM:

Review Monthly Financial Report for the Month Ending June 30, 2022.

SUMMARY:

The City of Anna's financial policies require the publication of a financial report monthly. This report covers the financial performance for Fiscal Year 2022 through June 30, 2022. Enclosed in the report is an executive dashboard that provides a high level look at major funds along with detailed reporting of sales tax collections.

The financial condition of the City remains strong and the reported funds adhere to fund balance requirements.

FINANCIAL IMPACT:

Information only

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

Goal 4: High Performing, Professional City

STAFF RECOMMENDATION:

Approve

ATTACHMENTS:

1. FY2022 City Council Monthly Financial Report June

APPROVALS:

Terri Doby, Budget Manager
Jim Proce, City Manager

Created/Initiated - 7/21/2022
Final Approval - 7/21/2022

CITY OF ANNA
GENERAL & UTILITY FUNDS DASHBOARD
Through June 30, 2022

Positive Positive variance compared to historical trends
Warning Negative variance of 3%-5% compared to historical trends
Negative Negative variance of >5% compared to historical trends

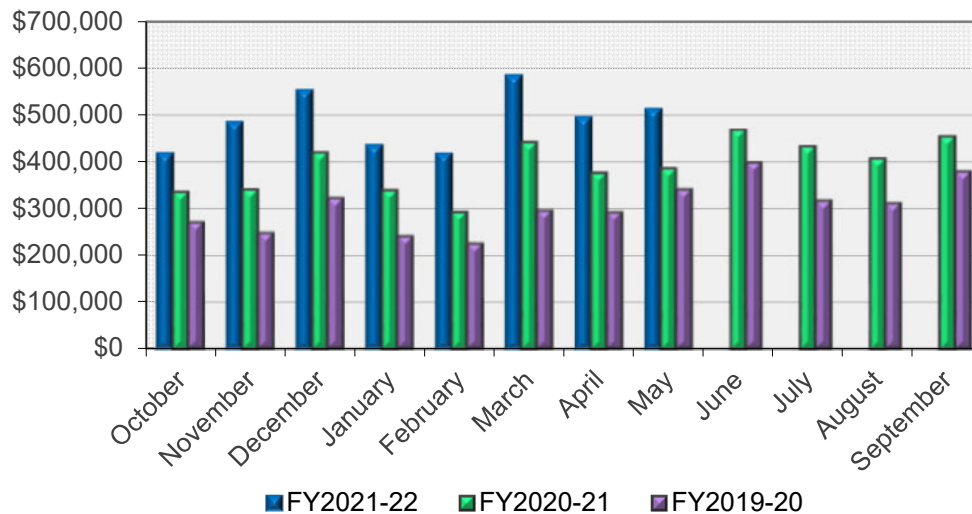
	FY2022 Budget	FY2022 YTD	%	Favorable / Unfavorable
REVENUES				
General Fund				
Property Taxes	\$ 8,015,000	\$ 8,007,434	99.9%	Property taxes are collected in December and January.
Sales Tax	3,296,370	2,433,499	73.8%	Remitted from the Comptroller with lag time of 30 - 60 days; amount is eight months of collections
Franchise and Local Taxes	485,000	499,808	103.1%	
Charges for Services	111,600	90,500	81.1%	
Fines	90,000	170,852	189.8%	
Licenses, Permits & Fees	3,703,060	5,027,272	135.8%	
Investment Income	30,000	23,751	79.2%	
Other Revenues	16,300	27,308	167.5%	
Intergovernmental	48,395	47,640	98.4%	
Revenue Total	\$ 15,795,725	\$ 16,328,064	103.4%	With 75.0% of the year expired, revenues are at 103.4% of budget.
EXPENDITURES				
General Fund				
Expense Total	\$ 15,309,784	\$ 10,471,200	68.4%	With 75.0% of the year expired, expenses are 68.4% of budget.
Utility Fund				
REVENUES				
Water Sales	\$ 6,000,000	\$ 4,590,850	76.5%	
Sewer Charges	3,600,000	3,177,271	88.3%	
Sanitation Revenue	1,100,000	1,317,253	119.8%	
Other Charges for Services	745,000	500,452	67.2%	Connection / Reconnect Fees are lower than expected.
Licenses, Permits & Fees	505,000	1,924,462	381.1%	
Investment Income	20,000	16,456	82.3%	
Other Revenues	188,700	194,321	103.0%	
Utility Fund Total	\$ 12,158,700	\$ 11,721,065	96.4%	With 75.0% of the year expired, revenues are 96.4% of budget.
EXPENDITURES				
Administration	\$ 1,219,038	\$ 1,069,607	87.7%	Electricity and legal expenses higher than expected; one-time payment for insurance.
Water	5,654,073	4,306,948	76.2%	Growing number of customers resulting in higher expenses.
Sewer	4,712,683	2,654,669	56.3%	
Sanitation	1,100,000	1,054,263	95.8%	Growing number of customers resulting in higher expenses.
Utility Billing	560,311	242,928	43.4%	
Utility Fund Total	\$ 13,246,105	\$ 9,328,415	70.4%	With 75.0% of the year expired, expenses are 70.4% of budget.

CITY OF ANNA
Schedule of Sales Tax Collections
For the month May 31, 2022

	2021-22 Collections Monthly	% Change from Prior Year	2020-21 Collections Monthly
October	\$ 417,343	24.4%	\$ 335,454
November	483,556	42.2%	340,156
December	552,138	31.7%	419,319
January	435,037	28.4%	338,879
February	416,044	42.3%	292,405
March	583,700	32.4%	441,021
April	494,472	31.6%	375,823
May	511,309	32.7%	385,457
June			467,686
July			432,097
August			406,214
September			453,292
	\$ 3,893,599		\$ 4,687,804

Budget: 4,526,370 86.0% 4,300,000

**Monthly Sales Tax Collections:
3 Year Comparison**

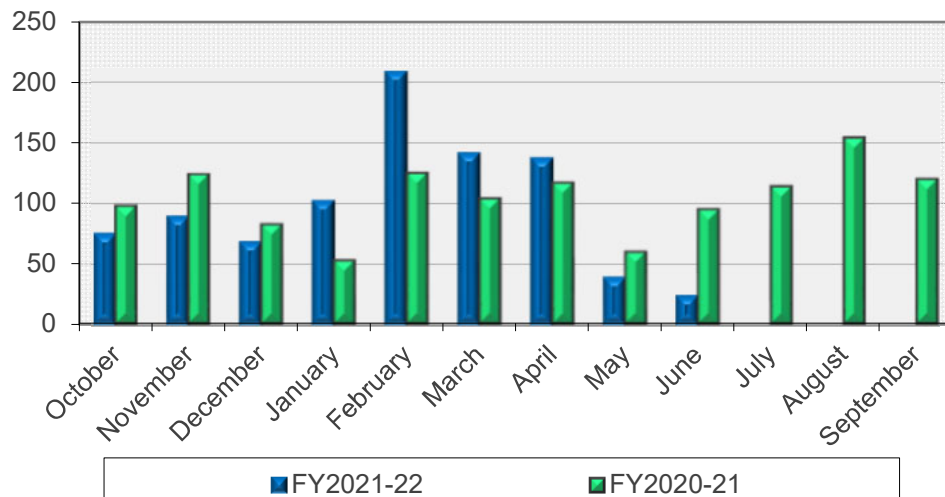


CITY OF ANNA
Building Permits Received
Thru the month June 30, 2022

	Fiscal Year 2021-22 Monthly	Fiscal Year 2020-21 Monthly
October	75	98
November	89	124
December	68	83
January	102	53
February	208	125
March	141	104
April	137	117
May	39	60
June	24	95
July		114
August		154
September		120
	883	1,247

	% Budget
FY2022 Budget:	1,100
	80.3%

**Monthly Building Permits Received:
2 Year Comparison**





Item No. 6.g.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022

Staff Contact: Alan Guard

AGENDA ITEM:

Approve the Quarterly Investment Report for the Period Ending June 30, 2022. (Finance Director Alan Guard)

SUMMARY:

In accordance with the Public Funds Investment Act (PFIA), the City of Anna is required to submit a quarterly report on the investments of all public funds held by the City. The report includes:

- Review of the City's holdings.
- Comparison of book vs. market value.
- Allocation information by fund.
- Charts showing historical activity.

The City's portfolio as of the quarter ending June 30, 2022 earned an average yield of 0.61%. The total fiscal year-to-date interest earned is \$253,779. The total investments are about the same as the previous quarter.

FINANCIAL IMPACT:

Interest earnings YTD of \$253,779 versus a budget of \$75,400.

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

GOAL 4 - HIGH PERFORMING, PROFESSIONAL CITY.

STAFF RECOMMENDATION:

Adopt the report.

ATTACHMENTS:

1. Quarterly Investment Report 06.30.2022

APPROVALS:

Alan Guard, Director of Finance
Jim Proce, City Manager

Created/Initiated - 7/19/2022
Final Approval - 7/21/2022

April 1, 2022 to June 30, 2022

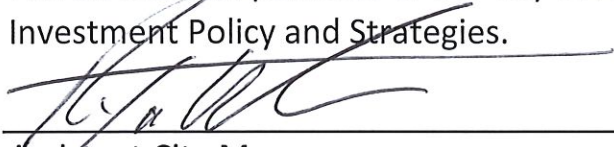


QUARTERLY INVESTMENT REPORT

For the Quarter Ended

June 30, 2022

The investment portfolio of the City of Anna is in compliance with the Public Funds Investment Act and the Investment Policy and Strategies.



Assistant City Manager



Finance Director



Accounting Manager

Summary
Investment Report
April 1, 2022 to June 30, 2022

Quarter End Results by Investment Category:

Asset Type	Ave. Yield	June 30, 2022		March 31, 2022	
		Book Value	Market Value	Book Value	Market Value
Bank DDA	0.55%	\$ 51,145,911	\$ 51,145,911	\$ 51,042,004	\$ 51,042,004
Money Market	0.05%	\$ 1,228,793	\$ 1,228,793	\$ 1,224,488	\$ 1,224,488
Texpool	0.78%	\$ 22,026,529	\$ 22,026,529	\$ 22,003,172	\$ 22,003,172
Texas CLASS	0.55%	\$ 1,865,032	\$ 1,865,032	\$ 1,858,837	\$ 1,858,837
Totals		\$ 76,266,265	\$ 76,266,265	\$ 76,128,501	\$ 76,128,501

Current Quarter Average Yield

Total Portfolio 0.61%

Fiscal Year-to-Date Average Yield

Total Portfolio 0.46%

Quarterly Interest Income

\$109,583

Year-to-date Interest Income

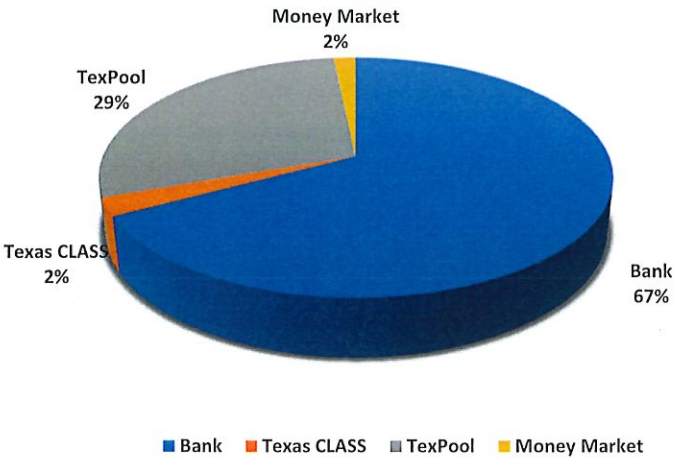
\$253,779

Investment Holdings
Investment Report
January 1, 2022 to March 31, 2022

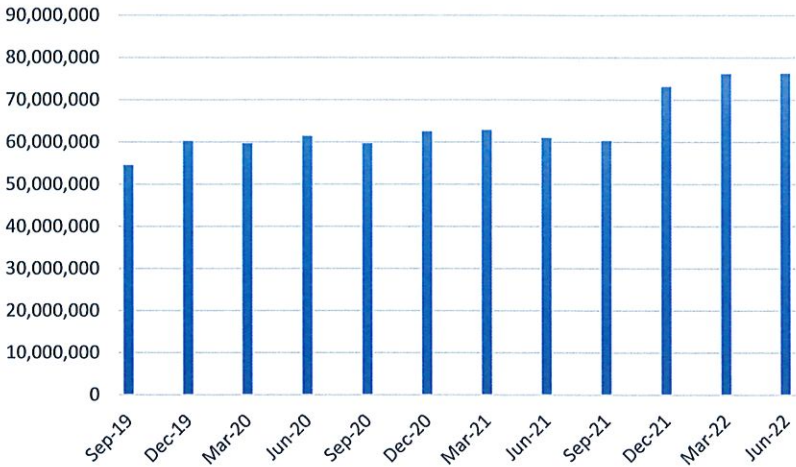
Description	Yield	Maturity Date	Purchase Date	06/30/2022		03/31/2022		Qtr to Qtr Change
				Book Value	Market Value	Book Value	Market Value	
Independent Bank	0.55%	3/31/2022		\$ 51,145,911	\$ 51,145,911	\$ 51,042,004	\$ 51,042,004	\$ 103,907
Simmons Bank	0.05%	3/31/2022		\$ 1,228,793	\$ 1,228,793	\$ 1,224,488	\$ 1,224,488	\$ 4,305
TexPool	0.78%	3/31/2022	Various	\$ 22,026,529	\$ 22,026,529	\$ 22,003,172	\$ 22,003,172	\$ 23,357
Texas CLASS	0.50%	3/31/2022	8/5/2020	\$ 1,865,032	\$ 1,865,032	\$ 1,858,837	\$ 1,858,837	\$ 6,195
TOTAL				\$ 76,266,265	\$ 76,266,265	\$ 76,128,501	\$ 76,128,501	\$ 137,764

April 1, 2022 to June 30, 2022

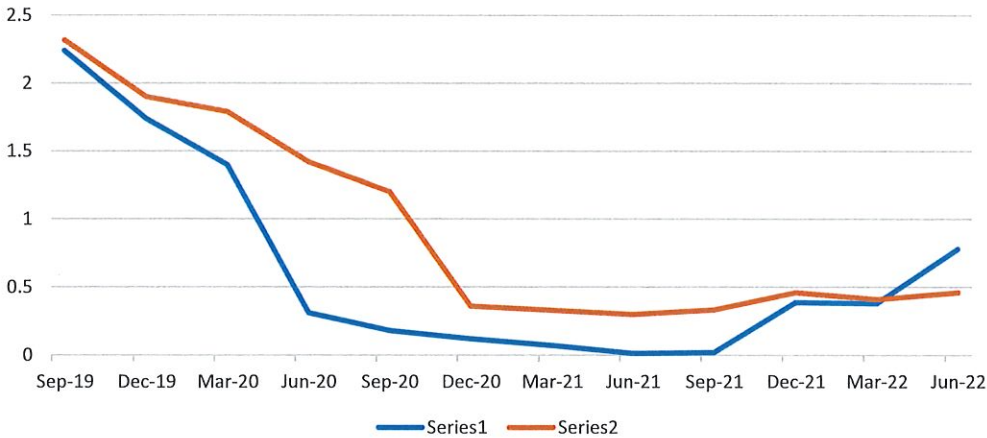
Portfolio Comparison



Total Portfolio



Total Portfolio Performance





Item No. 6.h.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022

Staff Contact: Ray Isom

AGENDA ITEM:

Approve Resolution approving Collin County Hazard Mitigation Action Plan (Fire Chief Ray Isom)

SUMMARY:

In order for the City of Anna to receive disaster funding from the Federal Emergency Management Agency (FEMA) should a declaration be declared in Anna, Collin County's multi-hazard mitigation plan must be approved by the Anna City Council in accordance with the Disaster Mitigation Act of 2000. This plan identifies mitigation goals and actions to reduce or eliminate long-term risks and hazards (both natural and man-made) to neighbors and properties within the city limits of Anna. This plan must be updated every five years, reviewed by the Collin County Office of Emergency Management, approved by the Collin County Commissioners Court, and submitted to FEMA for acceptance. The plan has been updated by Chief Isom and is ready for approval by city council. If the plan fails approval, the City of Anna will not be eligible for federal recovery funds in the event of a disaster declaration.

FINANCIAL IMPACT:

N/A

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

Goal 4: High Performing Professional City

STAFF RECOMMENDATION:

Approve Resolution approving the Collin County Hazard Mitigation Action Plan

ATTACHMENTS:

1. Collin Municipalities HazMAP Resolution
2. Collin County Approved Hazard Mitigation Action Plan-Court Order 2022-519-06-06
3. APA Notice Package_Collin County

APPROVALS:

Stephanie Welch, Adm Assistant
Jim Proce, City Manager

Created/Initiated - 7/21/2022
Final Approval - 7/21/2022

CITY OF ANNA, TEXAS

RESOLUTION NO. _____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS APPROVING THE COLLIN COUNTY HAZARD MITIGATION ACTION PLAN, JUNE 2022

WHEREAS, the City of Anna, Texas recognizes the threat that natural hazards pose to people and property within Collin County; and

WHEREAS, the County of Collin has prepared a multi-hazard mitigation plan, hereby known as Collin County Hazard Mitigation Action Plan, June 2022, in accordance with the Disaster Mitigation Act of 2000; and

WHEREAS, Collin County Hazard Mitigation Action Plan, June 2022 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the City of Anna, Texas from the impacts of future hazards and disasters; and

WHEREAS, adoption by City Council of the City of Anna, Texas demonstrates their commitment to the hazard mitigation and achieving the goals outlined in the Collin County Hazard Mitigation Action Plan, June 2022.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ANNA, THAT:

Section 1. The recitals set forth above are incorporated herein for all purposes as if set forth in full.

PASSED AND APPROVED by the City Council of the City of Anna this ____ day of _____, 2022.

ATTEST:

APPROVED:

City Secretary, Carrie L. Land

Mayor, Nate Pike

State of Texas
Collin County
Commissioners Court

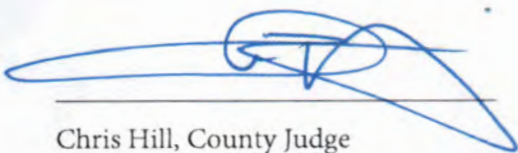
§
§
§

Court Order
2022-519-06-06

An order of the Collin County Commissioners Court approving the adoption of the Hazard Mitigation Action Plan.

The Collin County Commissioners Court hereby approves the adoption of the Collin County Hazard Mitigation Action Plan, as detailed in the attached documentation.

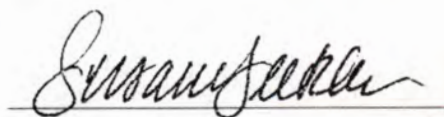
A motion was made, seconded, and carried by a majority of the court members in attendance during a regular session on Monday, June 6, 2022.



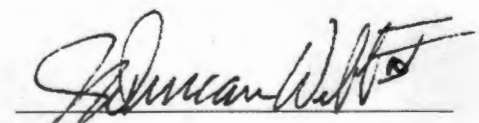
Chris Hill, County Judge



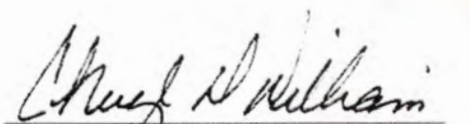
Darrell Hale, Commissioner, Pct 3



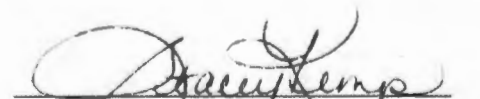
Susan Fletcher, Commissioner, Pct 1



Duncan Webb, Commissioner, Pct 4



Cheryl Williams, Commissioner, Pct 2



ATTEST: Stacey Kemp, County Clerk



Hazard Mitigation Action Plan

June 6, 2022

Collin County, Texas



Executive Summary

Mitigation is commonly defined as sustained actions taken to reduce or eliminate long-term risk to people and property from hazards and their effects. Hazard mitigation focuses attention and resources on community policies and actions that will produce successive benefits over time. A mitigation plan states the aspirations and specific courses of action that a community intends to follow to reduce vulnerability and exposure to future hazard events. These plans are formulated through a systematic process centered on the participation of citizens, businesses, public officials, and other community stakeholders.

The planning area for this plan update is for Collin County, Texas and includes the following jurisdictions:

- A. Collin County (unincorporated)
- B. City of Allen
- C. City of Anna
- D. City of Blue Ridge
- E. City of Celina
- F. Town of Fairview
- G. City of Farmersville
- H. City of Frisco
- I. City of Josephine
- J. City of Lavon
- K. City of Lowry Crossing
- L. City of Lucas
- M. City of Melissa
- N. City of Murphy
- O. Town of New Hope
- P. City of Parker
- Q. City of Princeton
- R. Town of Prosper
- S. Town of St. Paul
- T. City of Wylie

The contents of this plan update are designed and organized to be as reader-friendly and functional as possible. The structure and format of this plan has not significantly changed from the Mitigation Plan that was adopted in 2016.

As this plan is an update to previous plans updates to developments and evolutions to the hazard mitigation strategy of Collin County have been included. Each jurisdiction's individual mitigation strategy is discussed in their annex. Jurisdictions that participated in the 2016 HazMAP have changes in development highlighted in their individual annex.

As the growth of Collin County has expanded since the previous version of the plan; however, no new hazards have been included. The vulnerability analysis has changed and these updates have been included.

Discussion of all hazards can be found in chapter 3.

The objectives of this updated plan remain the same as in the previous plans. These include:

- To save lives and reduce injuries.
- Minimize damage to buildings and infrastructure (especially critical facilities).
- Minimize economic losses

Further examination of the action items from the 2016 plan, including the status of each action item, can be found in Chapter 4 of the main plan. New action items for each jurisdiction are located in the jurisdictional annexes.

During the development phase of this updated planning document, the review team noted some changes. While the scope and intent of the 2011 priorities remain the same, some of the underlying factors driving the priorities reflect new external trends, such as public perceptions and expectations, or are indicative of new awareness and approaches to community mitigation strategies.

Areas of 2016 Priorities

- Post disaster conditions
 - With the potential for significant reimbursement for post-disaster projects through FEMA grants, it was prudent the plan be updated.
- Financial, legal and political realities
 - The Collin County Hazard Mitigation Action Plan (HazMAP) was updated to new standards utilizing a HMA grant and the North Central Texas Council of Governments (NCTCOG). This provided the necessary financial assistance and personnel to help organize the jurisdictions of Collin County, as well as compile the data into a cohesive plan.
 - Due to a HMA grant funding the NCT Safe Room Rebate Program, there was initial concern that only jurisdictions that were part of the county plan or had their own HazMAP would be eligible. As a result, most of the Collin County jurisdictions opted to participate in the Collin County HazMAP.
- Changes in hazard focus
 - Collin County has not changed the overall focus on hazards but has updated the likelihood of an occurrence based on new data from past meteorological and archival data. With these updates, the data has shown we are more likely to experience certain disasters over others. Through the use of the Priority Risk Index, persons interested in the plan will be able to better understand the rank of disasters and why one disaster may be considered at a higher risk than others. In addition, expansive soils and lightning were included as potential hazards. These hazards were not included in the 2011 plan.

Areas of 2021 Priority Refinement:

- The Plan was updated based on the current standards, which were the same standards during the 2016 update
- The Plan was updated without contractor help and with local jurisdictions updating their areas of responsibility accordingly
- The Plan was simplified in regards to maps. Unless a map was needed for a specific jurisdiction, Countywide maps were used for the 2021 update.

The 2021 Planning Team acknowledges this mitigation plan is a planning document, not a regulatory document. The plan meets Federal Emergency Management Agency (FEMA) planning requirements by addressing hazards, vulnerability and risk.

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Table of Contents

Executive Summary	1
Table of Contents	4
Chapter 1: Introduction	6
1.1 Purpose	6
1.2 Collin County Hazard Mitigation Action Plan Planning Process	6
1.3 HazMAP Planning Process Point of Contact and Demographics	7
1.4 Collin County Hazard Mitigation Action Plan Organization	9
1.5 Collin County Hazard Mitigation Strategy Maintenance Process	9
1.6 Collin County Hazard Mitigation Action Plan Adoption	10
Chapter 2: Planning Process	11
Chapter 3: Hazard Identification and Risk Assessment	13
3.1 Profiling Hazards	13
3.2 Location of Hazards	17
3.3 Extent	84
3.4 Geographic Information System Based Analysis	100
3.5 Statistical Risk Assessment	134
3.6 Qualitative Assessment	168
3.7 Summary	170
Chapter 4: 2016 Plan Action Items	172
Chapter 5: Plan Maintenance	284
5.1 Monitoring, Evaluating, and Updating the Plan	284
5.2 Plan Incorporation	285
5.3 Continued Public Involvement	285
Chapter 6: Introduction to Jurisdictional Annexes	286
Jurisdictional Annexes	287
Appendix A: Planning Process Documentation	1021

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Chapter One: Introduction

1.1 Purpose

Collin County is susceptible to a number of different natural hazards that have potential to cause property damage or loss, loss of life, economic hardship, and threats to public health and safety. Occurrence of natural disasters cannot be prevented; however, their impact on people and property can be lessened through hazard mitigation measures.

The Collin County Hazard Mitigation Action Plan has been developed by the Collin County Hazard Mitigation Planning Team (HMPT). The plan represents collective efforts of citizens, elected and appointed government officials, business leaders, non-profit organizations, and other stakeholders.

Through the development of this plan, the Planning Team identified the natural hazards that could affect Collin County, and evaluated the risks associated with these hazards. The implementation of this plan will make Collin County more disaster- resilient because the benefits that can be gained by planning ahead and taking measures to reduce damages before the next disaster strikes have been recognized. The plan will allow Collin County and participating jurisdictions to comply with the Disaster Mitigation Act of 2000 (DMA 2000) and its implementing regulations 44 CFR Part 201.6, thus resulting in eligibility to apply for federal aid for technical assistance and post-disaster hazard mitigation project funding.

1.2 Collin County Hazard Mitigation Action Plan Planning Process

The Collin County Hazard Mitigation Action Plan (HazMAP) was created in order to meet current federal and state hazard mitigation plan regulations in compliance with the following rules and regulations:

Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390)

Federal Emergency Management Administration's Interim Final Rule, published in the Federal Register on February 26, 2002, at 44 CFR Part 201.

Each jurisdiction participated by having a Hazard Mitigation Planning Committee (HMPC). Each HMPC participated in the creation of and contributed to the Hazard Mitigation Action Plan. The North Central Texas Council of Governments (NCTCOG) Emergency Preparedness Department also participated in the HazMAP update³⁴¹. NCTCOG's role was to assist in compiling the jurisdictional information and preparing the plan for submission. Collin County hazard mitigation planning meetings were held on August 12, 2020, November 2, 2020, November 5, 2020, November 12, 2020, and June 10, 2021.

1.3 HazMAP Planning Process Point of Contact and Demographics

The following were the points of contacts during the HazMAP planning process for 2020:

Jurisdiction	Agency	Title	Jurisdiction	Agency	Title
Collin County	Emergency Management	Assistant EMC	Lowry Crossing	Administration	City Secretary
Collin County	Emergency Management	Assistant EMC	Lucas	Fire Dept.	EMC/Asst. Fire Chief
Allen	Fire Department	Division Chief	Melissa	Fire Dept.	Fire Chief
Anna	Fire Dept.	Fire Chief	Melissa	Fire Department	Admin. Assistant
Anna	Fire Department	Bat. Chief	Murphy	Fire Dept.	Fire Chief
Blue Ridge	Public Works	City Secretary	Murphy	Fire Dept.	Fire Marshal
Celina	Fire Dept.	Assistant Chief	New Hope	City Admin.	Town Secretary
Fairview	City Management	Asst. to City Manger	New Hope	City Council	Alderman
Farmersville	Fire Dept.	Police Chief	Parker	Fire Dept.	Fire Lieutenant
Frisco	Fire Dept.	Deputy EMC	Parker	Police Dept.	Police Chief
Frisco	Fire Dept	EM Analysis	Princeton	Administration	EMC/Fire Lt.
Josephine	Fire Dept.	Police Chief	Prosper	Fire Dept.	EMC
Lavon	Fire Department	Fire Chief	St. Paul	City Council	Town Secretary
Lavon	City Management	City Administrator	Wylie	Fire Dept.	EMC

Jurisdiction	2014 Population	2019 Population
Collin County	846,850	1,034,730
Allen	90,030	105,823
Anna	10,250	15,778
Blue Ridge	822	1,023
Celina	6,660	27,607
Fairview	8,310	12,738
Farmersville	3,292	3,351
Frisco	137,310	200,490
Josephine	811	1,966

Jurisdiction	2014 Population	2019 Population
Lavon	2,740	4,210
Lowry Crossing	1,710	1,756
Lucas	5,970	8,553
Melissa	6,190	12,381
Murphy	18,020	20,500
New Hope	614	705
Parker	4,110	5,177
Princeton	7,840	15,330
Prosper	14,710	28,830
St. Paul	1,070	1,090
Wylie	44,280	53,067

Source: 2020 NCTCOG Population Estimates, United States Census Bureau & Texas Association of Counties

Figure 1. Collin County



Source: Texas National Resource Inventory

1.4 Collin County Hazard Mitigation Action Plan Organization

The Collin County Hazard Mitigation Action Plan is organized into five chapters which satisfy the mitigation requirements in 44 CFR Part 201, with an appendix providing the required supporting documentation.

Chapter One: Introduction

Describes the purpose of the Collin County Hazard Mitigation Action Plan and introduces the mitigation planning process.

Chapter Two: Planning Process

Describes the planning process and organization for each participating jurisdiction, satisfying requirements 201.6(c)(1), 201.6(b)(2), 201.6(b)(1), 201.6(b)(3), 201.6(c)(4)(iii), 201.6(c)(4)(i).

Chapter Three: Hazard Identification and Risk Assessment

Describes the hazards identified, known national extent scales, location of hazards, previous events, and jurisdictional profiles, satisfying requirements 201.6(c)(2)(i), 201.6(c)(2)(ii).

Chapter Four: Previous Action Items

Examines the ability of Collin County and participating jurisdictions to implement and manage a comprehensive mitigation strategy. The past action items are listed with their current status of deferred, in progress, completed or deleted.

Chapter Five: Plan Maintenance

Describes the monitoring, evaluating, updating, plan incorporation, and future public updates for each participating jurisdiction, satisfying requirements 201.6(c)(4)(i), 201.6(c)(4)(ii), 201.6(c)(4)(iii).

Chapter Six: Individual Jurisdictional Annexes

Each participating jurisdiction has written a personalized annex detailing their planning process, hazard analysis, capabilities, mitigation strategies and action items, and maintenance plan.

Appendix A: Documentation from Planning and Public Meetings

1.5 Collin County Hazard Mitigation Strategy Maintenance Process

The Collin County Hazard Mitigation Action Planning Team will continue to collaborate as a planning group and in coordination with other surrounding jurisdictions and the North Central Texas Council of Governments (NCTCOG) Emergency Preparedness Department as needed. Primary Contact will be through emails and conference calls with strategy meetings to occur at least annually. Collin County will lead the plan maintenance and update processes by:



- Assisting jurisdictional Hazard Mitigation Planning Teams in updating their individual contributions to the County HazMAP
- Assisting interested jurisdictions in the County who would like to begin their mitigation planning process
- Facilitating Collin County HazMAP meetings and disseminating information
- Corroborating data for the county-wide sections
- Requesting updates and status-reports on planning mechanisms
- Requesting updates and status reports on mitigation action projects
- Assisting jurisdictions in mitigation grants
- Assisting jurisdictions in implementing mitigation goals and action projects
- Providing mitigation training opportunities
- Maintaining documentation of local adoption resolutions for the County Hazard Mitigation Action Plan

1.6 Collin County Hazard Mitigation Action Plan Adoption

Once the Collin County Hazard Mitigation Action Plan has received FEMA “Approved Pending Local Adoption” each participating jurisdiction will take the Collin County HazMAP to their Commissioner’s Courts or City Councils for final public comment and local adoption. A copy of the resolution will be inserted into the Collin County HazMAP and held on file at the North Central Texas Council of Governments.

Chapter Two: Planning Process

(In compliance with 201.6(c)(1))

Chapter Two of the Collin County Hazard Mitigation Action Plan (HazMAP) describes the comprehensive planning and open public process utilized by the participating jurisdictions within Collin County during the plan development and through to plan completion. Each of the jurisdictions involved developed an integrated approach specific to their jurisdiction that provided for not only hazard mitigation teams and management input, but also an opportunity for the public to comment on the plan. This information is included in each individual jurisdictional annex.

The development of the Hazard Mitigation Action Plan was orchestrated to provide an opportunity for all stakeholders to participate in the planning process. This planning process also included review and incorporation of other existing plans, documents, and studies related to reducing the effects of natural disasters, so as to avoid duplication and streamline hazard mitigation efforts. The following outlines the planning process:



Planning Process

Collin County has been and continues to be proactive in efforts to provide a comprehensive hazard mitigation program. Preparation and use of the Hazard Mitigation Action Plan is expected to bring an even higher level of cohesion and direction to emergency preparation in Collin County.

As a contributor to the Collin County Hazard Mitigation Action Plan (HazMAP), all jurisdictions participated in the planning process. Emergency management staff assessed a readiness to plan, secured political support from elected officials, and began to engage the communities in the process of emergency planning.

Public Involvement

The Hazard Mitigation Planning Team knows that participation and feedback from their community is pertinent in developing a successful Hazard Mitigation Action Plan. Collin County worked to increase public response to the plan by holding public meetings and posting notices on the County and city websites.

The HazMAP planning process provides an excellent avenue for residents to exchange quality information and improve the county response to emergencies. This is accomplished through speaking engagements, website information, disaster awareness campaigns and information pamphlets, among other opportunities.

Plan Incorporation

The Office of Emergency Management made efforts for a comprehensive mitigation plan by incorporating other city plans and creating layers of data. These layers were useful in determining vulnerabilities and susceptible neighborhoods. This information was used when creating current risk assessment data. City and County Appraisal Data (2020), and the Texas Forest Service and Texas Wildfire Risk Assessment

Summary Report were also incorporated. Other sources listed in the annexes were also used for the mitigation action plan.

By reviewing plans and documents from the sources listed in the individual annexes, the Hazard Mitigation Team was able to take pertinent information and turn it into the Hazard Mitigation Action Plan.

Chapter Three: Hazard Identification Risk Assessment

3.1 Profiling Hazards

The Hazard Mitigation Action Plan for Collin County is a tool to assist in the identification and documentation of all the hazards faced in the region.

The 2016 Collin County profile was one of many developed by the North Central Texas Council of Governments (NCTCOG) under the FEMA Hazard Mitigation program. These plans are created by compiling data from the NCTCOG regional natural hazards risk assessments, damage assessments, hazard profiling and identification as well as historical data and geographic information. The current update is an update versus rewrite, and is based on previous data. It is being updated by internal city and county staff.

Hazards Addressed The Collin County Hazard Mitigation Action Plan has identified the following natural hazards as having the potential to cause damage in the county. Of the 15 hazards identified in the State of Texas Hazard Mitigation Plan, 12 will be discussed. The remaining three (coastal erosion, land subsidence, and hurricane/tropical storm) have no impact on the area. Collin County is not in coastal area nor experience land subsidence so these hazards have been omitted at this time. This applies to all participating jurisdictions in this plan, as listed on page 1. Wildland fire, flooding, and dam failure are the only hazards recognized to have predictable vulnerable areas. All other hazards are equally likely to occur throughout Collin County jurisdictions.

Dam Failure A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams typically are constructed of earth, rock, concrete, or mine tailings. A dam failure is an accidental or unintentional collapse, breach, or other failure of an impoundment structure that results in downstream flooding. Because dams are man-made structures, dam failures are usually considered technological hazards. However, since most dam failures result from prolonged periods of rainfall, they are often cited as secondary or cascading effects of natural flooding disasters and are not named as the primary hazard that causes disaster declarations.

There have not been any inundation studies for the dams in Collin County and the county does not have information from the owners or Emergency Operations Plans for the dams. Therefore, more research is needed for inundation data before the next update. The data presented is from the National Inventory of Dams (NID). Based on a quantitative analysis of the dams currently in place in Collin County and a qualitative analysis of the potential impacts that dam failures would have on the social, economic, and environmental components of the region, the risk of a dam failure hazard is moderate.

Drought Drought can be defined as a water shortage caused by the natural reduction in the amount of precipitation expected over an extended period of time, usually a season or more in length. It can be aggravated by other factors such as high temperatures, high winds, and low relative humidity. Texas experiences a cycle of extended wet and drought conditions that can extend over a period of months even years. Extended periods of drought can have an enormous impact on an area by affecting the abundance of water supply, the agriculture economy, and foundations of structures. Drought has the potential to occur within the entire planning area.

Earthquake An earthquake is a sudden motion or trembling caused by an abrupt release of accumulated strain on the tectonic plates that comprise the Earth's crust. The theory of plate tectonics holds that the Earth's crust is broken into several major plates. These rigid, 50- to 60- mile thick plates move slowly and continuously over the interior of the earth, meeting in some areas and separating in others. As the tectonic plates move together they bump, slide, catch, and hold. Eventually, faults along or near plate boundaries slip abruptly when the stress exceeds the elastic limit of the rock, and an earthquake occurs. The ensuing seismic activity and ground motion provoke secondary hazards: surface faulting, ground failure, and tsunamis. The vibration or shaking of the ground during an earthquake is referred to as ground motion. In general, the severity of ground motion increases with the amount of energy released and decreases with distance from the causative fault or epicenter. When a fault ruptures, seismic waves are propagated in all directions, causing the ground to vibrate at frequencies ranging from 0.1 to 30 Hz. Seismic waves are referred to as P waves, S waves, and surface waves. Due to the risk associated to a distant quake, earthquakes have the potential to occur anywhere within the planning area.

The most likely risk for a significant earthquake event is associated to a large quake which might occur in Missouri, Tennessee, or Oklahoma, though these earthquakes are probable to occur only once every 500 years. There is no history of earthquakes occurring within Collin County, however, there have been earthquakes measuring up to 3.7 on the Richter scale in nearby counties. Because of the lack of earthquake data for Collin County and increasing quakes in nearby jurisdictions, more research is needed.

Expansive Soils Expansive soils are soils that contain large percentages of swelling clays that may experience volume changes of up to 40% in the absence or presence of water. This type of plastic deformation is common in the North Central Texas region. Over time, expansive soils can be hazardous to buildings and other infrastructure, with the most extensive damage occurring to highways, streets, and building foundations. Expansive soils have the potential to affect the entire planning area, however a study needs to be conducted to collect more precise data.

Extreme Heat Extreme heat is characterized by a combination of a very high temperatures and exceptionally humid conditions. When persisting over a period of time, it is called a heat wave. Extreme heat can also be a factor that drastically impacts drought conditions as high temperatures lead to an increased rate of evaporation. Extreme heat can also lead to heat stroke and even death in vulnerable populations such as the elderly and the very young if exposed to the high temperatures for an extended period of time. Extreme heat has the potential to affect the entire planning area.

Flooding Flooding is defined as the accumulation of water within a water body and the overflow of excess water onto adjacent floodplain lands. 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. The statistical meaning of terms like "25-year storm" and "100-year flood" can be confusing. Simply stated, a floodplain can be located anywhere; it just depends on how large and how often a flood event occurs. Floodplains are those areas that are subject to inundation from flooding. Floods and the floodplains associated with them are often described in terms of the percent chance of a flood event happening in any given year. As a community management or planning term, "floodplain" most often refers to an area that is subject to inundation by a flood that has a one percent chance of occurring in any given year (commonly and incorrectly referred to as the 100-year floodplain). Common flooding hazards within the planning area include flash flooding and flood hazards resulting from new development.

A flash flood is a rapid flood that inundates low-lying areas in less than six hours. This is caused by intense rainfall from a thunderstorm or several thunderstorms. Flash floods can also occur from the collapse of a man-made structure or ice dam. Construction and development can change the natural drainage and create brand new flood risks as new buildings, parking lots, and roads create less land that can absorb excess precipitation from heavy rains, hurricanes, and tropical storms. Flash floods are a high risk hazard since they can roll boulders, tear out trees, and destroy buildings and bridges.

Hail Hail occurs when, at the outgrowth of a severe thunderstorm, balls or irregularly shaped lumps of ice greater than 0.75 inches in diameter fall with rain. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to warm air rising rapidly into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until, having developed sufficient weight, they fall as precipitation. Hail has the potential to occur within the entire planning area.

High Winds Wind is defined as the motion of air relative to the earth's surface. The horizontal component of the three-dimensional flow and the near-surface wind phenomenon are the most significant aspects of the hazard. Straight-line winds are often responsible for the wind damage associated with a thunderstorm. These winds are often confused with tornados because of similar damage and wind speeds. However, the strong and gusty winds associated with straight-line winds blow roughly in a straight line unlike the rotating winds of a tornado. Downbursts or micro-bursts are examples of damaging straight-line winds. A downburst is a small area of rapidly descending rain and rain-cooled air beneath a thunderstorm that produces a violent, localized downdraft covering 2.5 miles or less. Wind speeds in some of the stronger downbursts can reach 100 to 150 miles per hour, which is similar to that of a strong tornado. The winds produced from a downburst often occur in one direction, and the worst damage is usually on the forward side of the downburst. High winds has the potential to occur within the entire planning area.

Lightning Lightning results from the buildup and discharge of electrical energy between positively and negatively charged areas within thunderstorms. A "bolt" or brilliant flash of light is created when the buildup becomes strong enough. These bolts of lightning can be seen in cloud-to-cloud or cloud-to-ground strikes. Bolts of lightning can reach temperatures approaching 50,000° Fahrenheit. While lightning is mostly affiliated with thunderstorms, lightning often strikes outside of these storms, as far as 10 miles away from any rainfall. Federal Emergency Management Agency states that an average of 300 people are injured and 80 people are killed in the United States each year by lightning. Direct strikes have the power to cause significant damage to buildings, critical facilities, infrastructure, and ignition of wildfires which can result in widespread damages to property. Lightning has the potential to occur anywhere in the planning area.

Tornado A tornado is a violently rotating column of air, in contact with the ground, both pendant from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a condensation funnel. Tornadoes have the potential to occur anywhere in the planning area.

Wildland Fire Wildland fire is any fire occurring on grassland, forest, or prairie, regardless of ignition source, damages or benefits. Wildland fires are fueled almost exclusively by natural vegetation. They typically occur in national forests and parks, where federal agencies are responsible for fire management and suppression. Interface or intermix fires are urban/wildland fires in which vegetation and the built-environment provide fuel. Firestorms are events of such extreme intensity that effective suppression is

virtually impossible. Firestorms occur during extreme weather and generally burn until conditions change or the available fuel is exhausted. For the purposes of this hazard analysis, wildland fires are assessed under what is known as the Wildland Urban Interface (WUI). The WUI is an area of development that is susceptible to wildland fires due to the amount of structures located in an area with vegetation that can act a fuel for a wildland fire. Wildfires are most likely to occur within the WUI.

Winter Storms Winter storms originate as mid-latitude depressions or cyclonic weather systems, sometimes following the path of the jet stream. A winter storm or blizzard combines heavy snowfall, high winds, extreme cold and ice storms. Many winter depressions give rise to exceptionally heavy rain and widespread flooding and conditions worsen if the precipitation falls in the form of snow. The winter storm season varies widely, depending on latitude, altitude and proximity to moderating influences. Winter storms have the potential to occur within the entire planning area. Cold snaps in which temperatures fall below the freezing point of 32° Fahrenheit do happen on an annual basis in the planning area and can lead to issues with infrastructure, especially frozen roads and bridges.

3.2 Location of Hazards

The following maps illustrate the location of the hazards in Collin County. Maps concerning tornado and hail incidents are in reference to previous events as they have equal potential to occur throughout the county. Winter storms, extreme heat, and drought have potential to occur equally throughout the county and their previous events data is not represented by a map. Likewise, it is assumed that those hazard listed as having equal potential to occur throughout the HazMAP planning area will affect the area as described in each city's critical infrastructure and structure maps G.1-G.6, in section 3.6.

Map Series A Dams/FLOOD ZONES

- Map A.1 Collin County Dams/Floodzones
- Map A.2 City of Allen Dams/Floodzones
- Map A.3 City of Anna Dams/Floodzones
- Map A.4 City of Blue Ridge Dams/Floodzones
- Map A.5 City of Celina Dams/Floodzones
- Map A.6 City of Fairview Dams/Floodzones
- Map A.7 City of Farmersville Dams/Floodzones
- Map A.8 City of Frisco Dams/Floodzones
- Map A.9 City of Josephine Dams/Floodzones
- Map A.10 City of Lavon Dams/Floodzones
- Map A.11 City of Lowry Crossing Dams/Floodzones
- Map A.12 City of Lucas Dams/Floodzones
- Map A.13 City of Melissa Dams/Floodzones
- Map A.14 City of Murphy Dams/Floodzones
- Map A.15 City of New Hope Dams/Floodzones
- Map A.16 City of Parker Dams/Floodzones
- Map A.17 City of Princeton Dams/Floodzones
- Map A.18 City of Prosper Dams/Floodzones
- Map A.19 City of St. Paul Dams/Floodzones
- Map A.20 City of Wylie Dams/Floodzones

Map Series B – Land Use and Critical Infrastructure

- Map B.1 Collin County Land Use and Critical Infrastructure

Map Series C Hail Incident

- Map C.1 Collin County Hail Incidents

Map Series D Tornado Incident

- Map D.1 Collin County Tornado Incidents

Map Series E Wildfire Risk Assessment

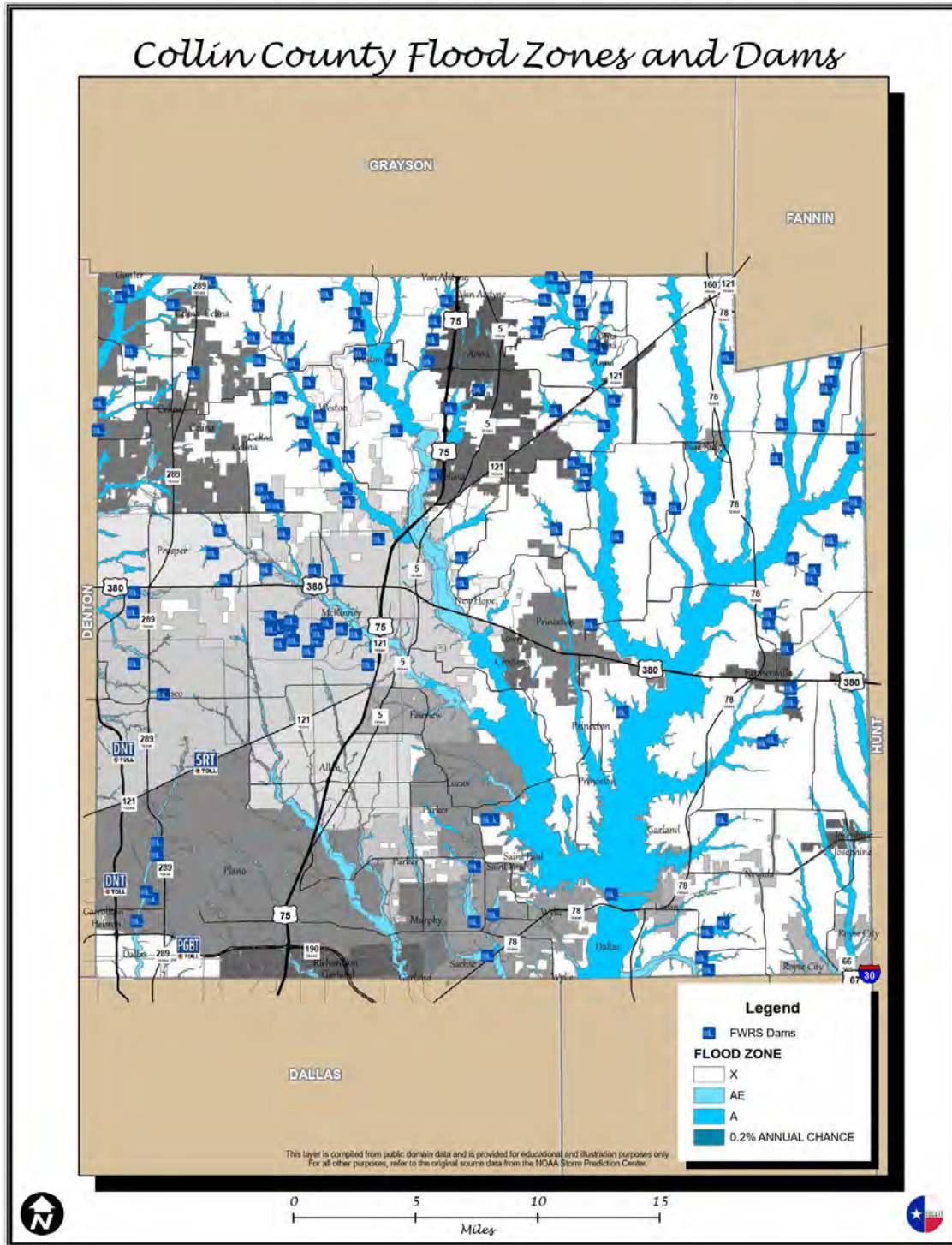
- Map E.1 Collin County Wildfire Threat
- Map E.2 City of Allen Wildfire Threat
- Map E.3 City of Anna Wildfire Threat
- Map E.4 City of Blue Ridge Wildfire Threat

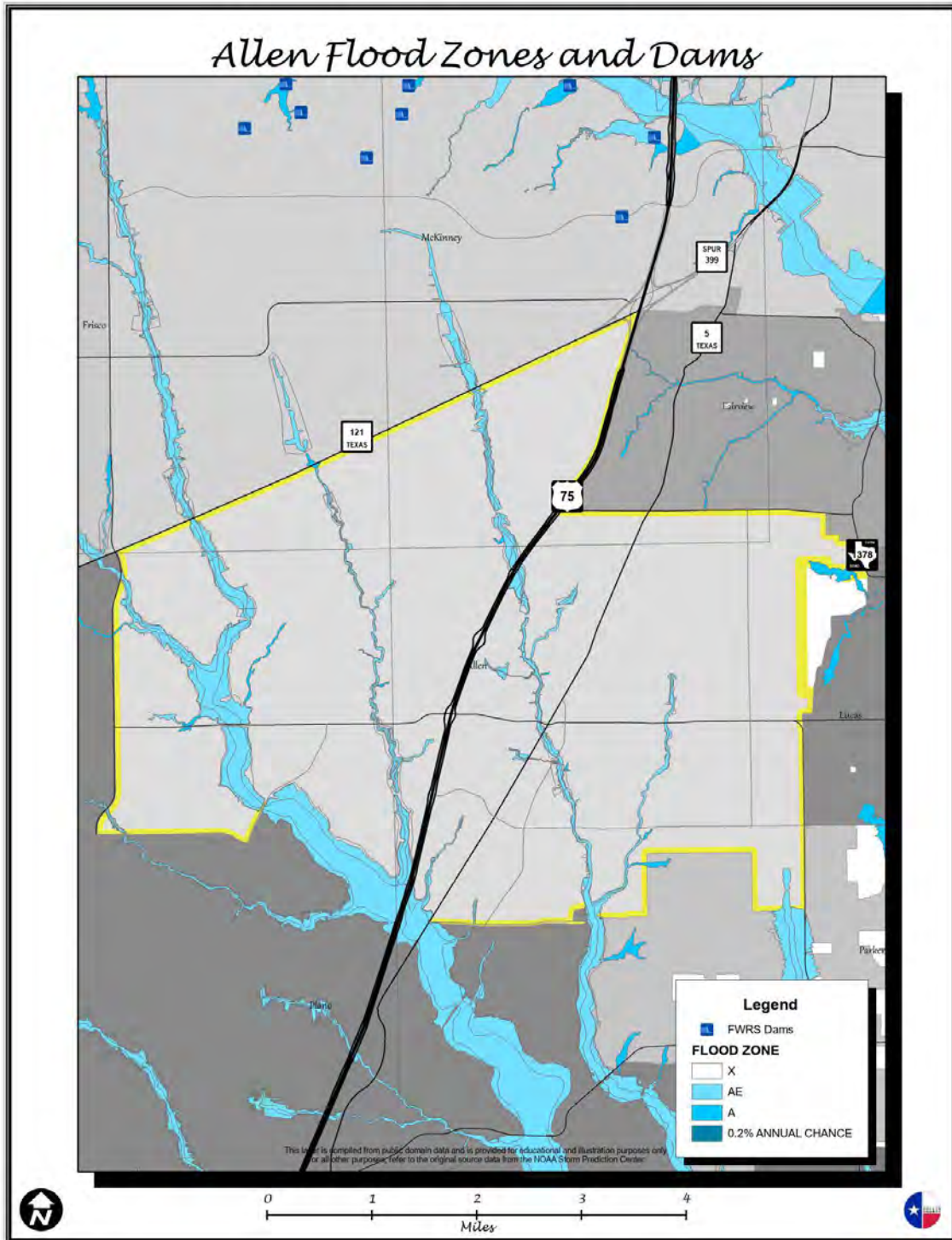
Map E.5 City of Celina Wildfire Threat
Map E.6 City of Fairview Wildfire Threat
Map E.7 City of Farmersville Wildfire Threat
Map E.8 City of Frisco Wildfire Threat
Map E.9 City of Josephine Wildfire Threat
Map E.10 City of Lavon Wildfire Threat
Map E.11 City of Lowry Crossing Wildfire Threat
Map E.12 City of Lucas Wildfire Threat
Map E.13 City of Melissa Wildfire Threat
Map E.14 City of Murphy Wildfire Threat
Map E.15 City of New Hope Wildfire Threat
Map E.16 City of Parker Wildfire Threat
Map E.17 City of Princeton Wildfire Threat
Map E.18 City of Prosper Wildfire Threat
Map E.19 City of St. Paul Wildfire Threat
Map E.20 City of Wylie Wildfire Threat

Map Series F Wildland Urban Interface

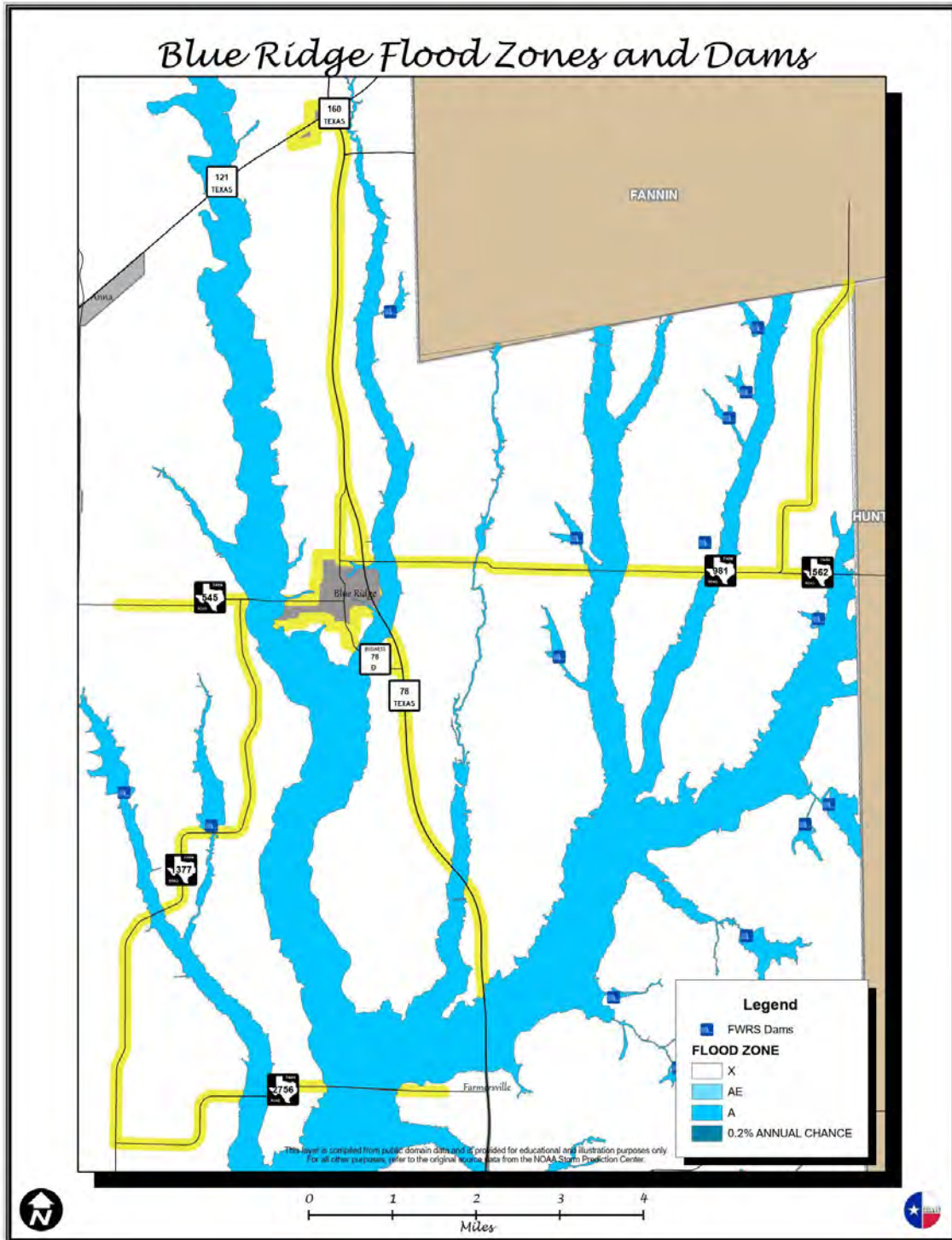
Map F.1 Collin County Wildland Urban Interface
Map F.2 City of Allen Wildland Urban Interface
Map F.3 City of Anna Wildland Urban Interface
Map F.4 City of Blue Ridge Wildland Urban Interface
Map F.5 City of Celina Wildland Urban Interface
Map F.6 City of Fairview Wildland Urban Interface
Map F.7 City of Farmersville Wildland Urban Interface
Map F.8 City of Frisco Wildland Urban Interface
Map F.9 City of Josephine Wildland Urban Interface
Map F.10 City of Lavon Wildland Urban Interface
Map F.11 City of Lowry Crossing Wildland Urban Interface
Map F.12 City of Lucas Wildland Urban Interface
Map F.13 City of Melissa Wildland Urban Interface
Map F.14 City of Murphy Wildland Urban Interface
Map F.15 City of New Hope Wildland Urban Interface
Map F.16 City of Parker Wildland Urban Interface
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Map F.19 City of St. Paul Wildland Urban Interface
Map F.20 City of Wylie Wildland Urban Interface

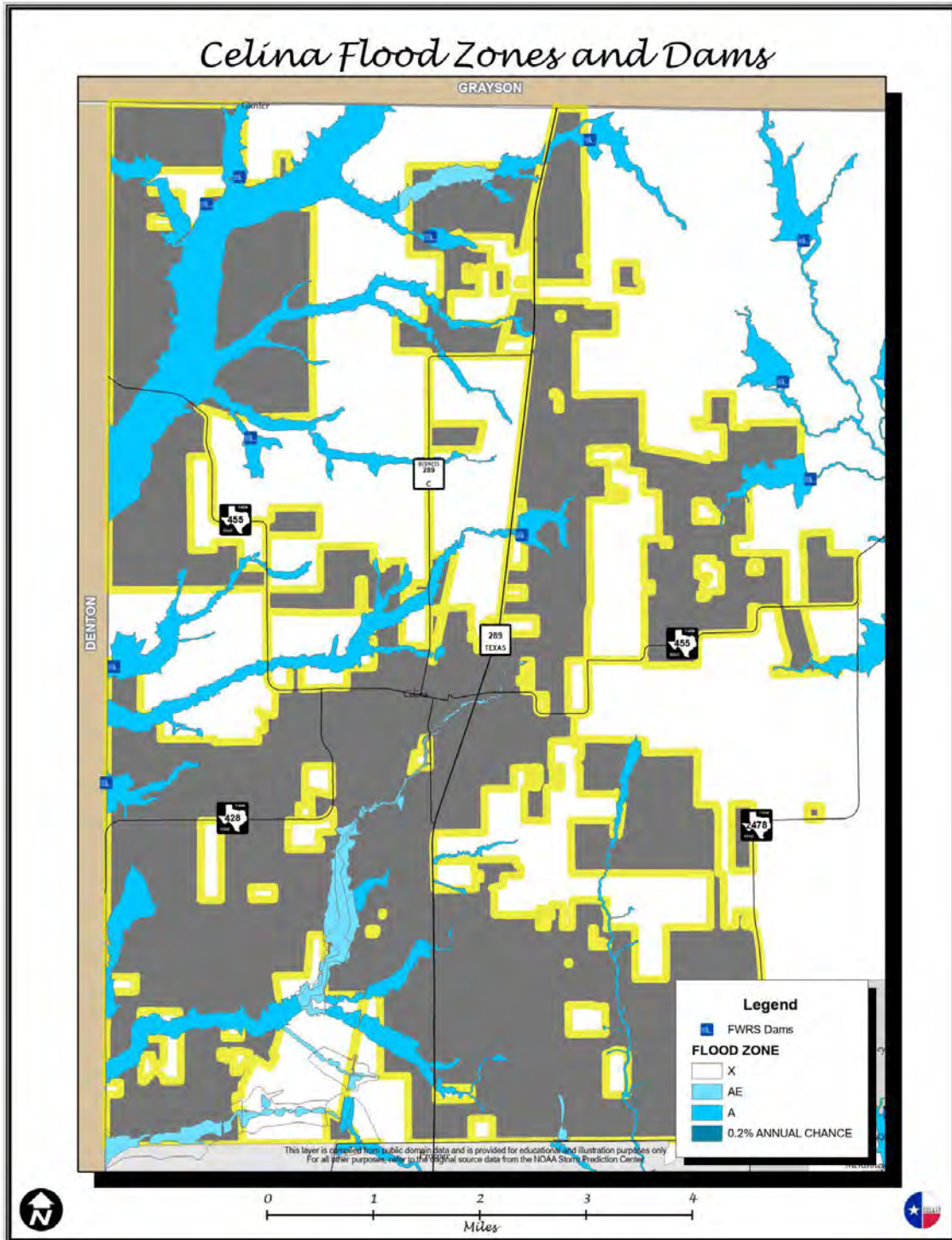
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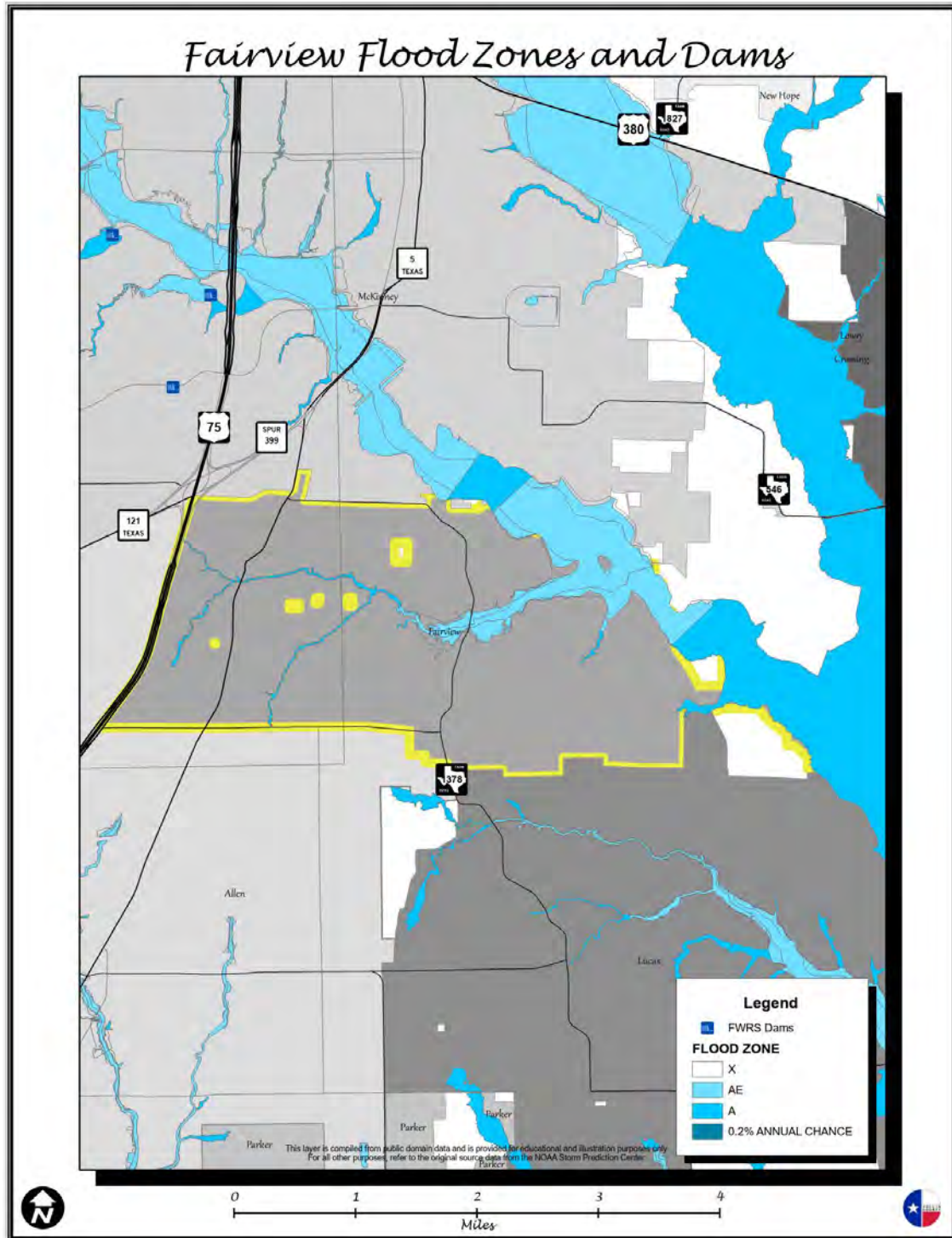


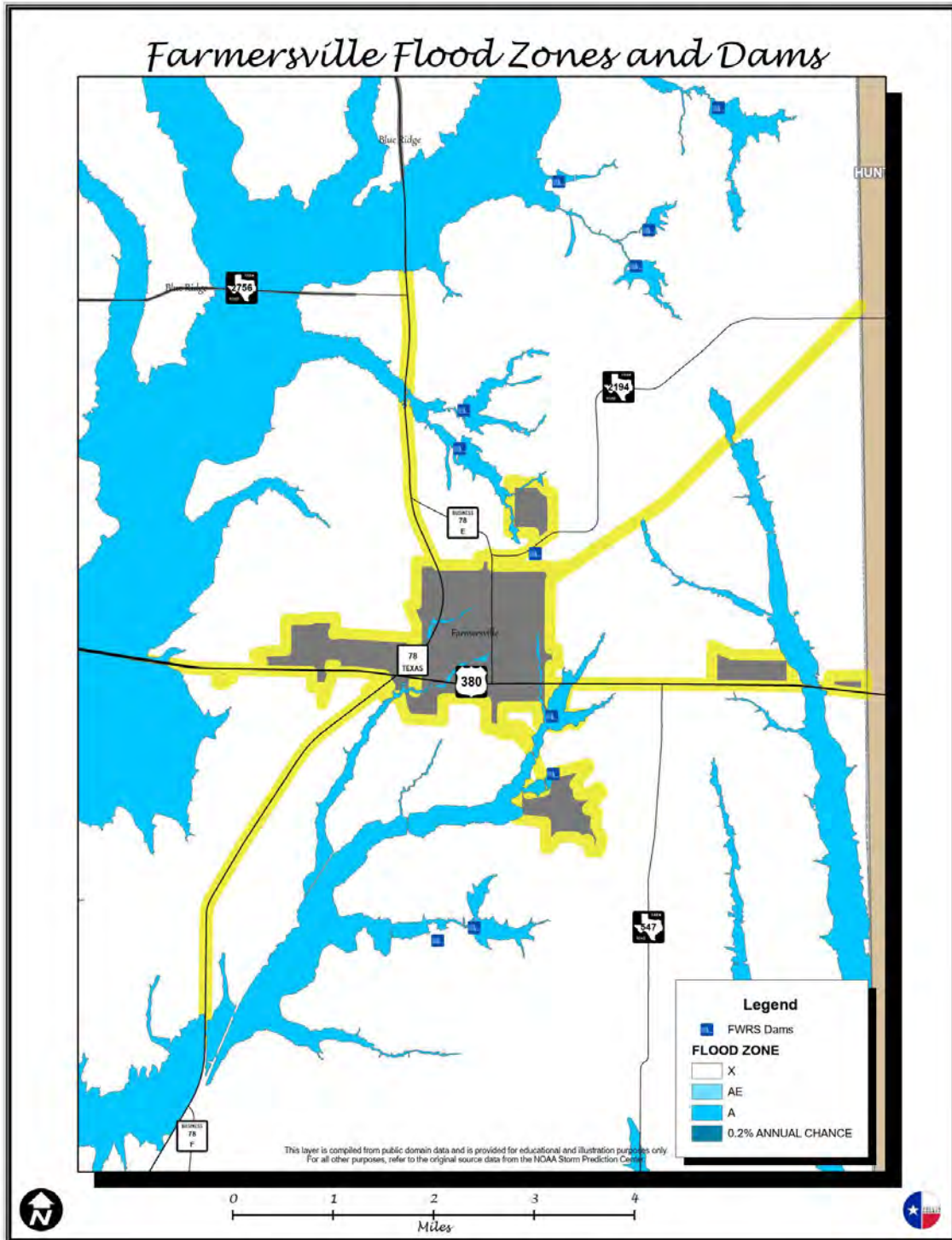


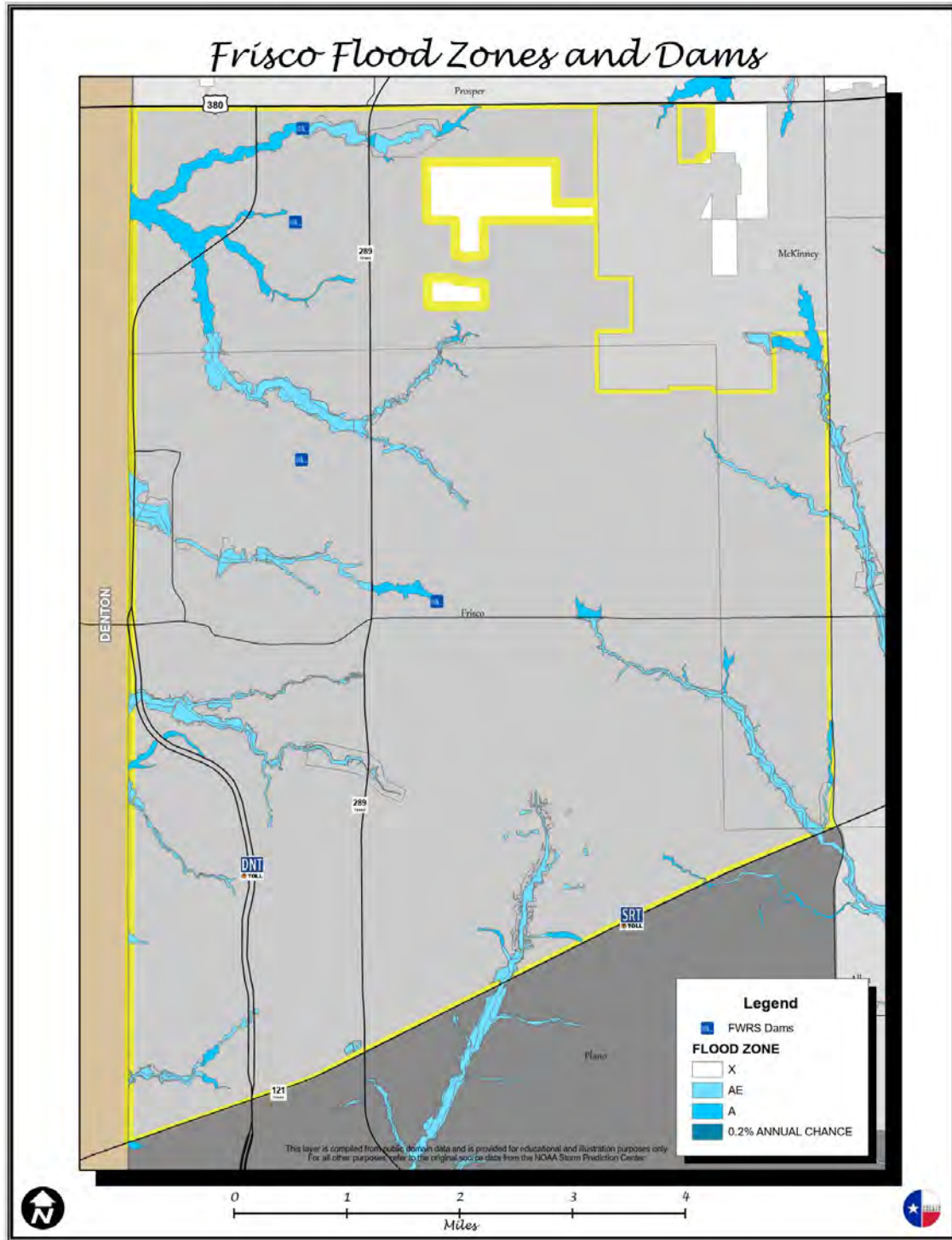


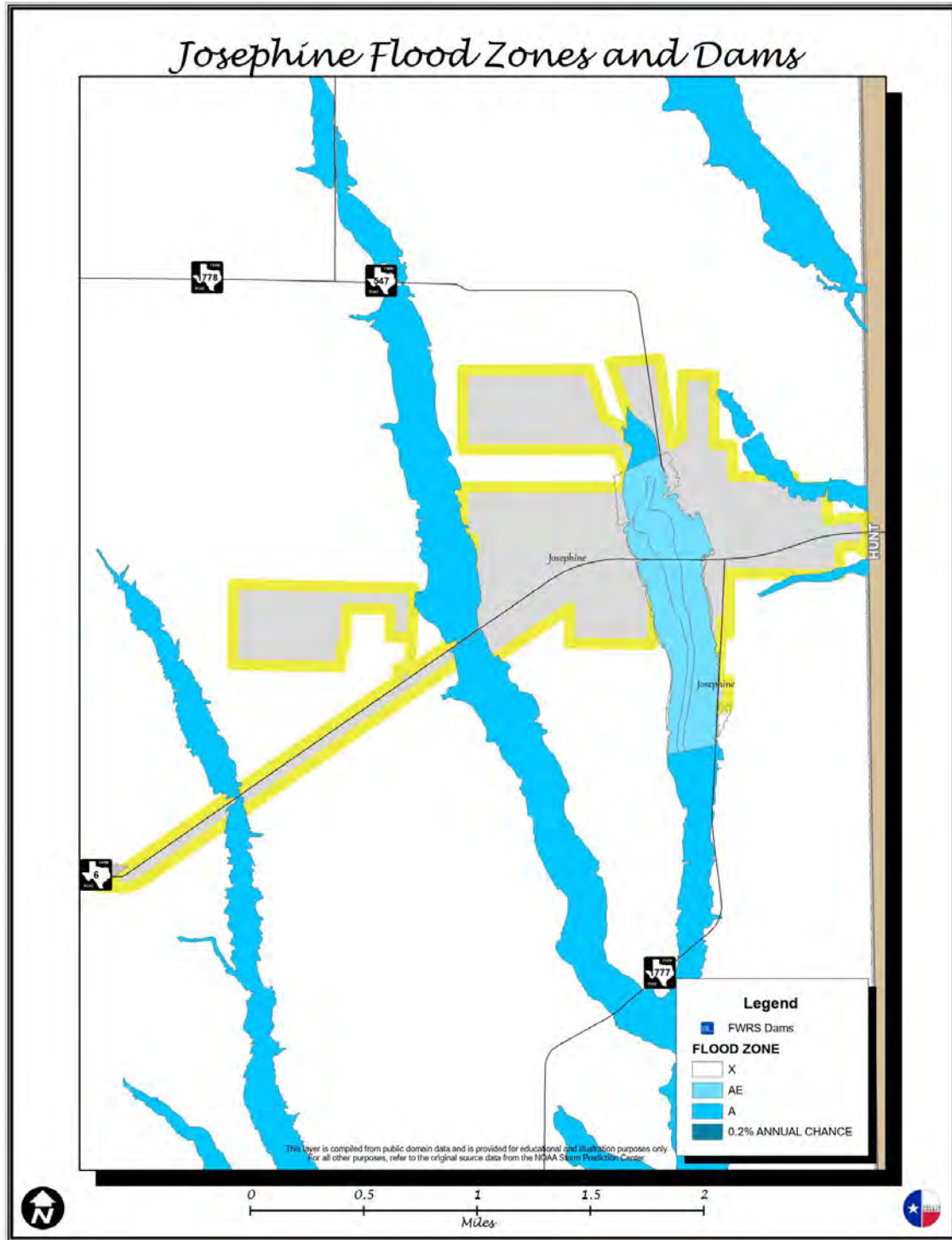


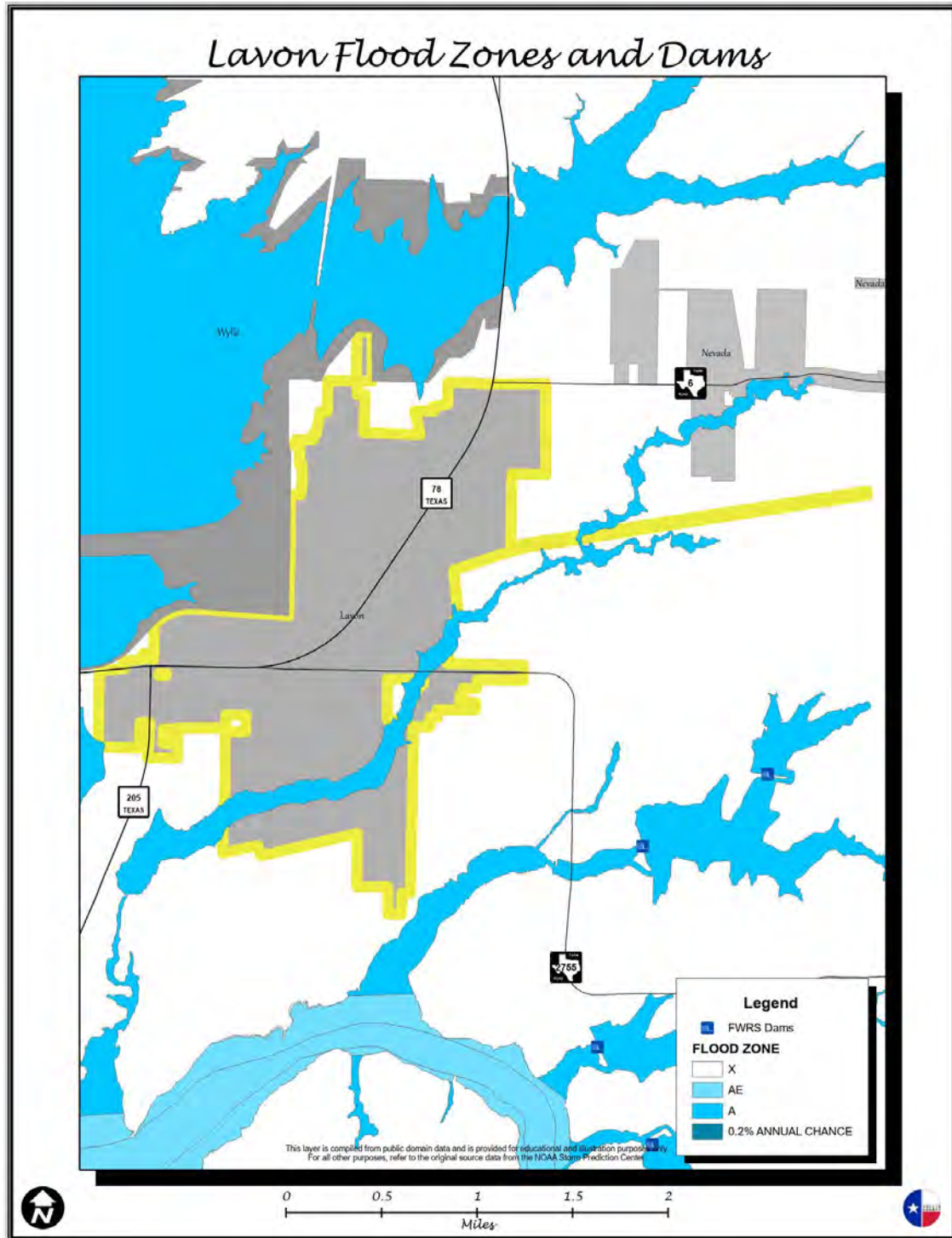


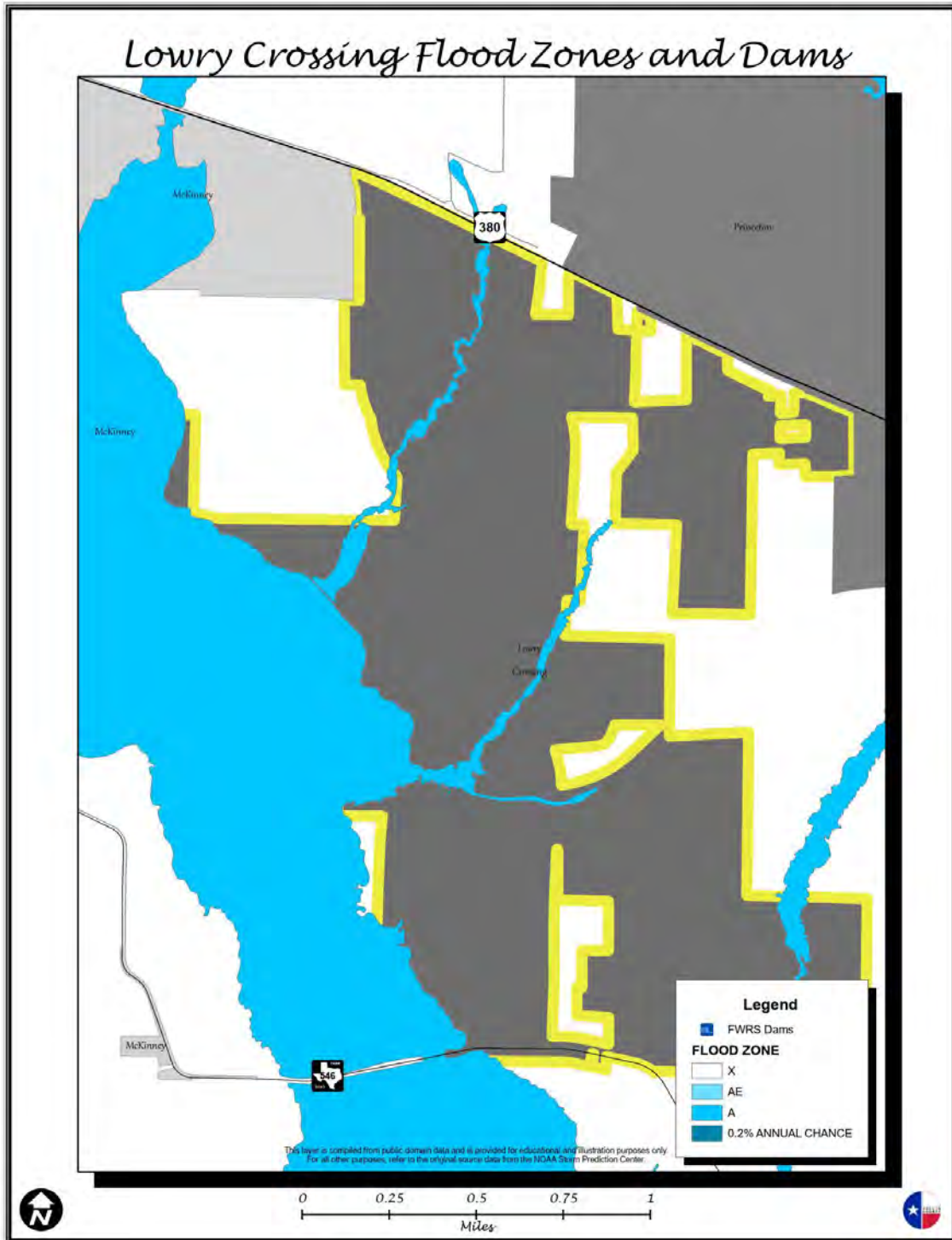


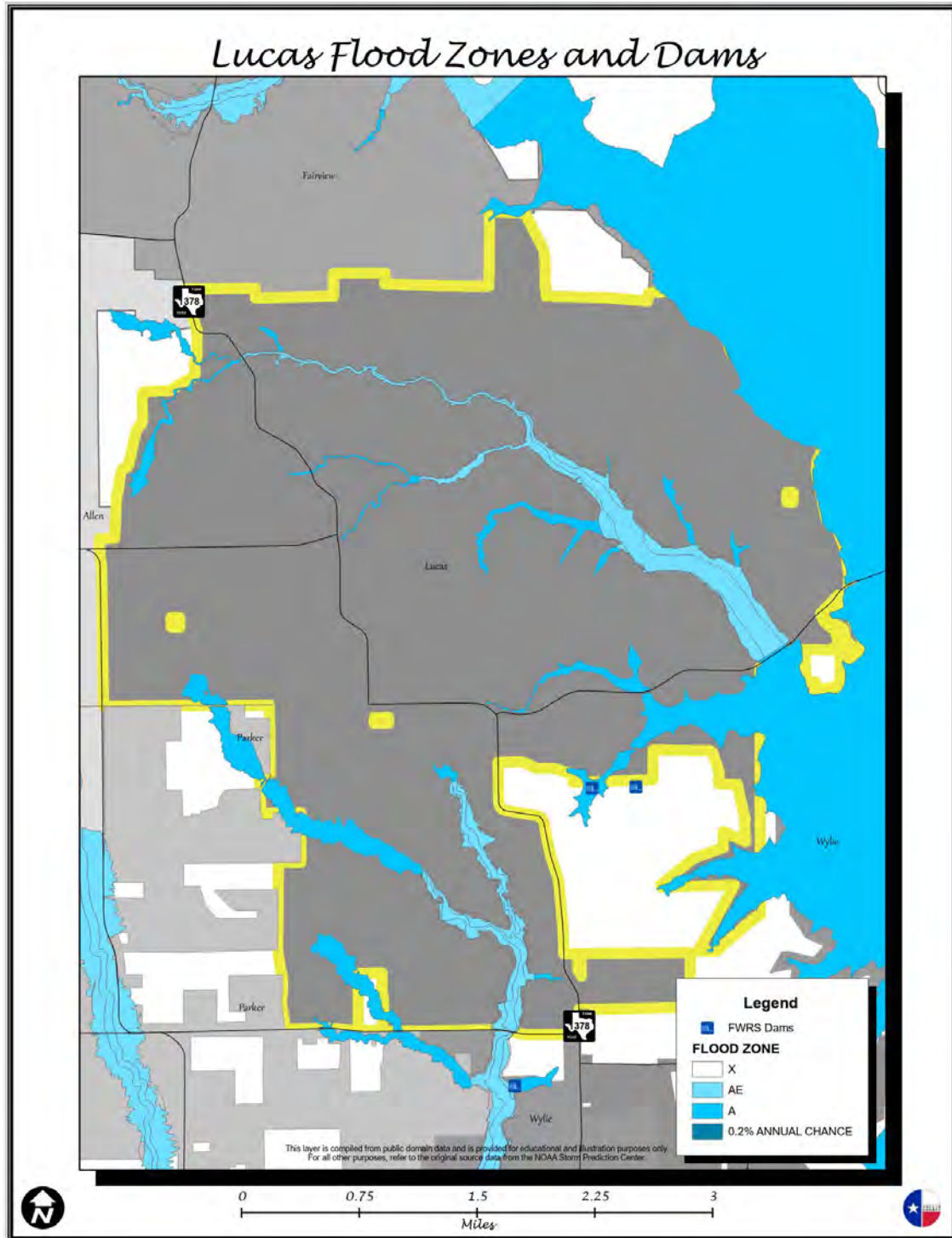


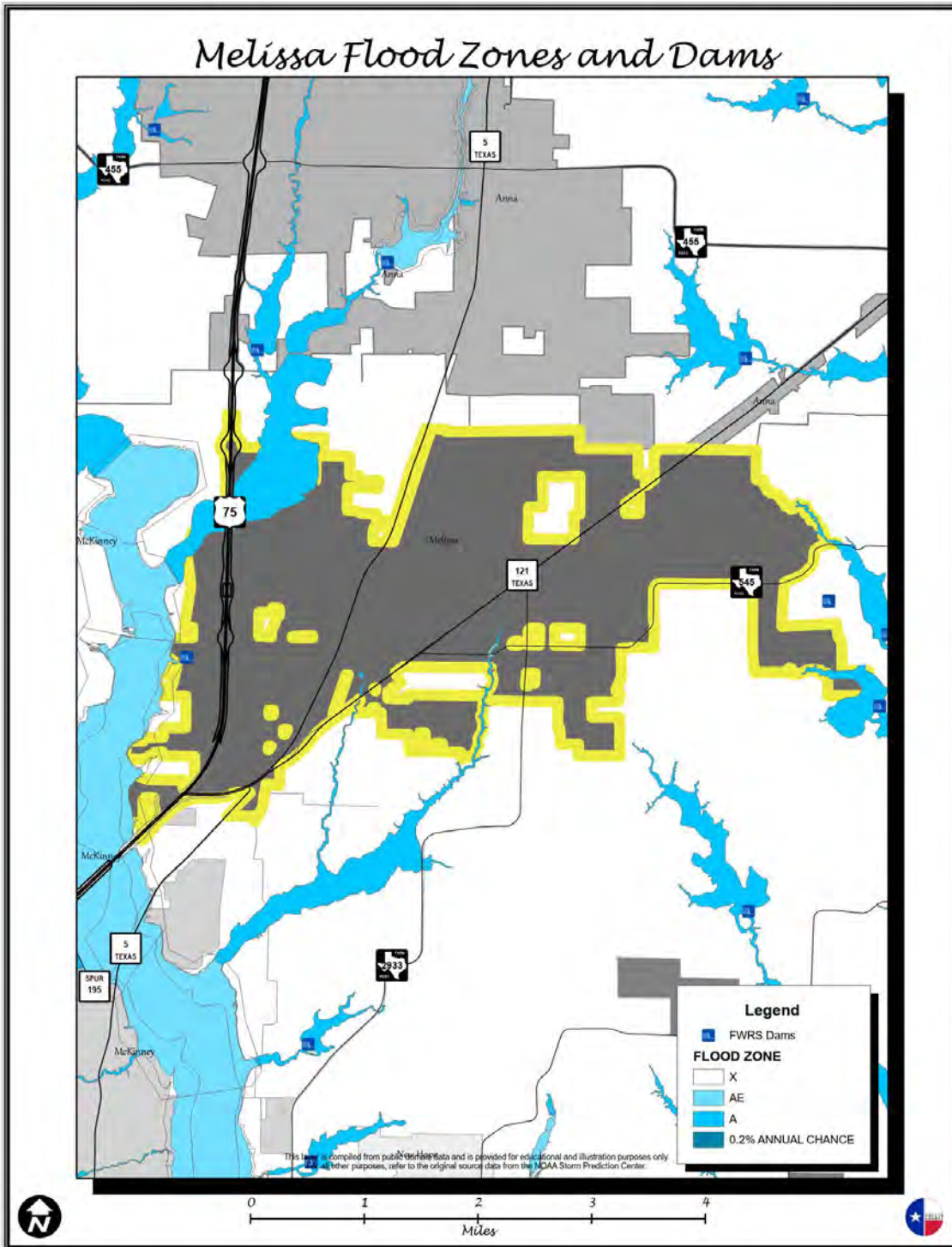


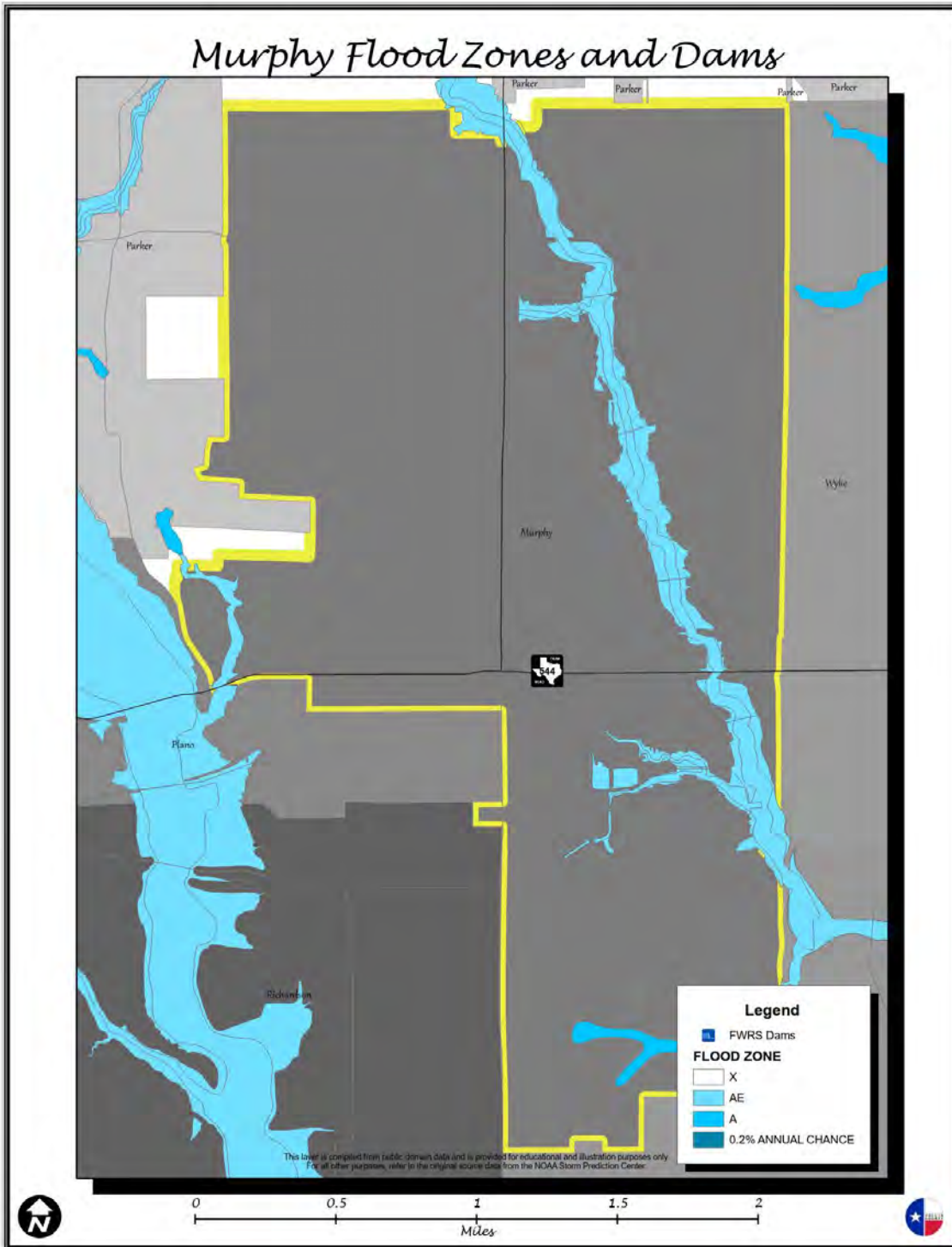


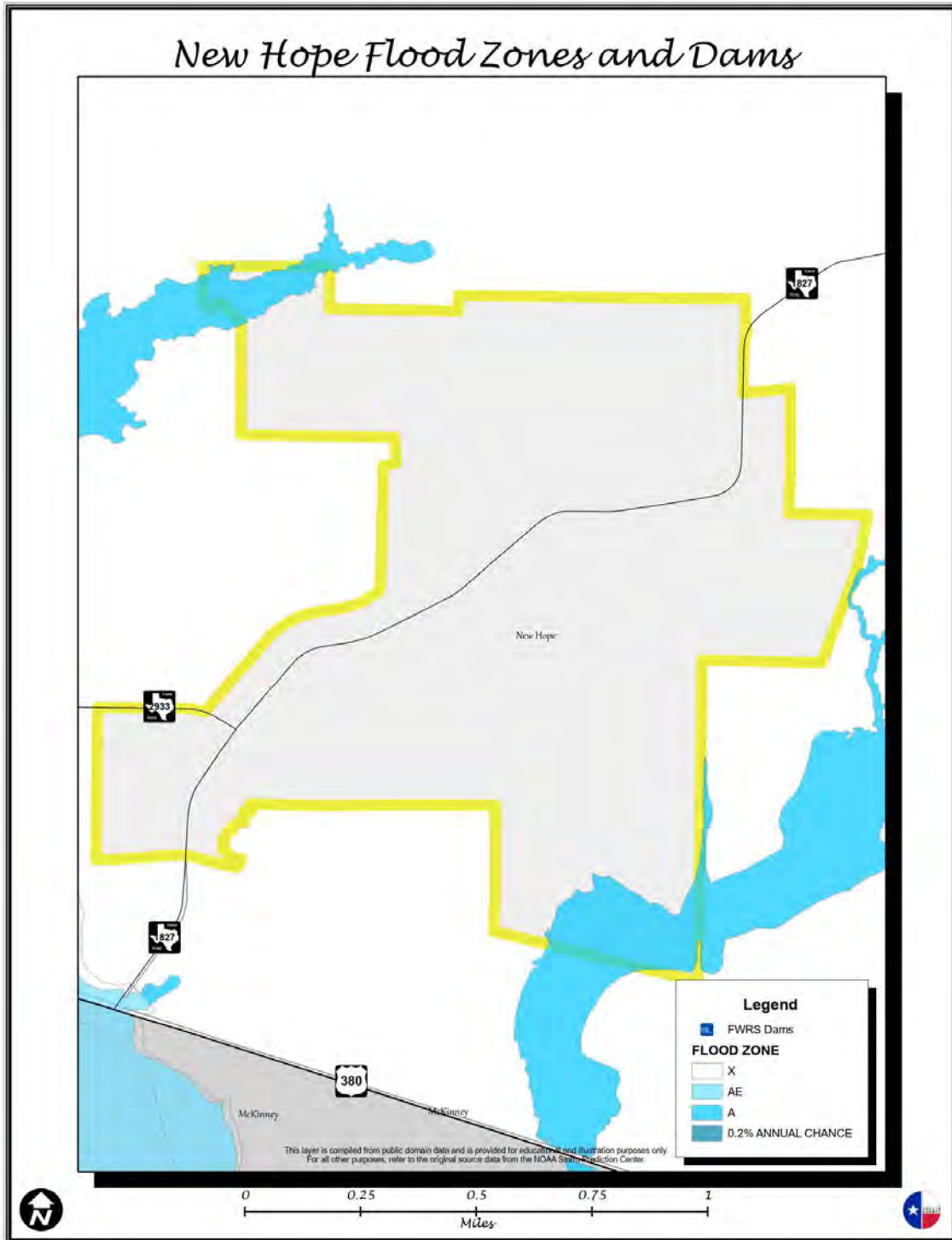


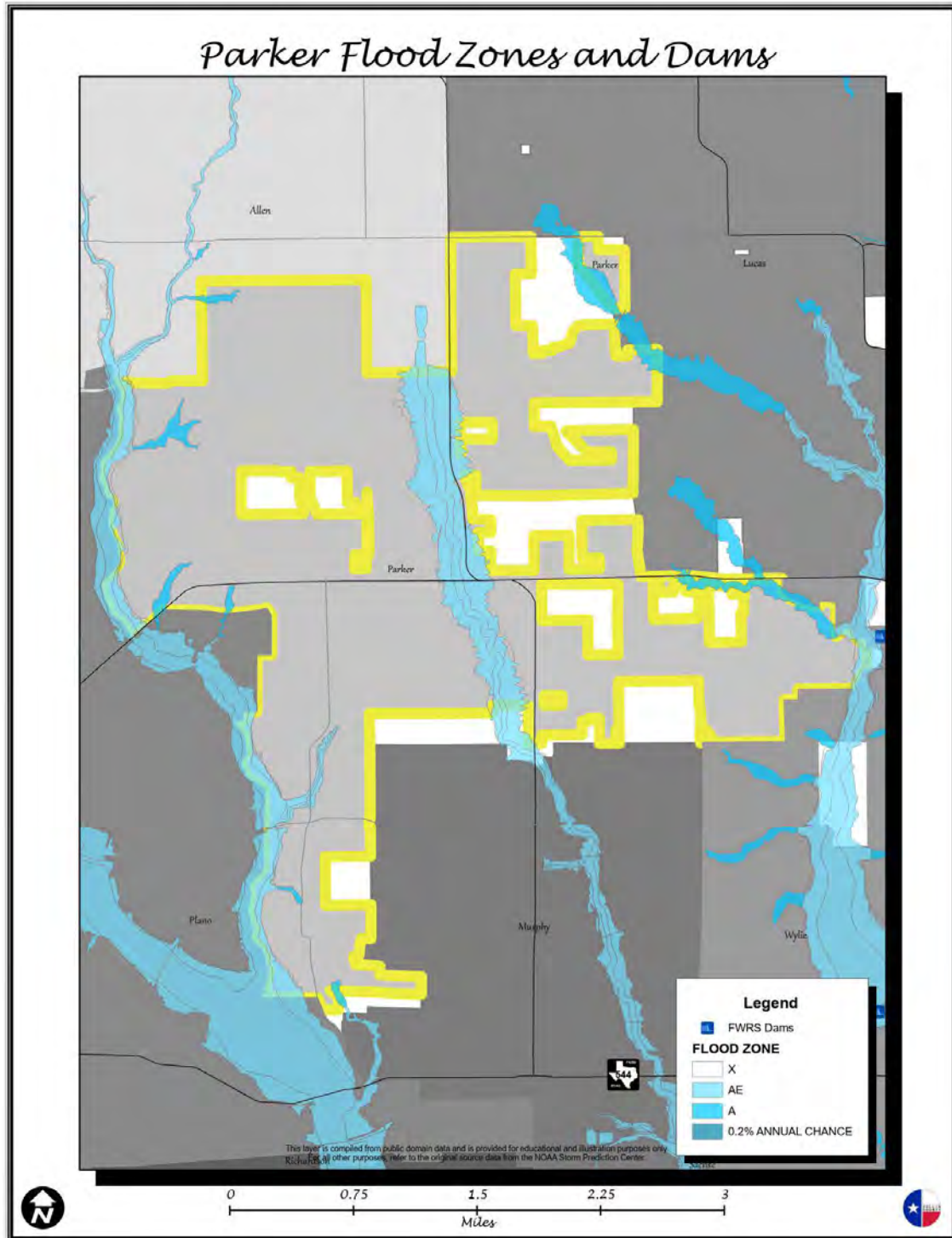


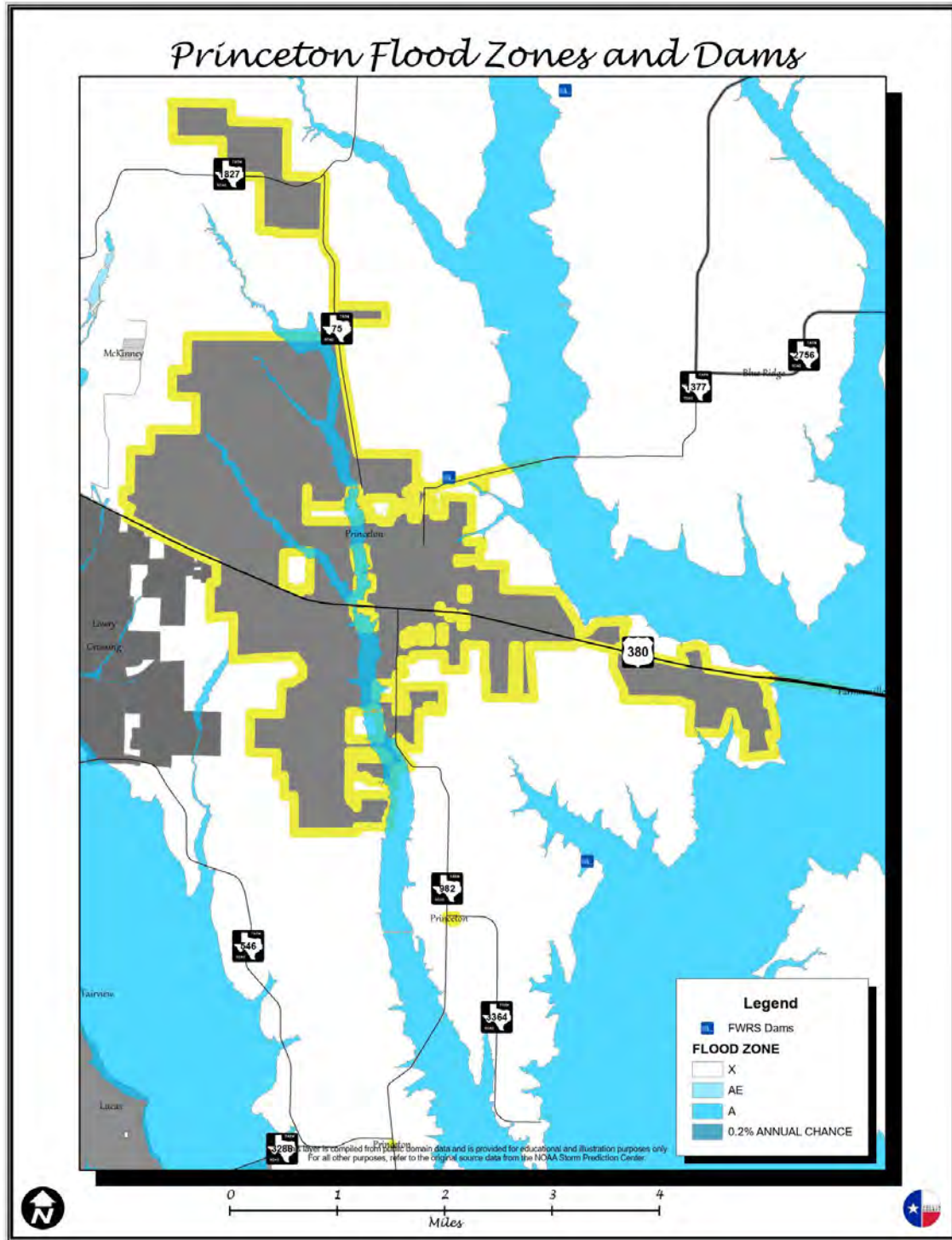


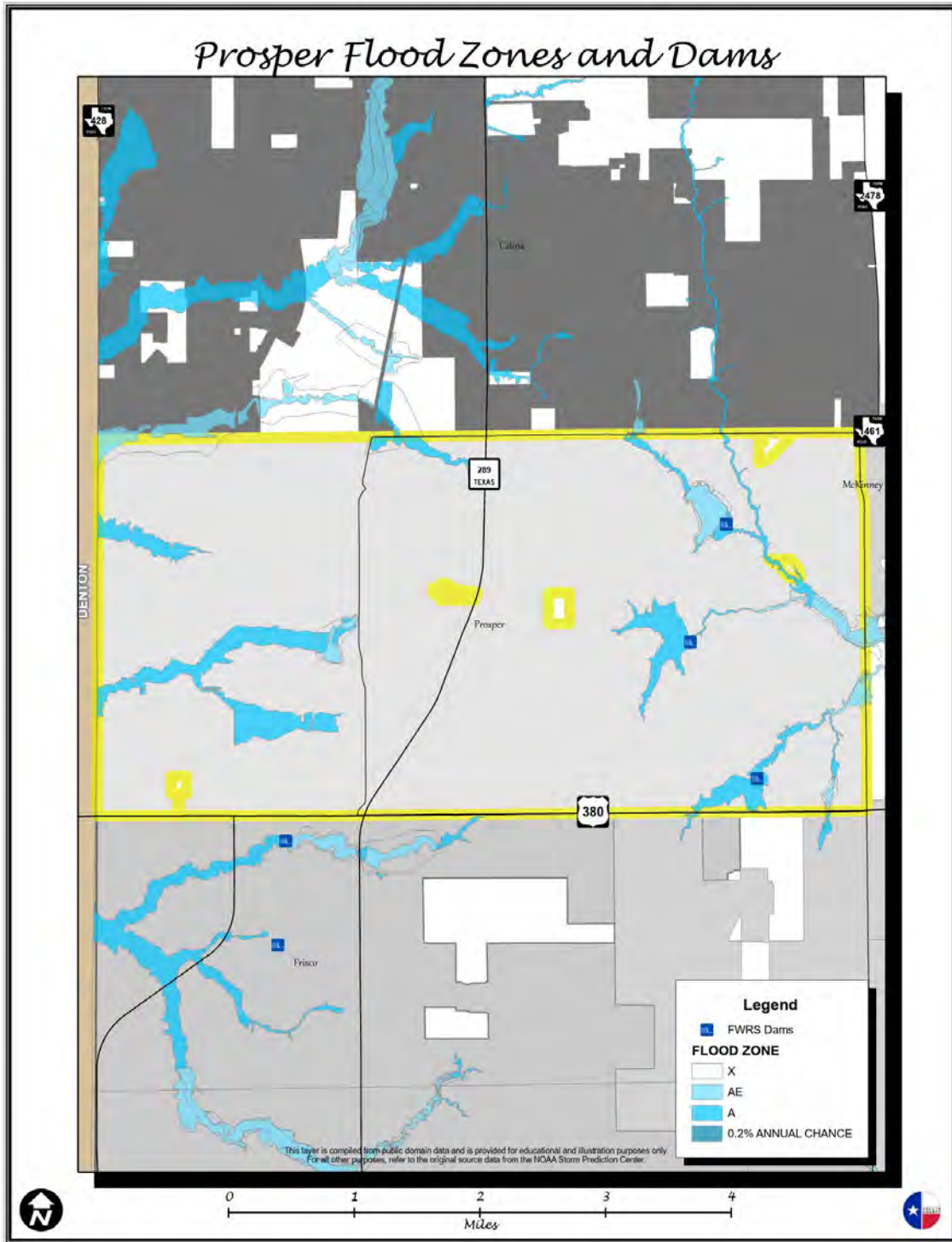


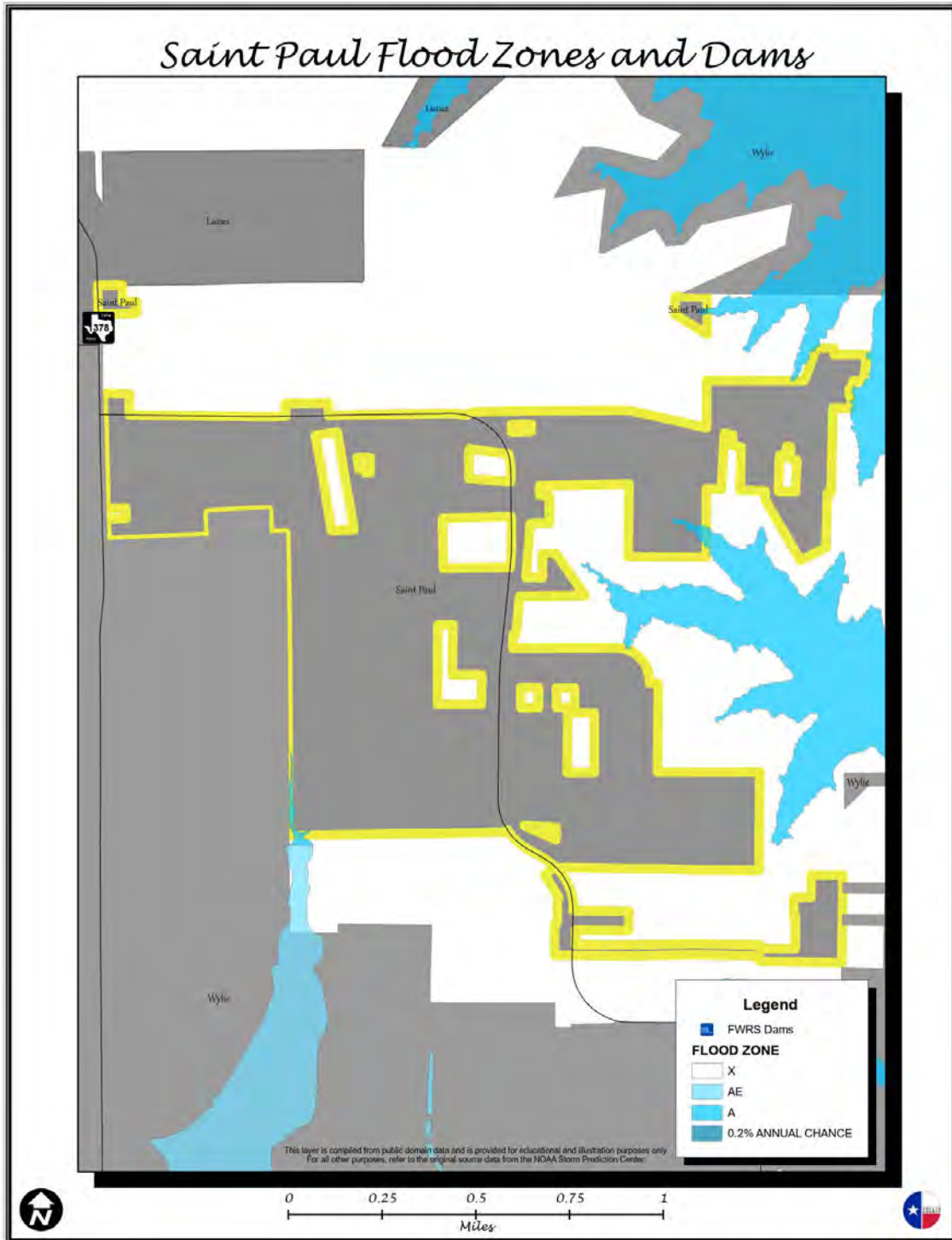


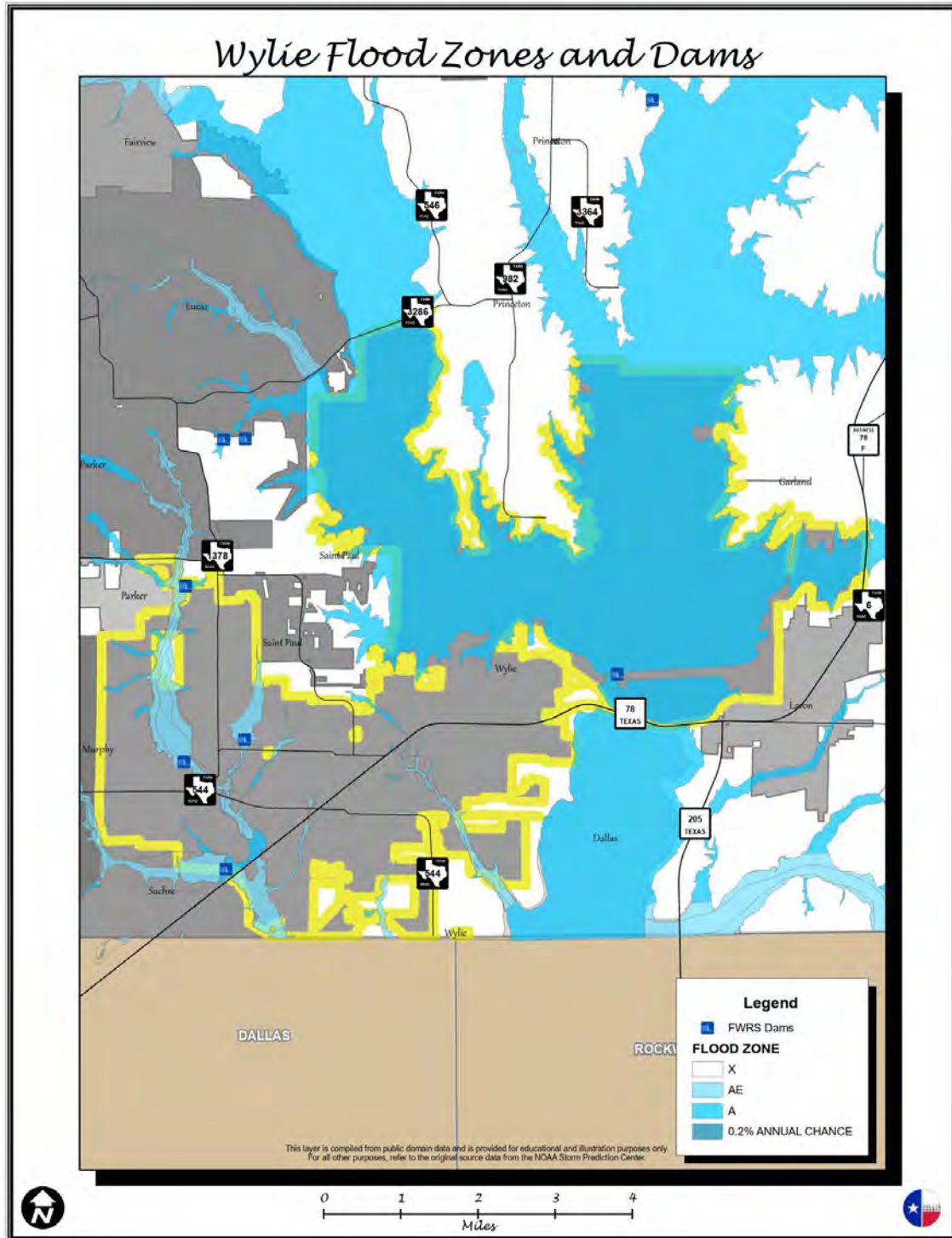




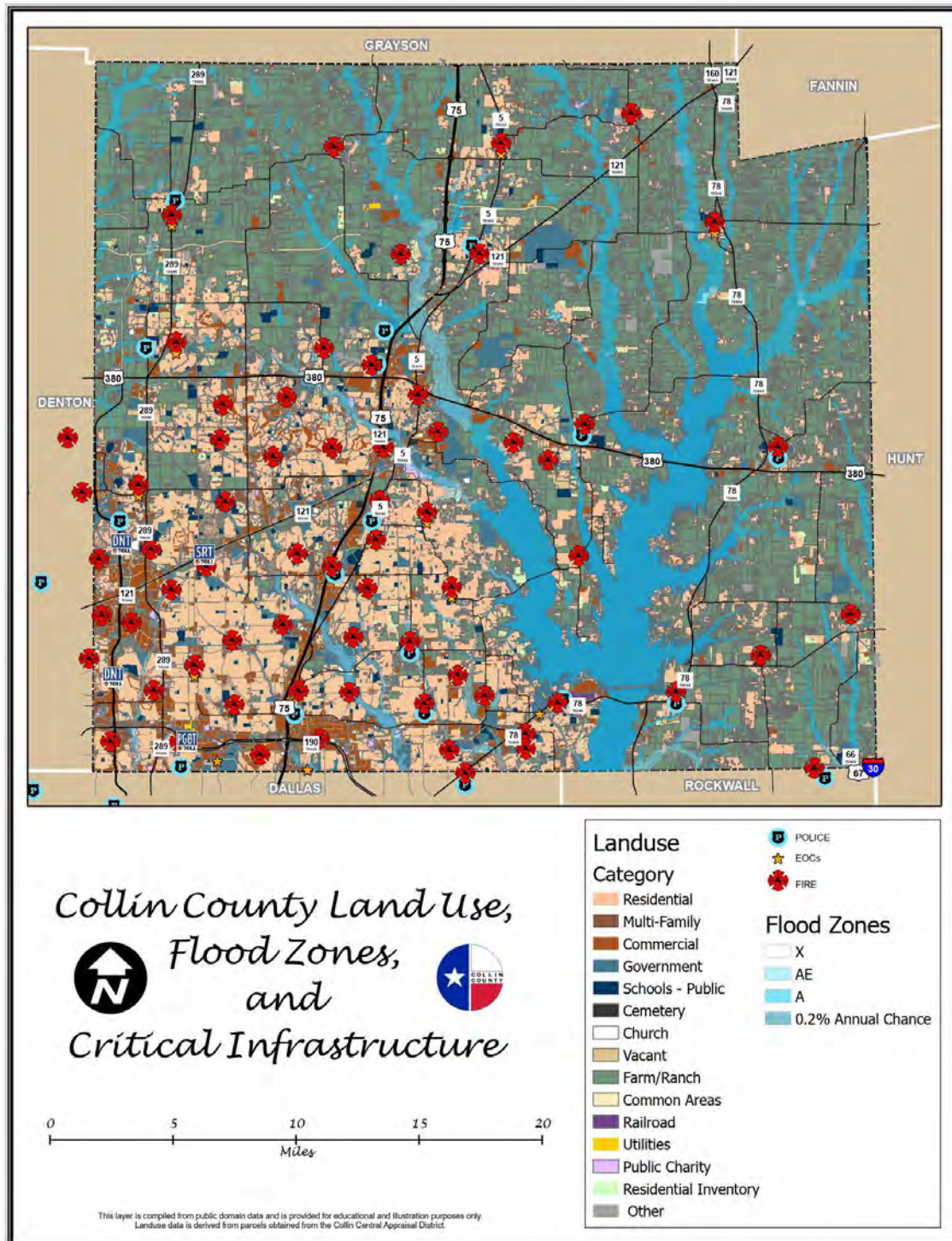




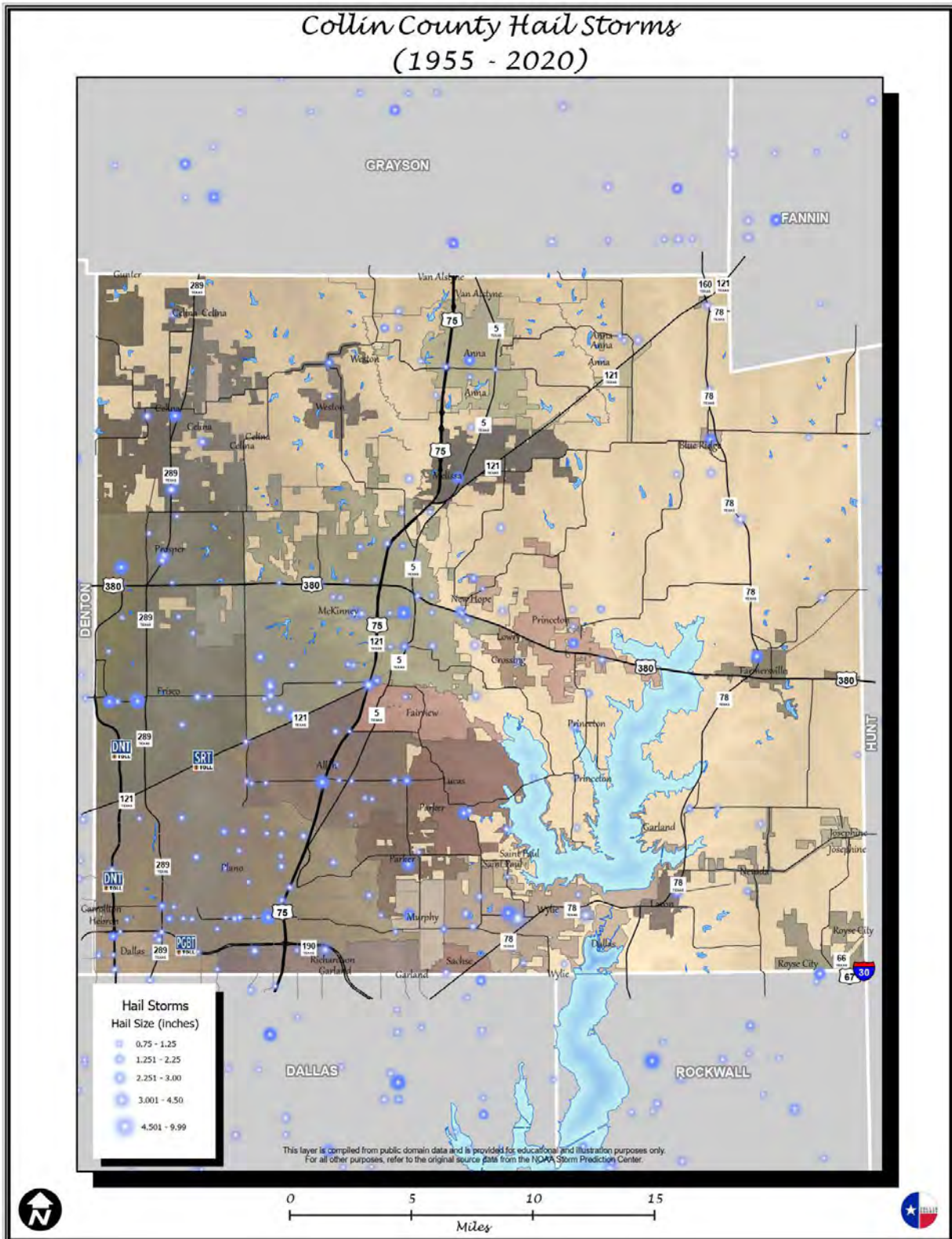




Map Series B – Land Use, Critical Infrastructure, and Flood Zones

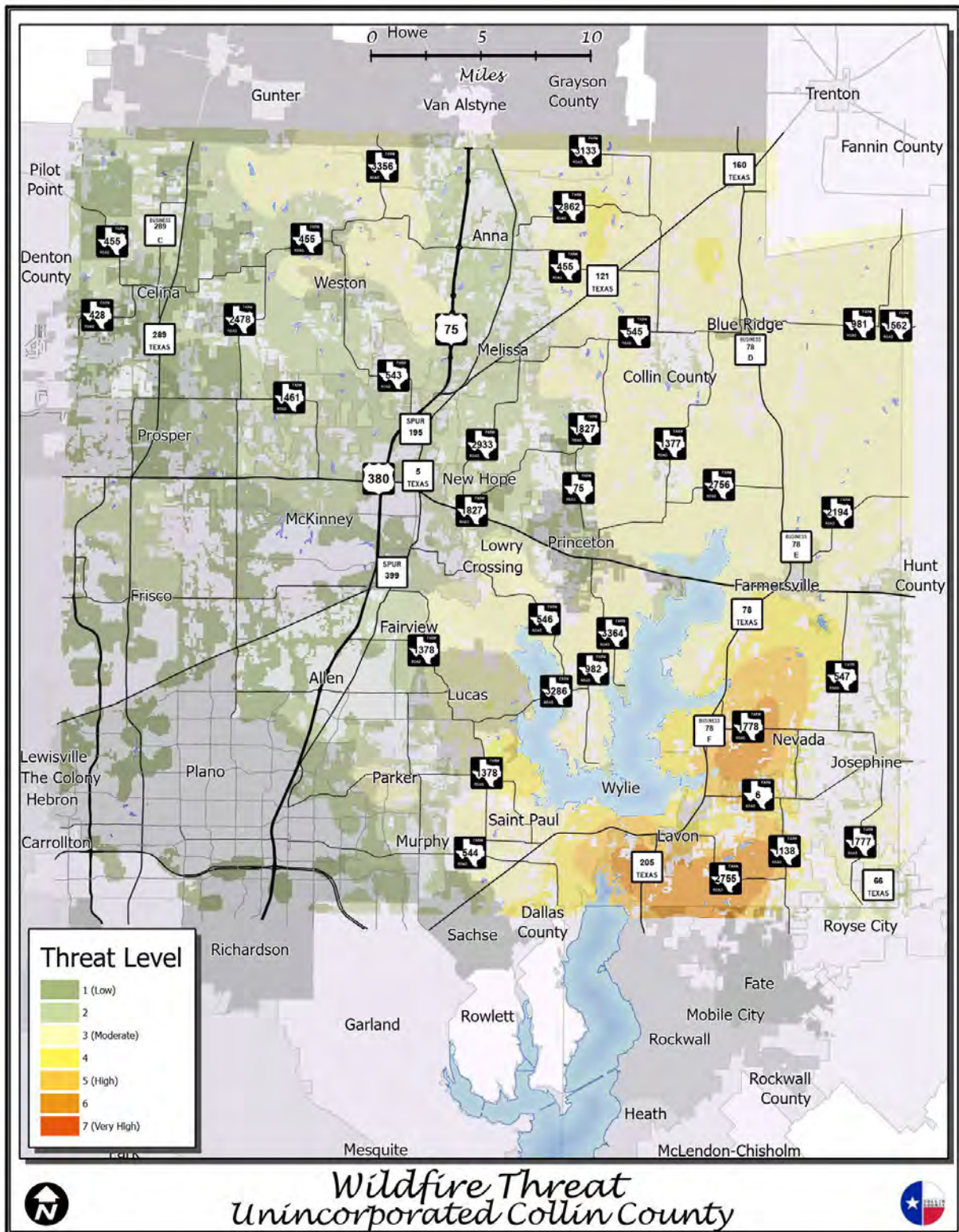


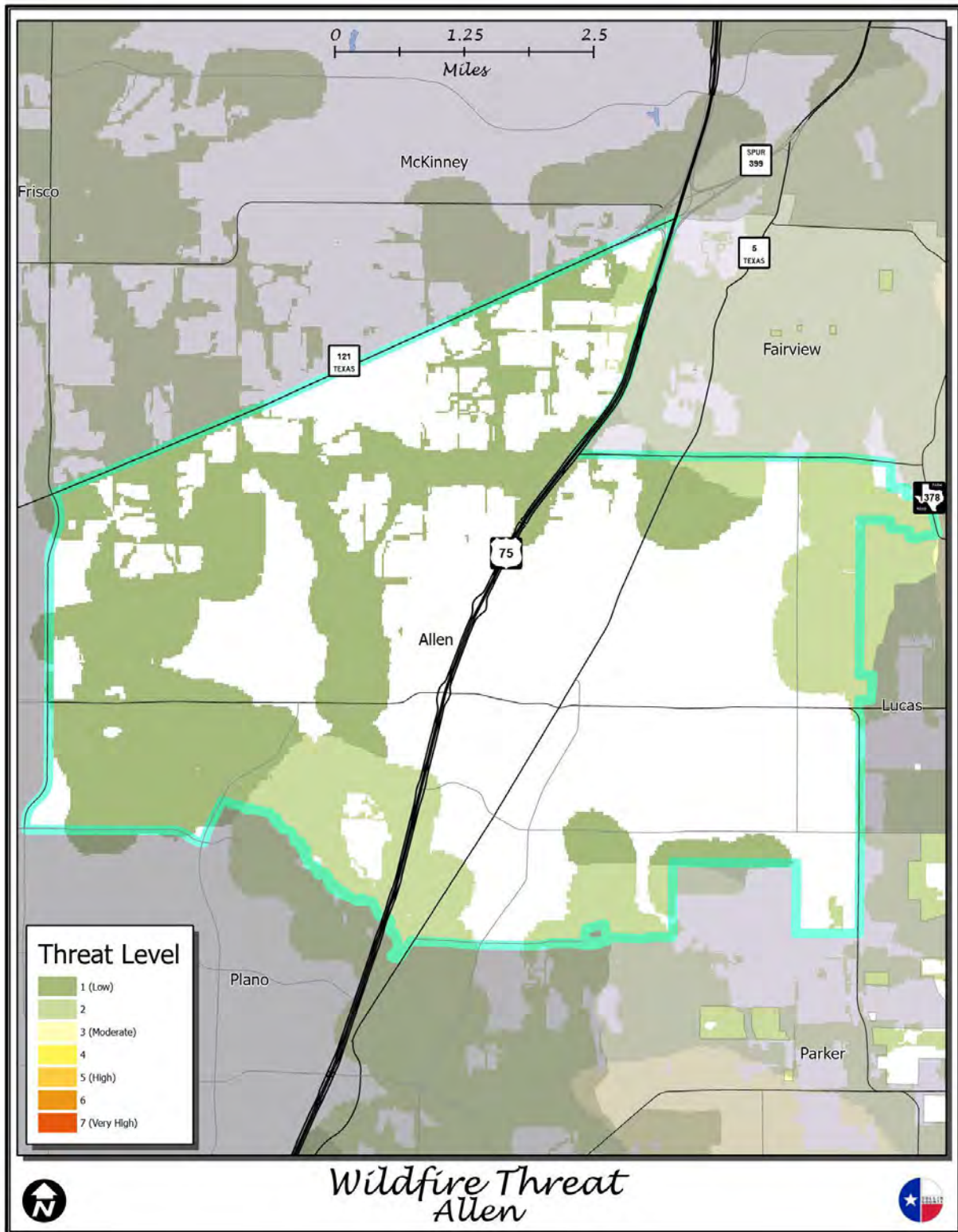
Map Series C – Hail Events

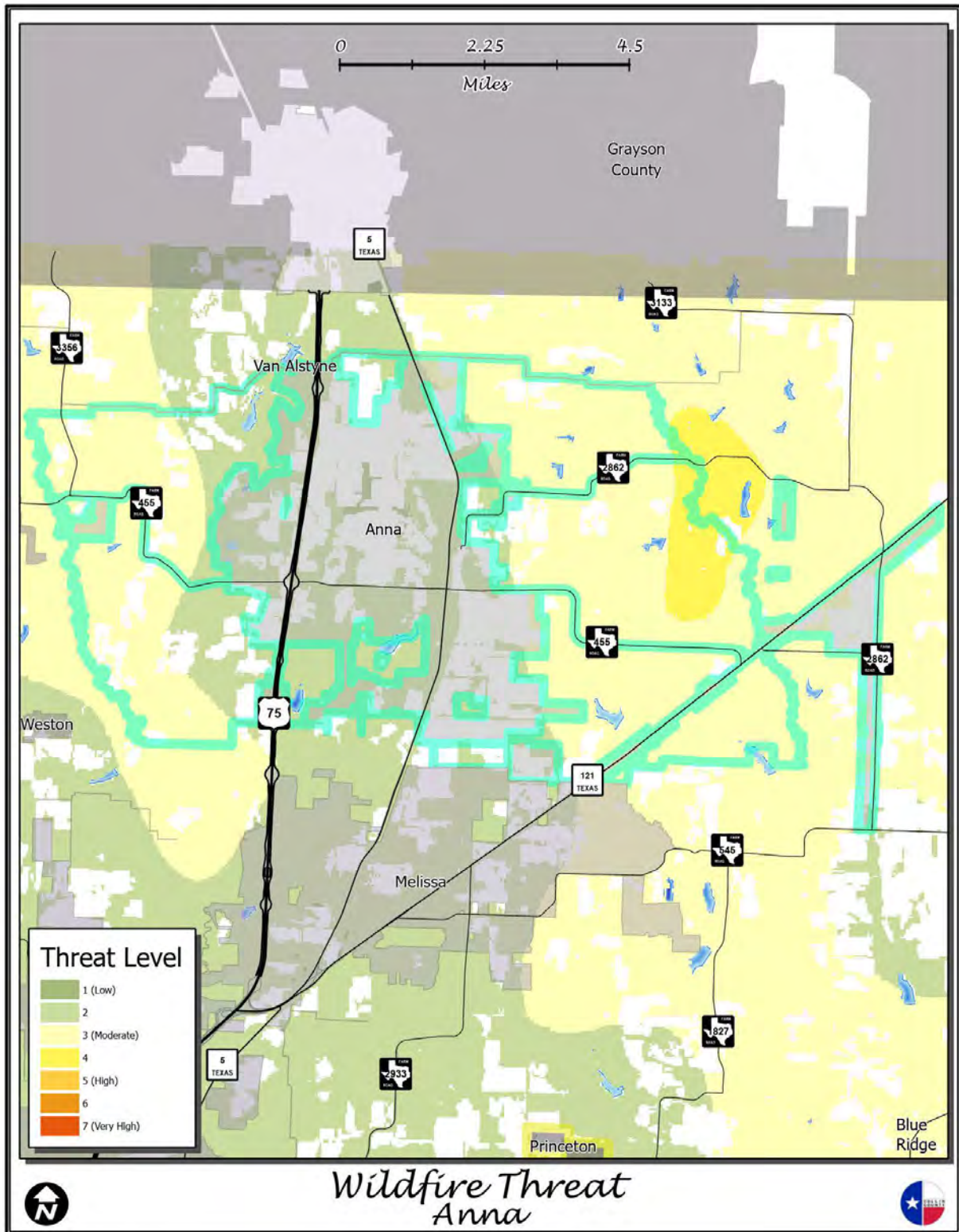


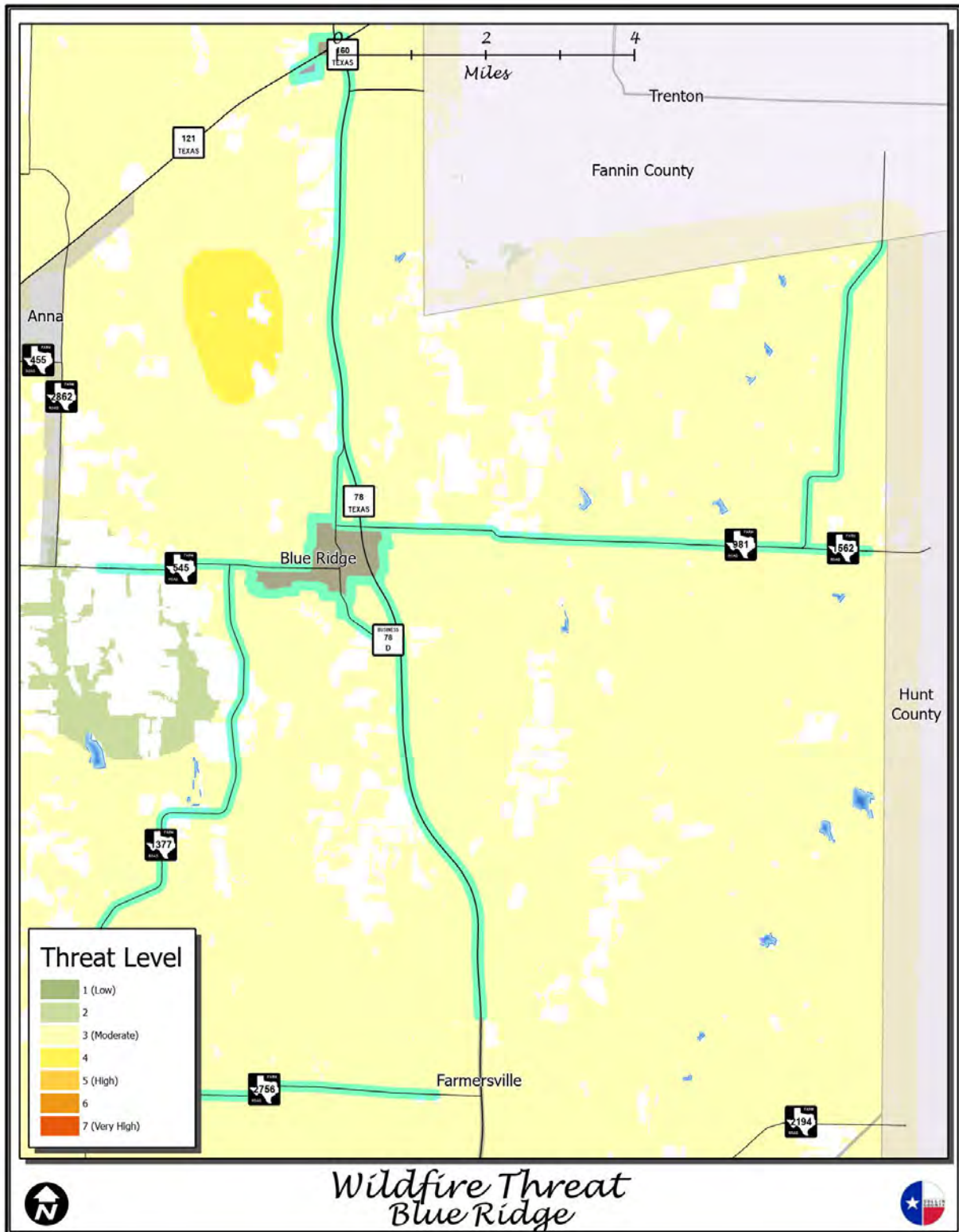


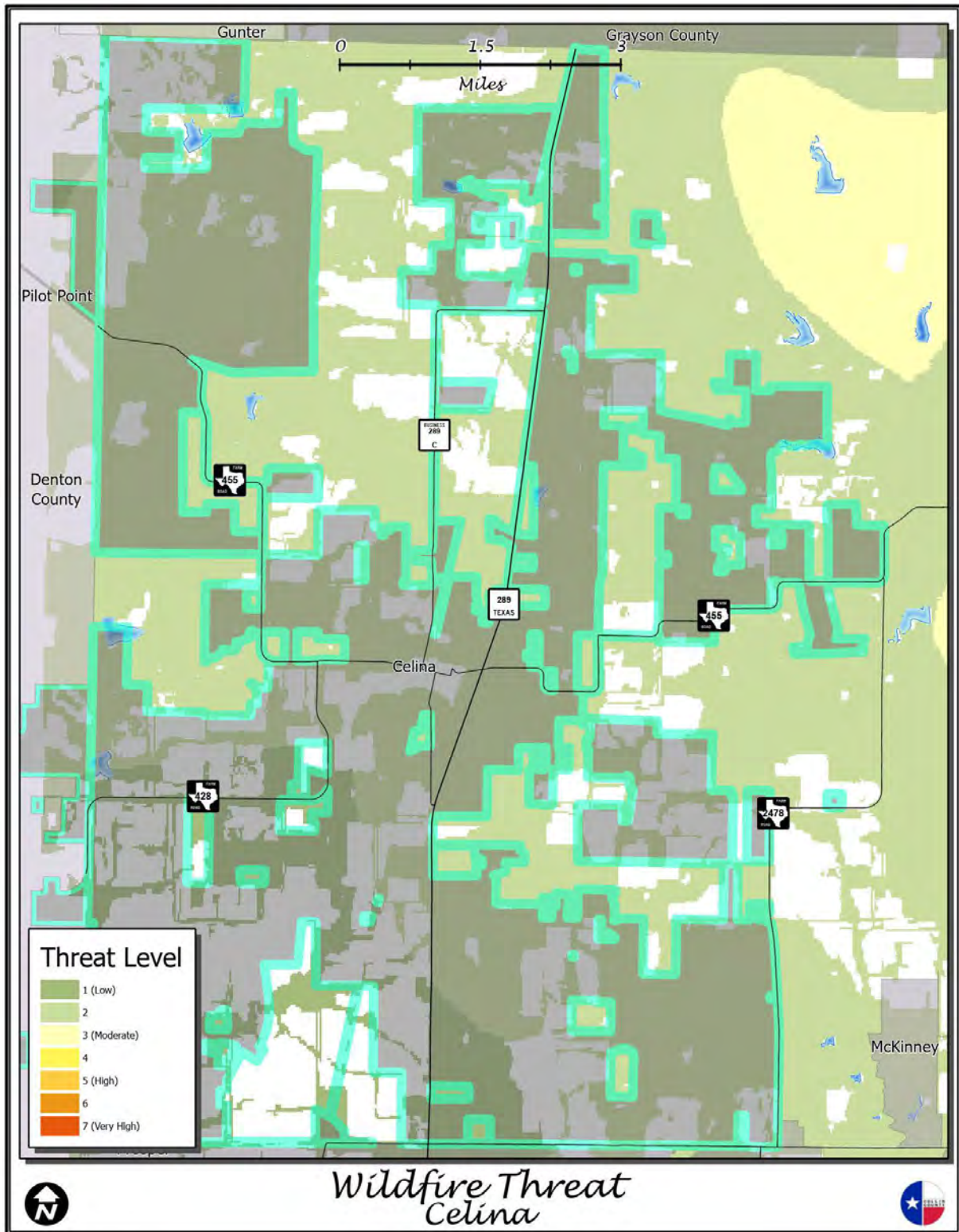
Map Series E – Wildfire Threat

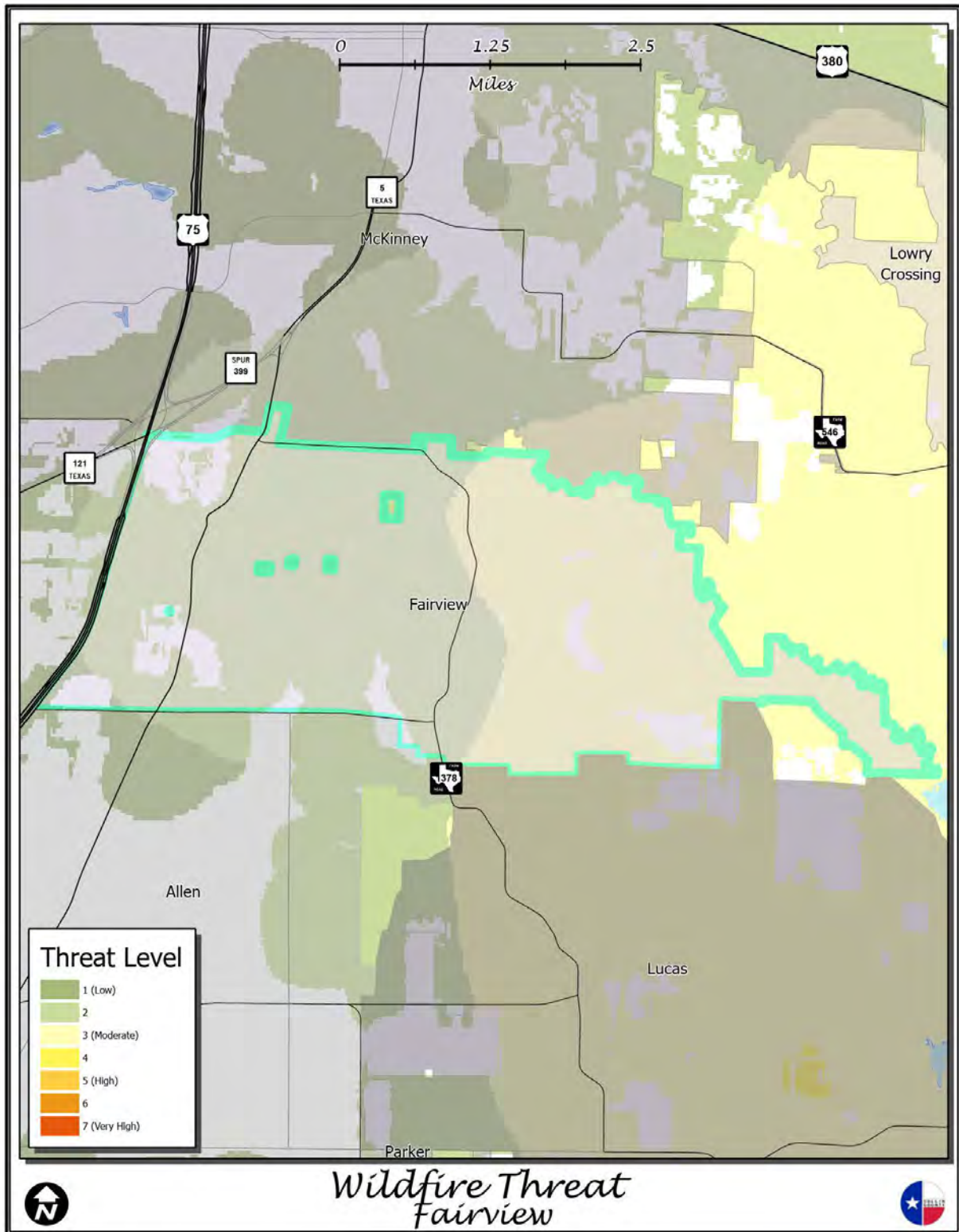


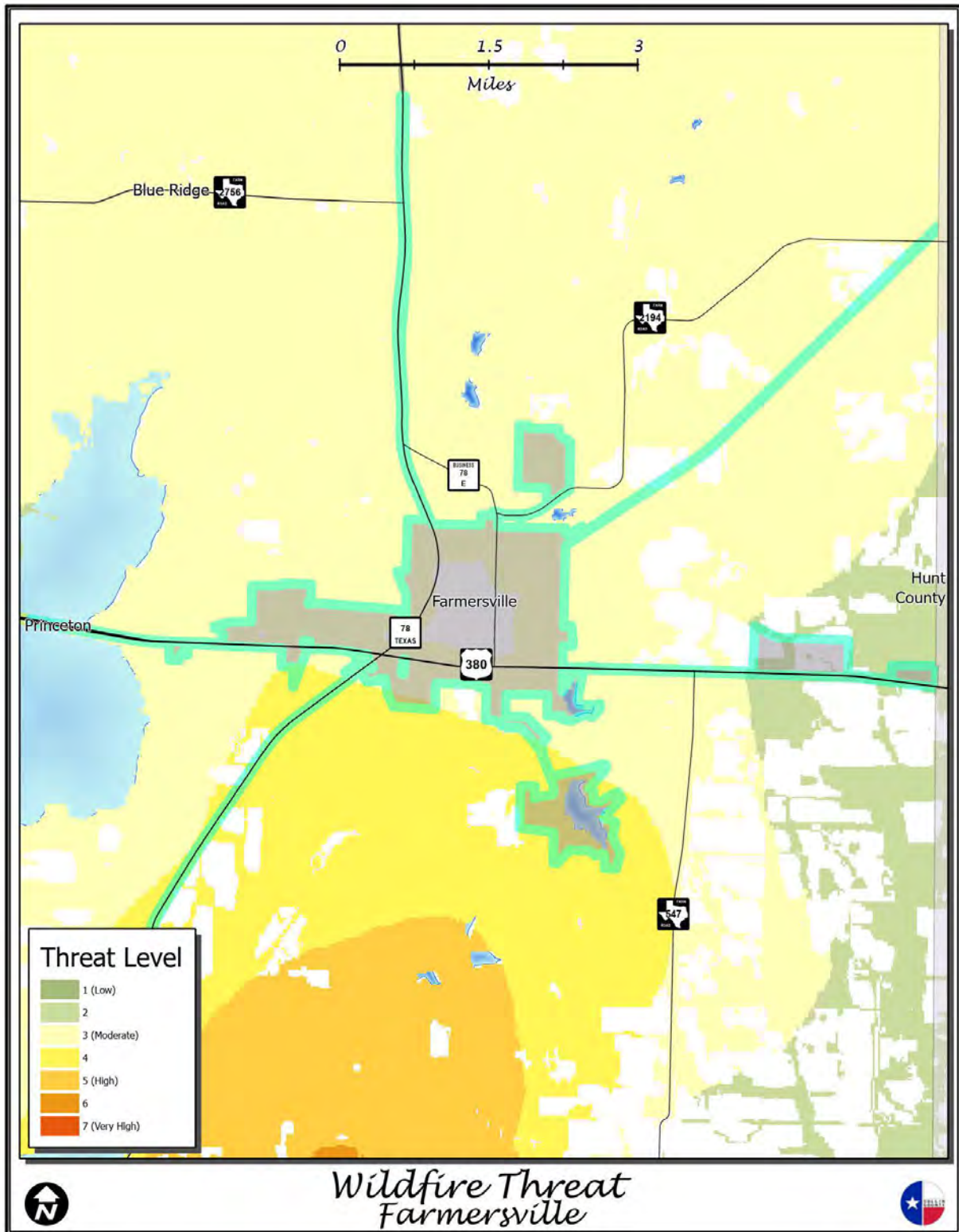


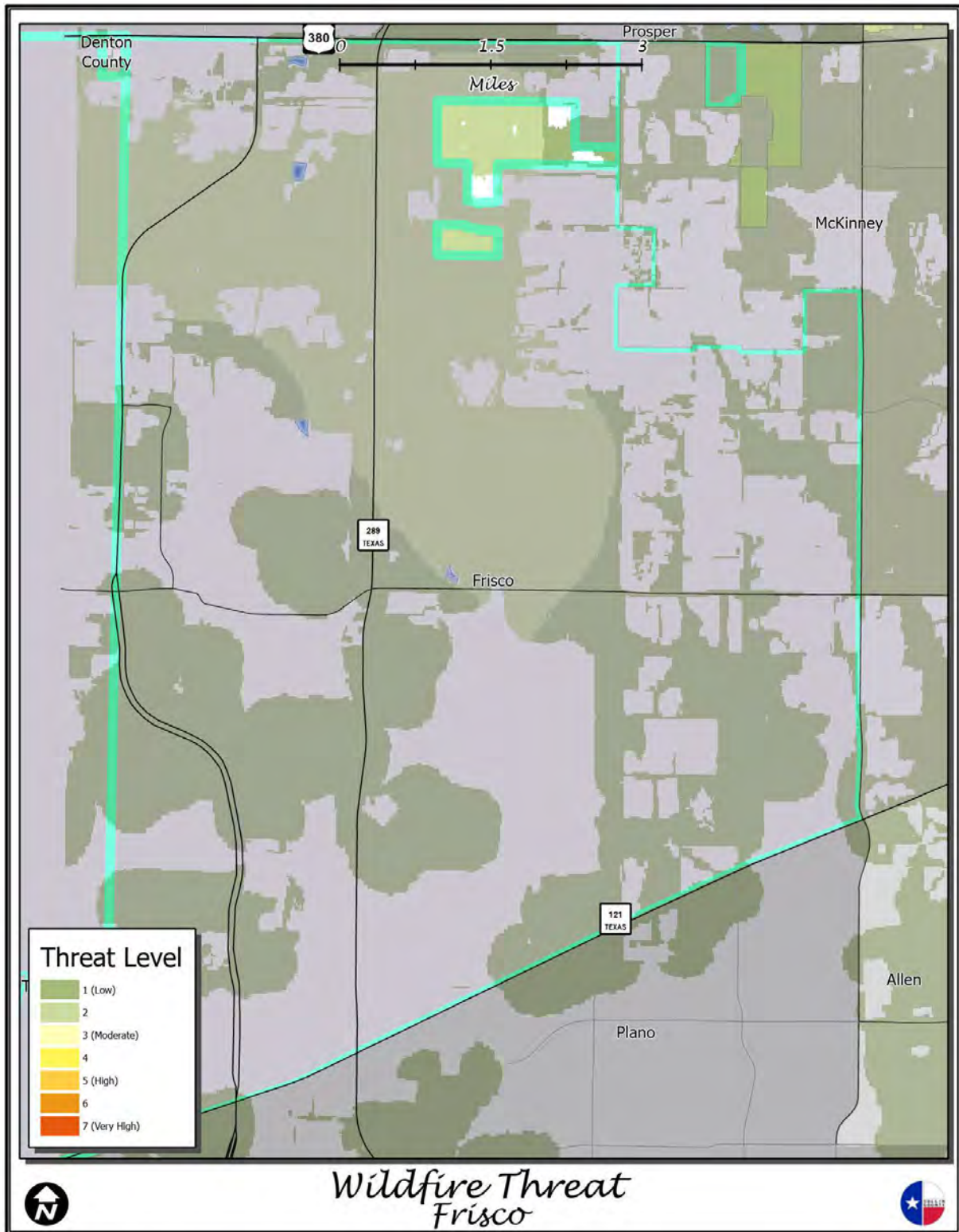


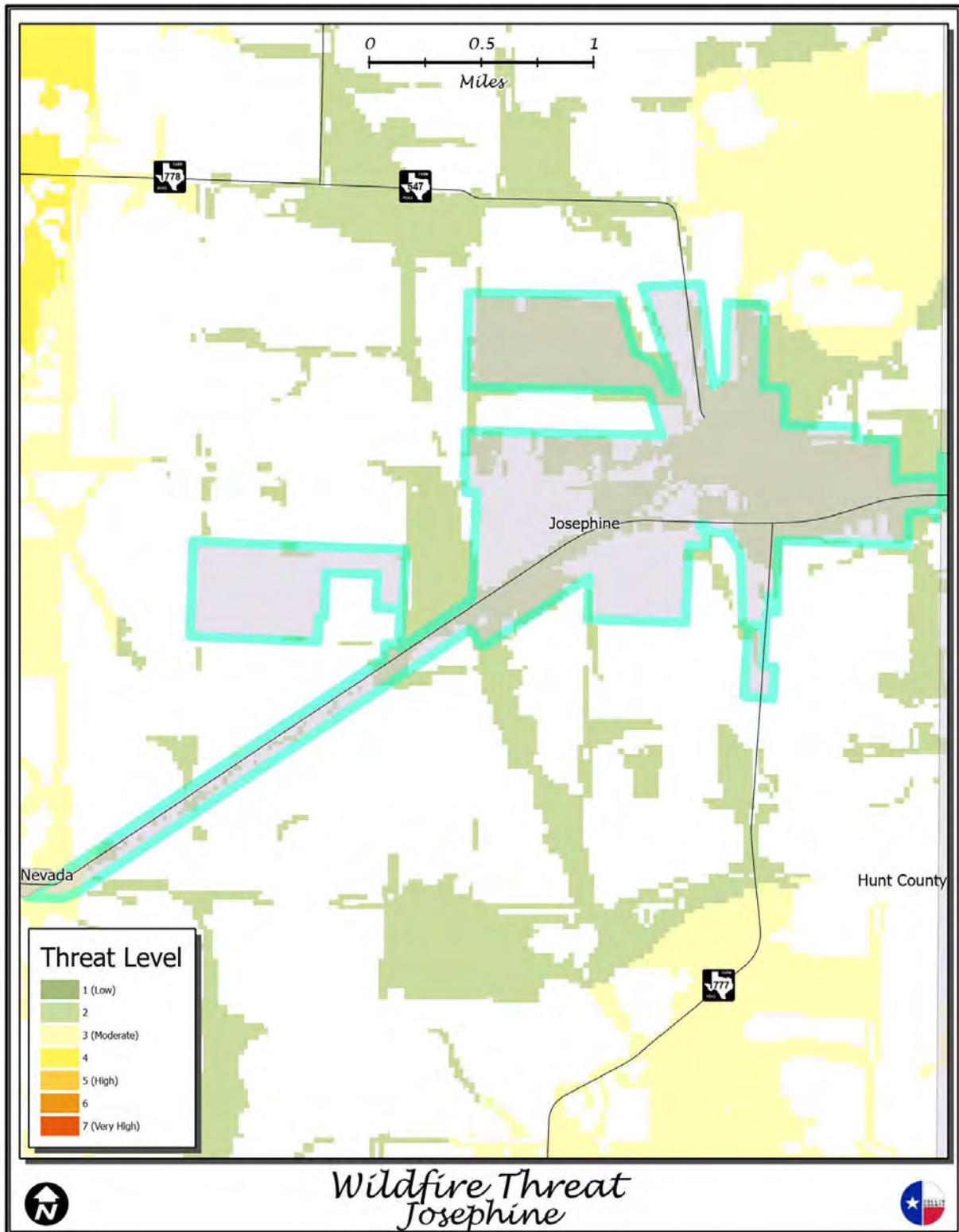


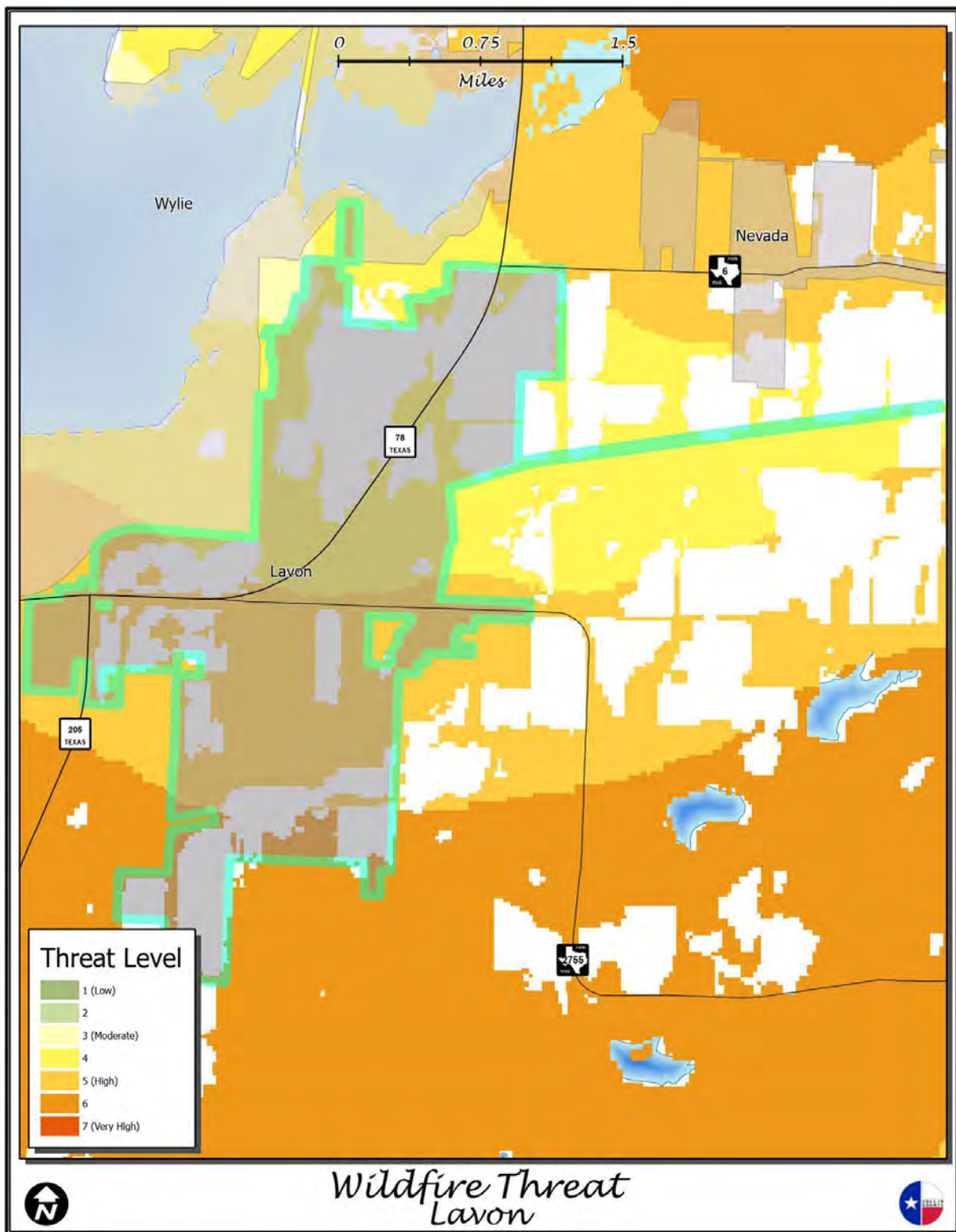


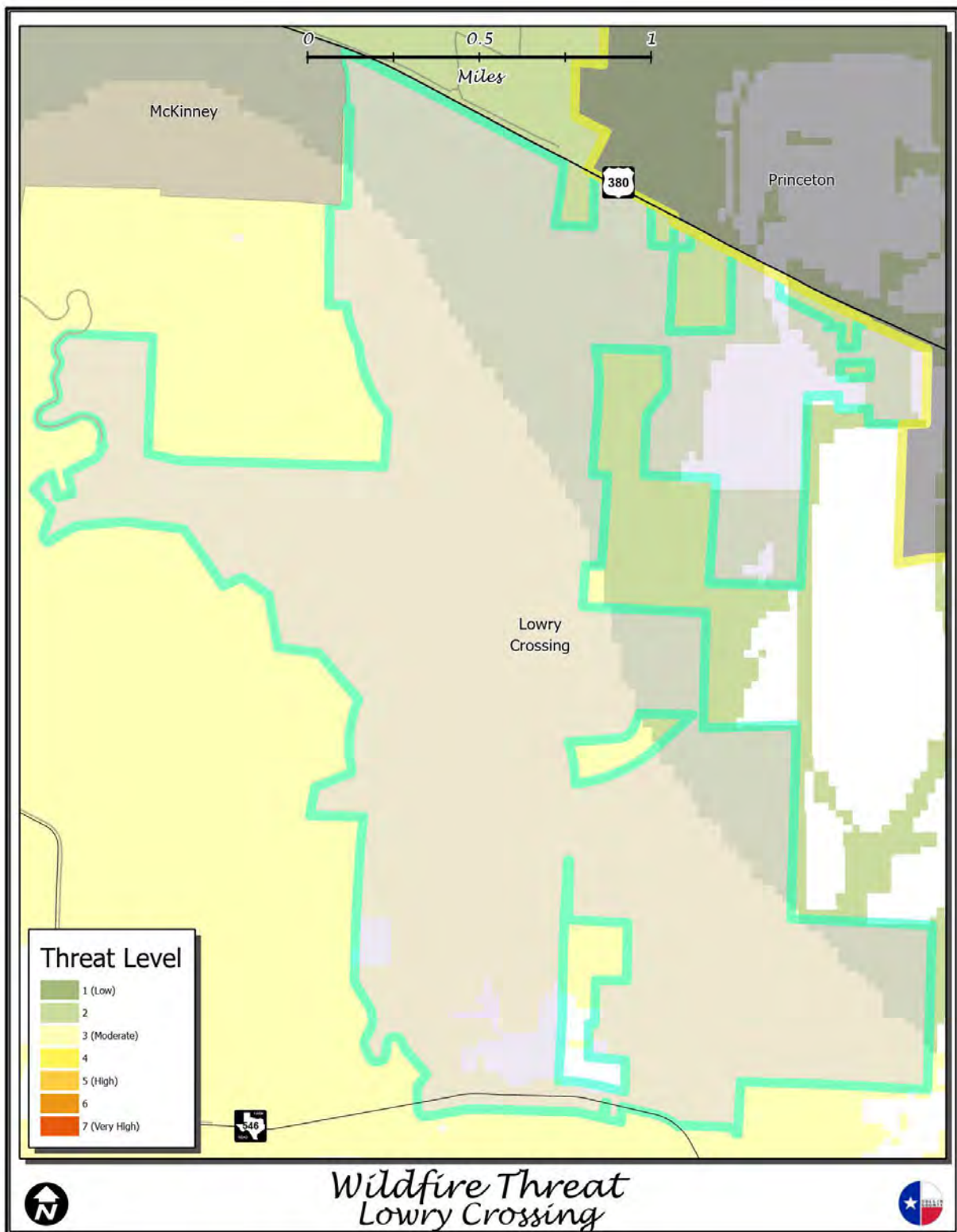


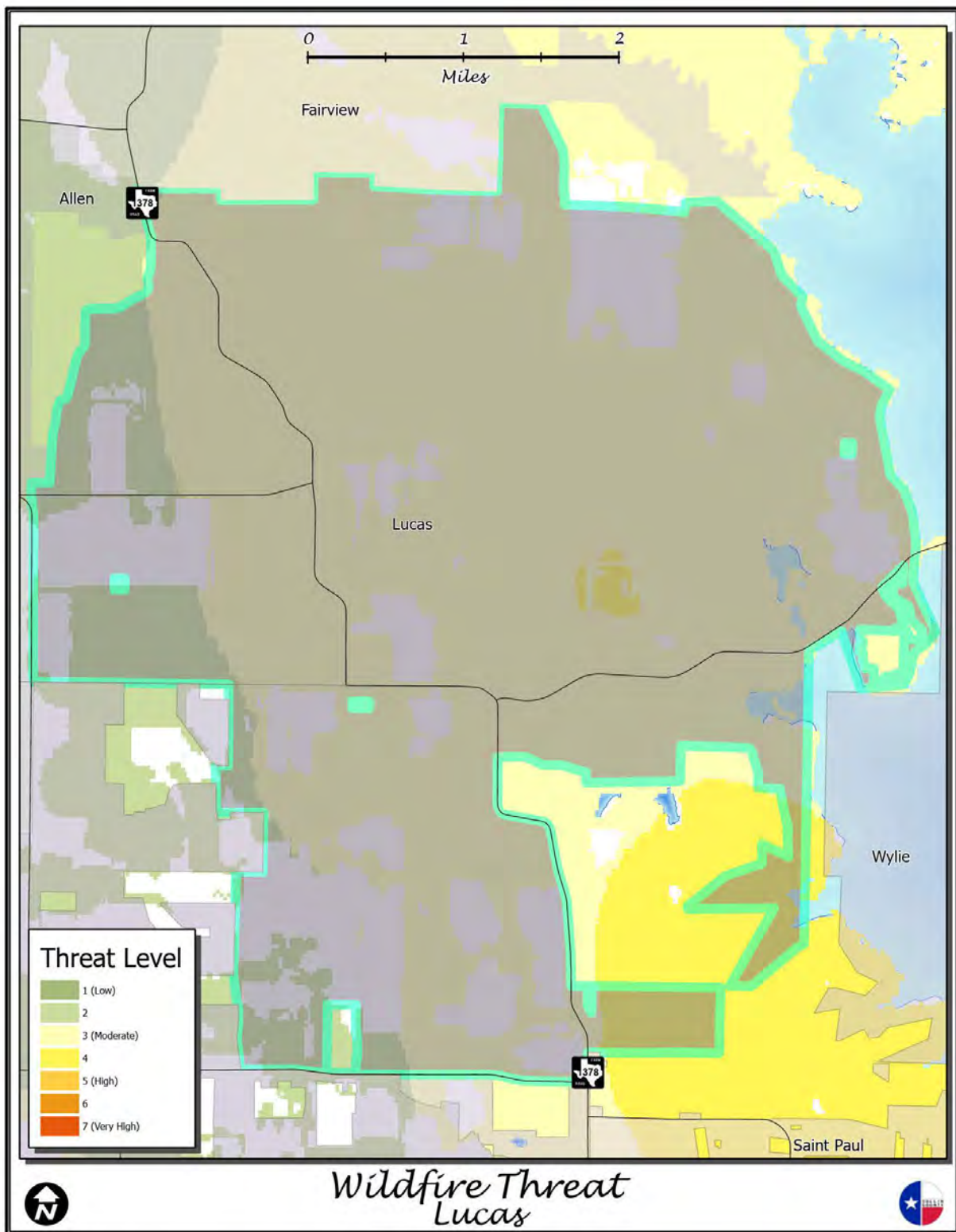


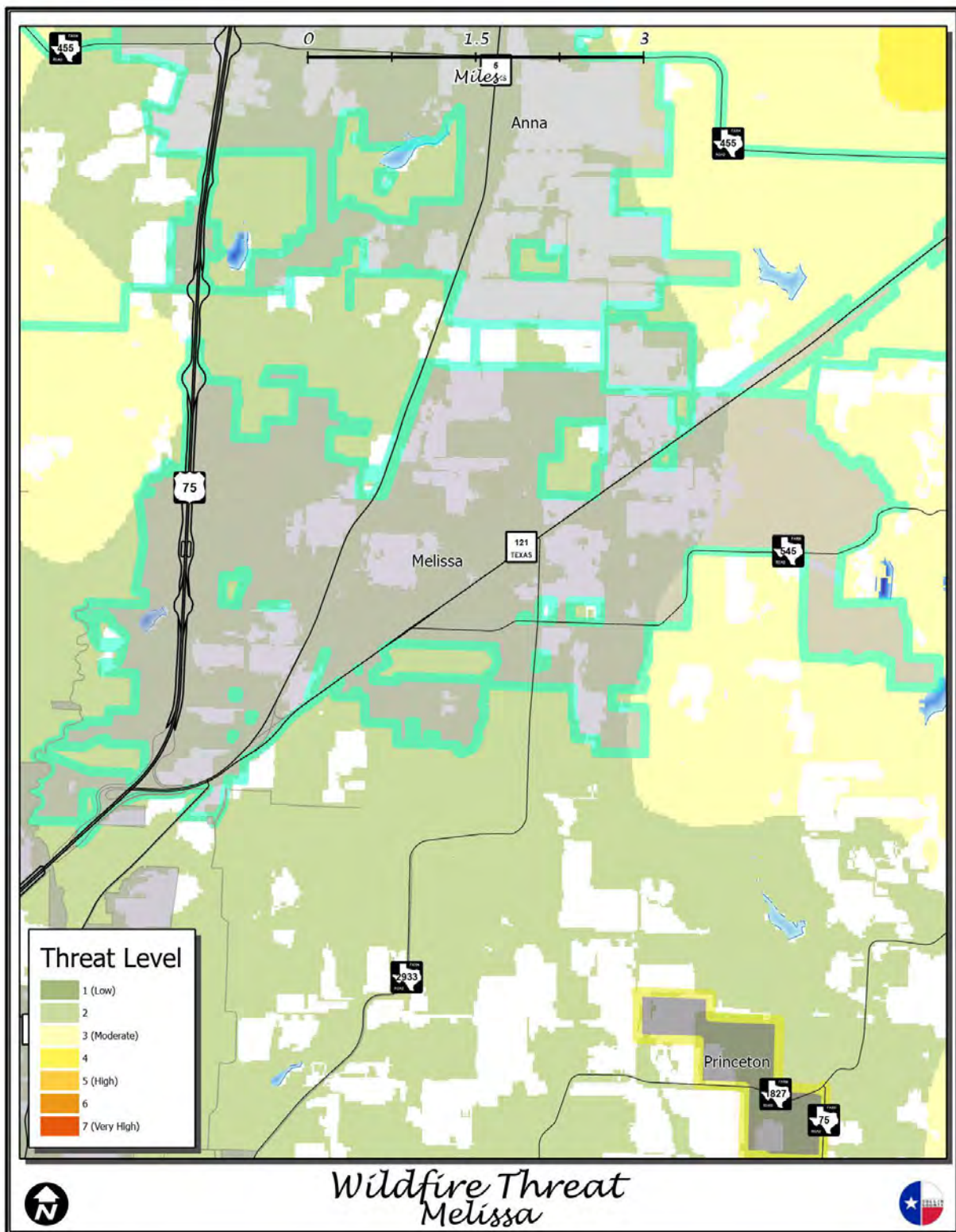


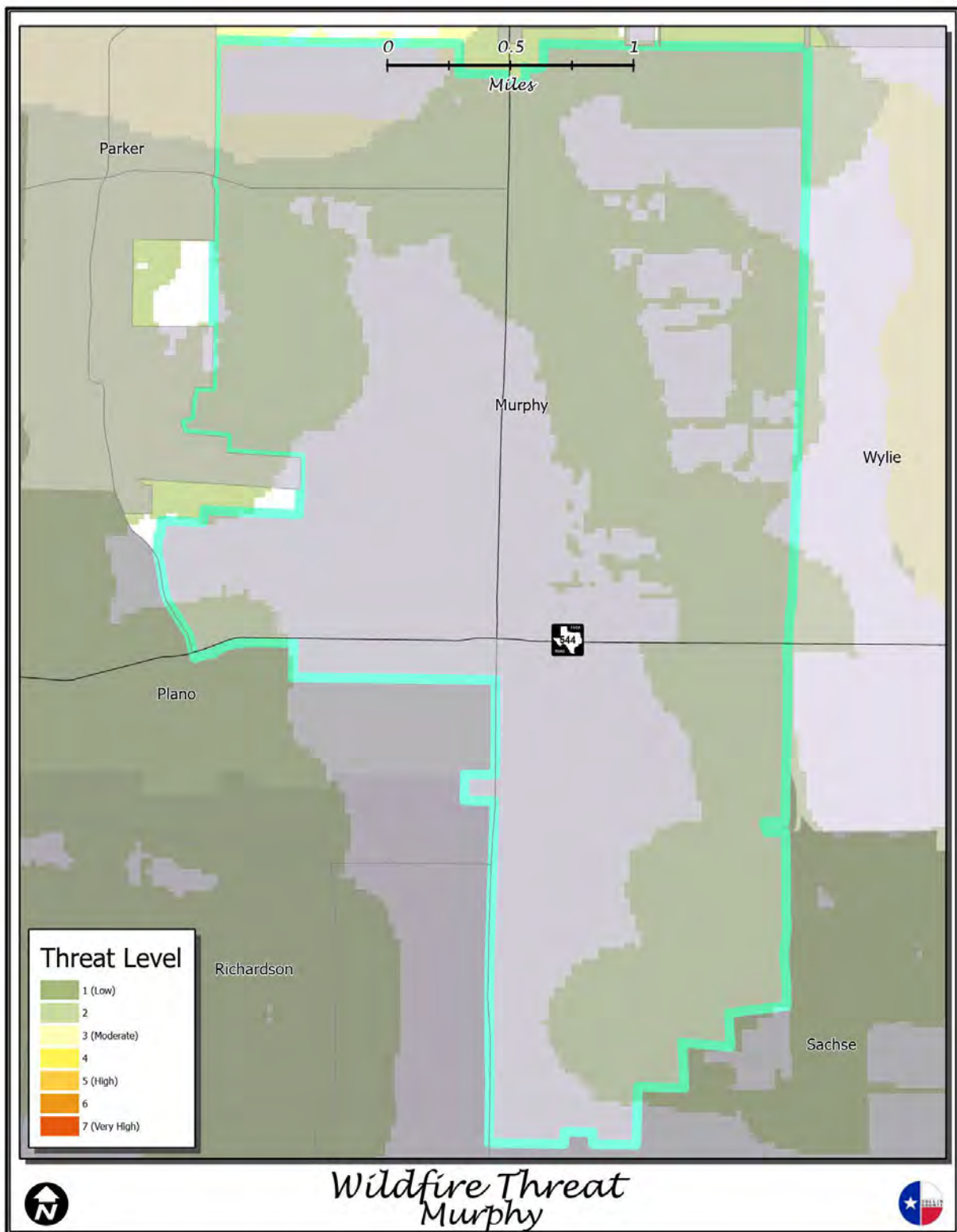


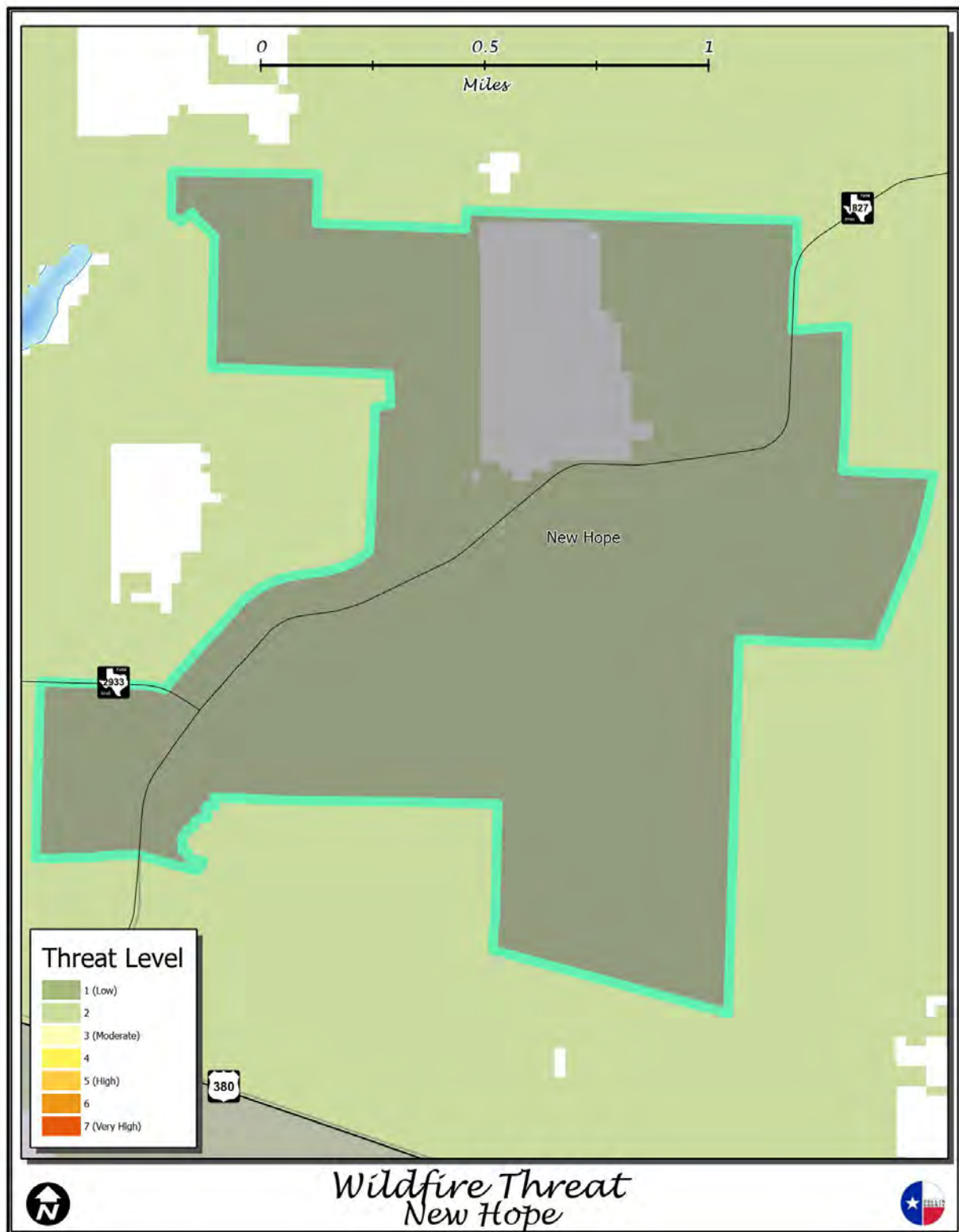


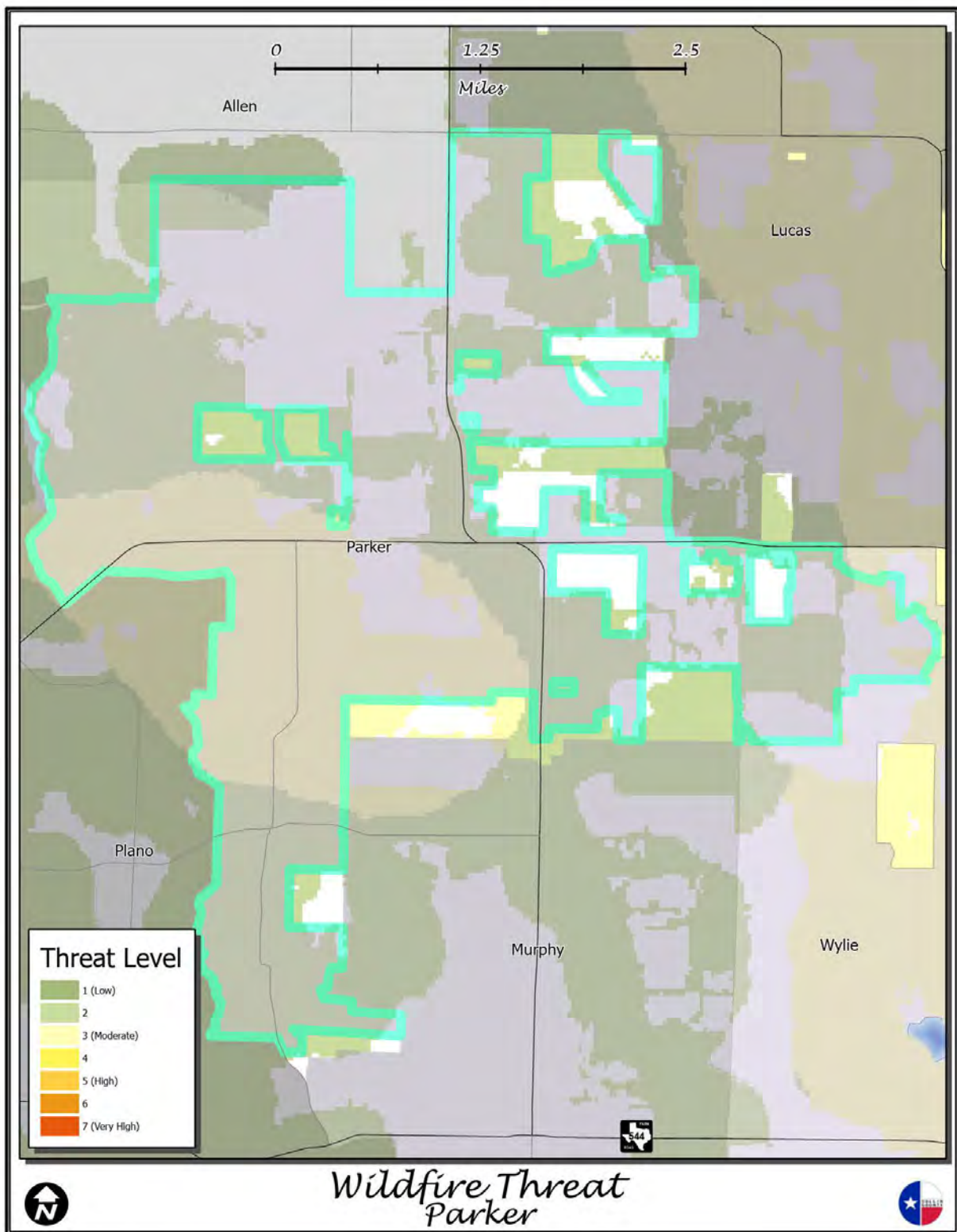


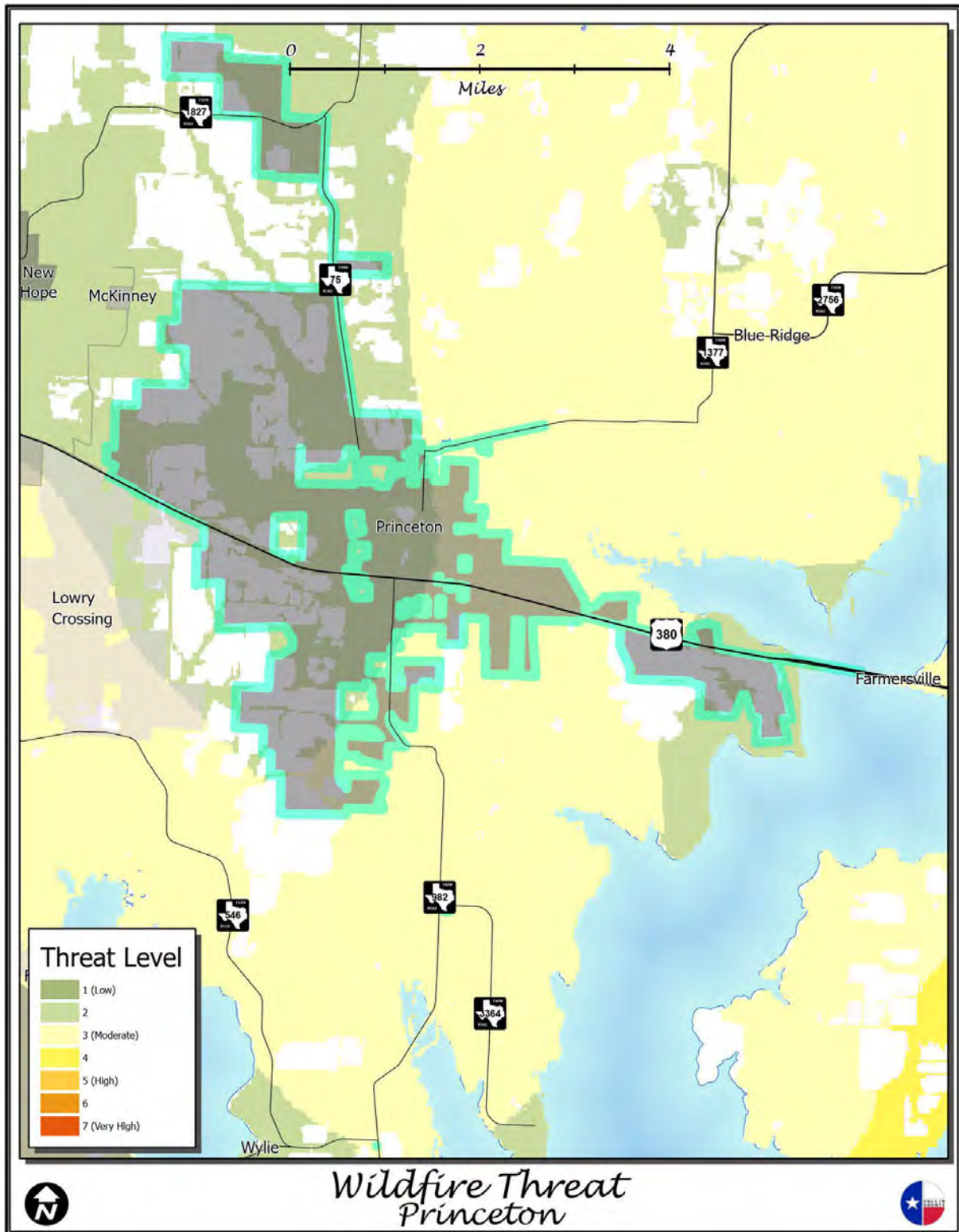


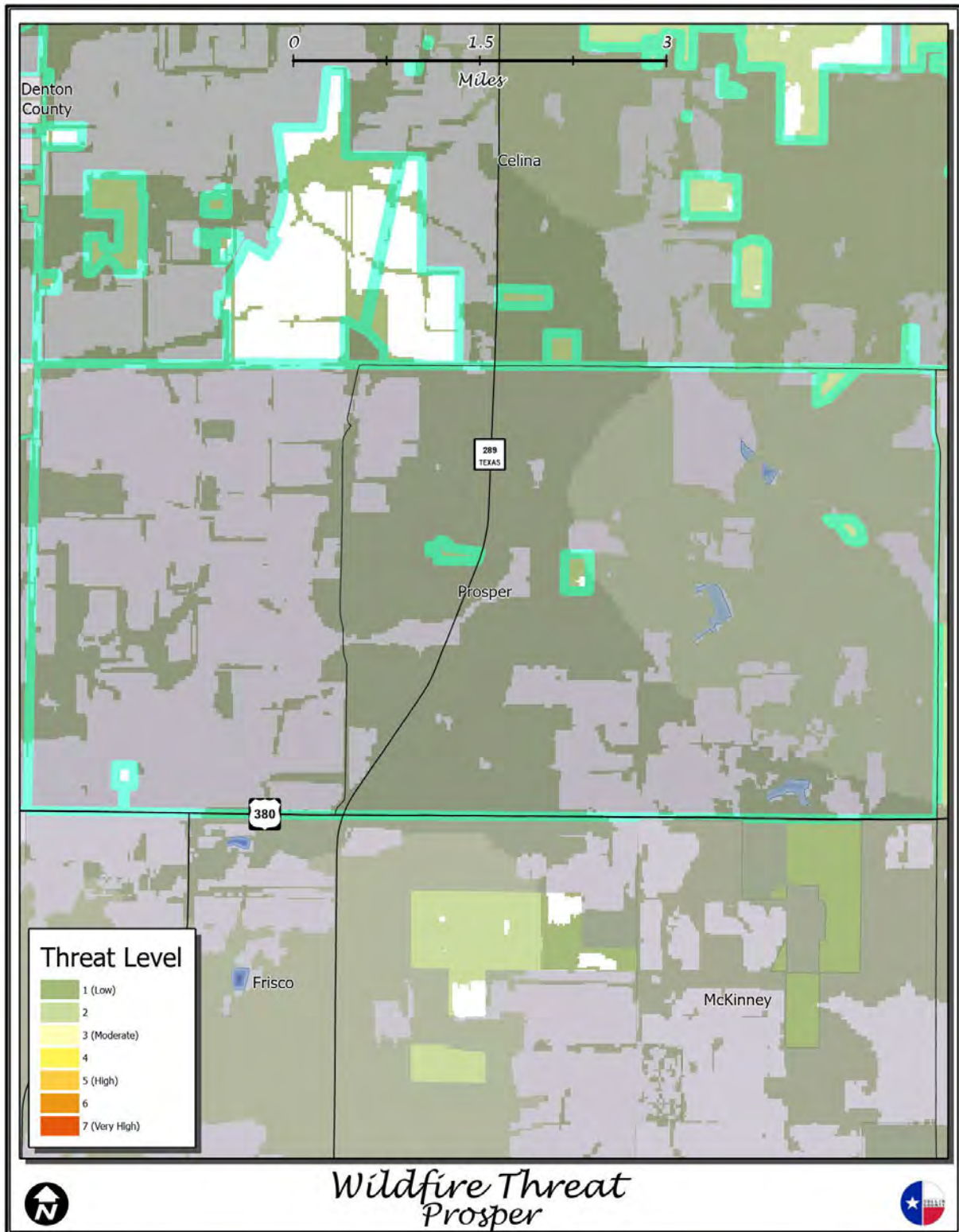


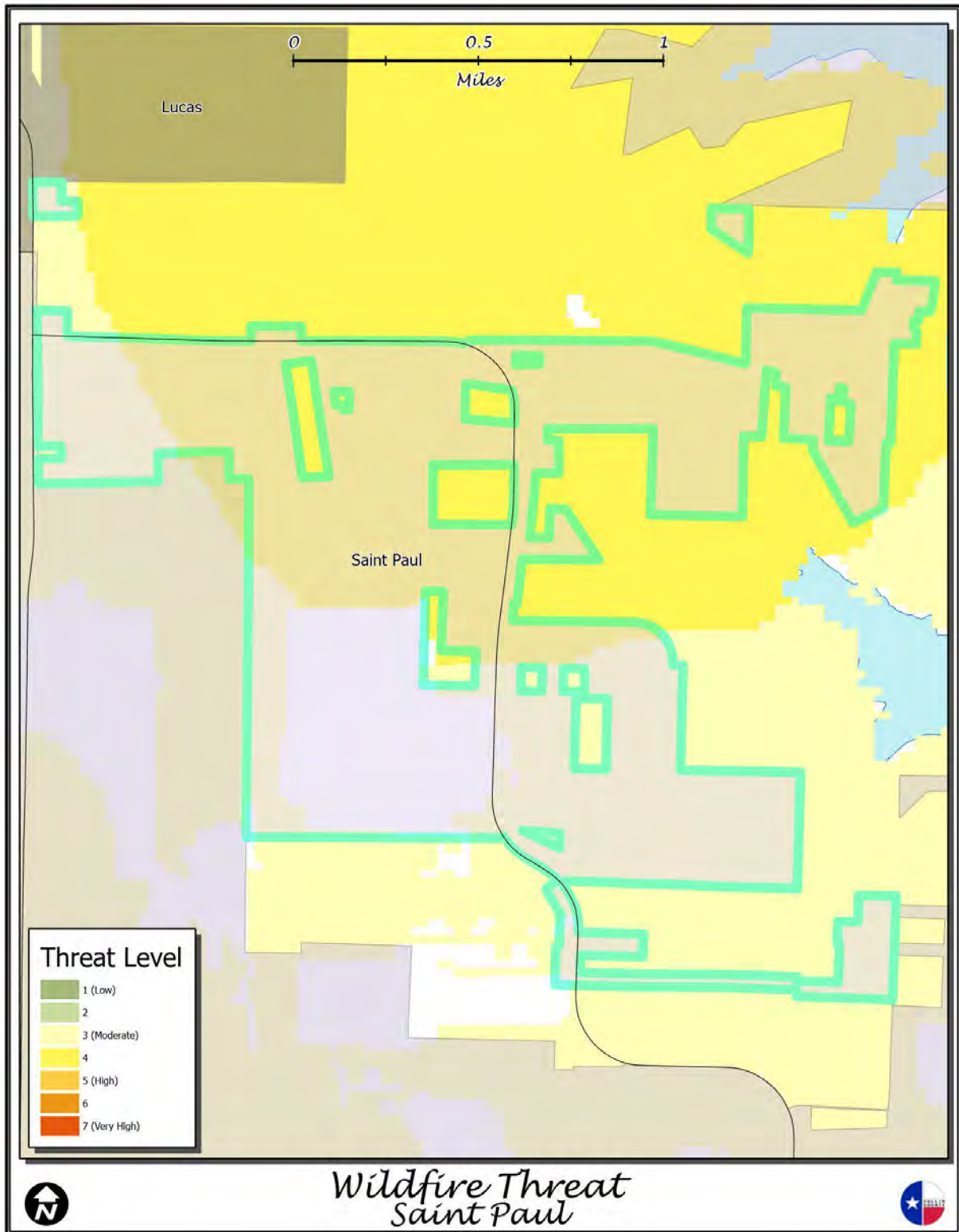


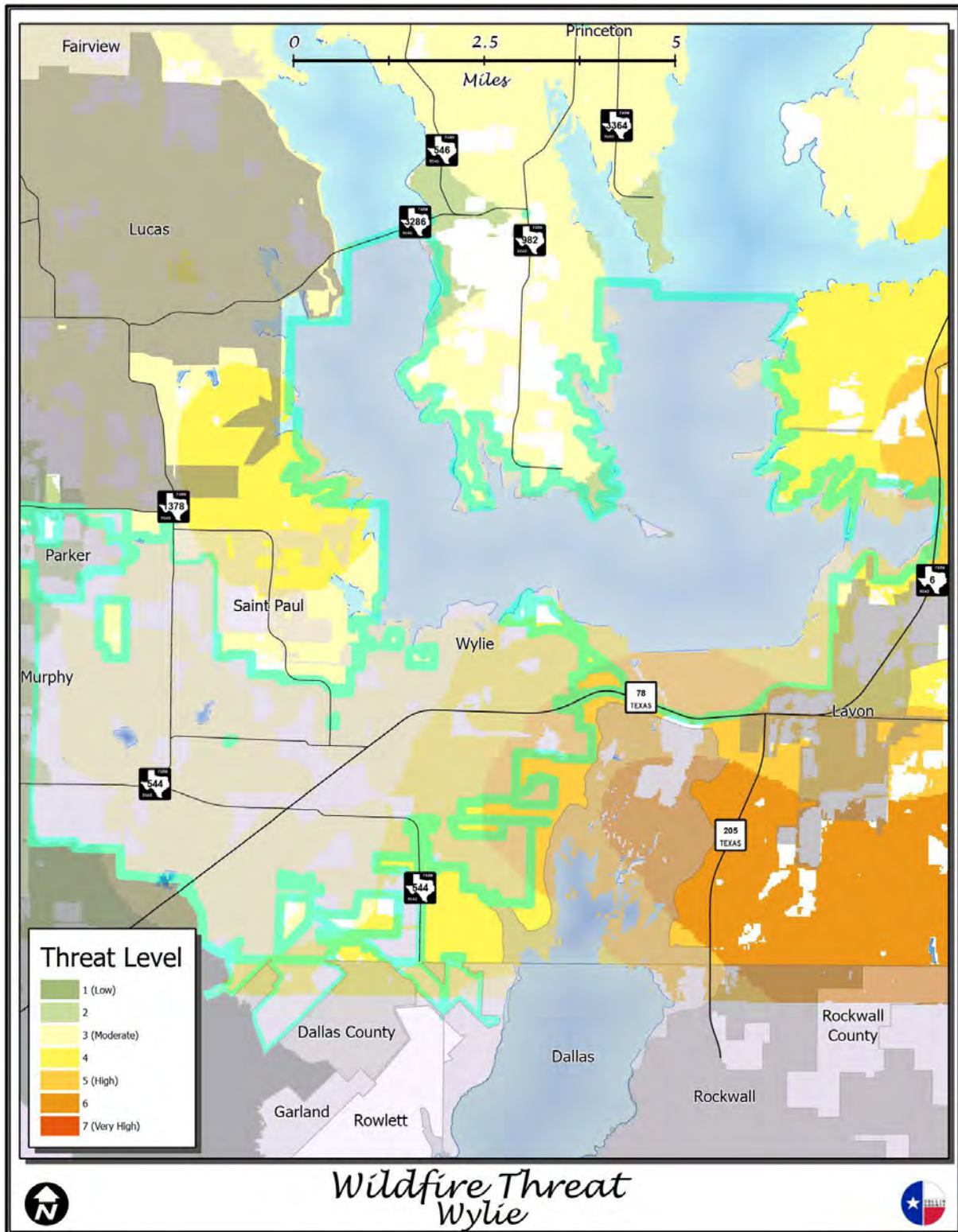




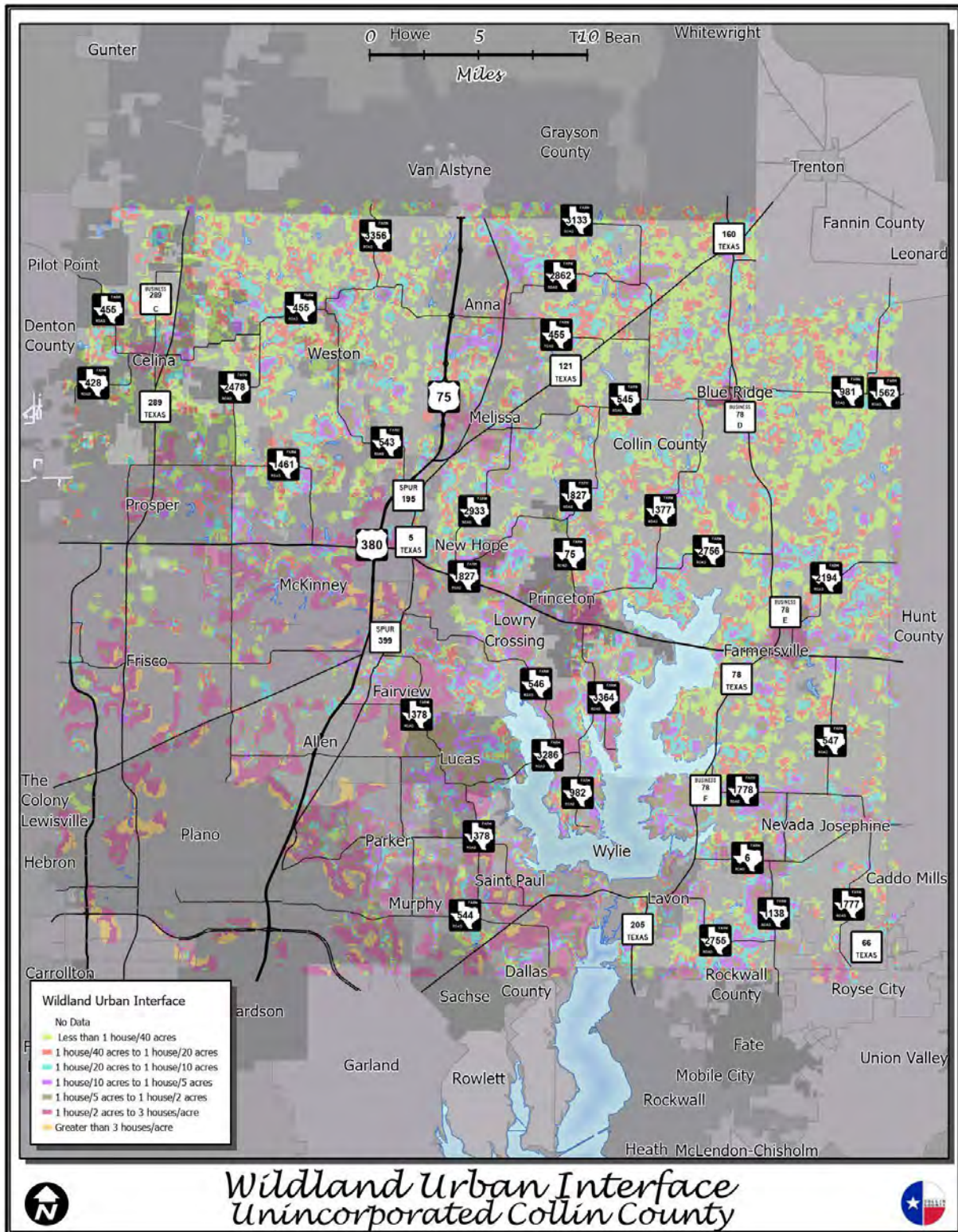


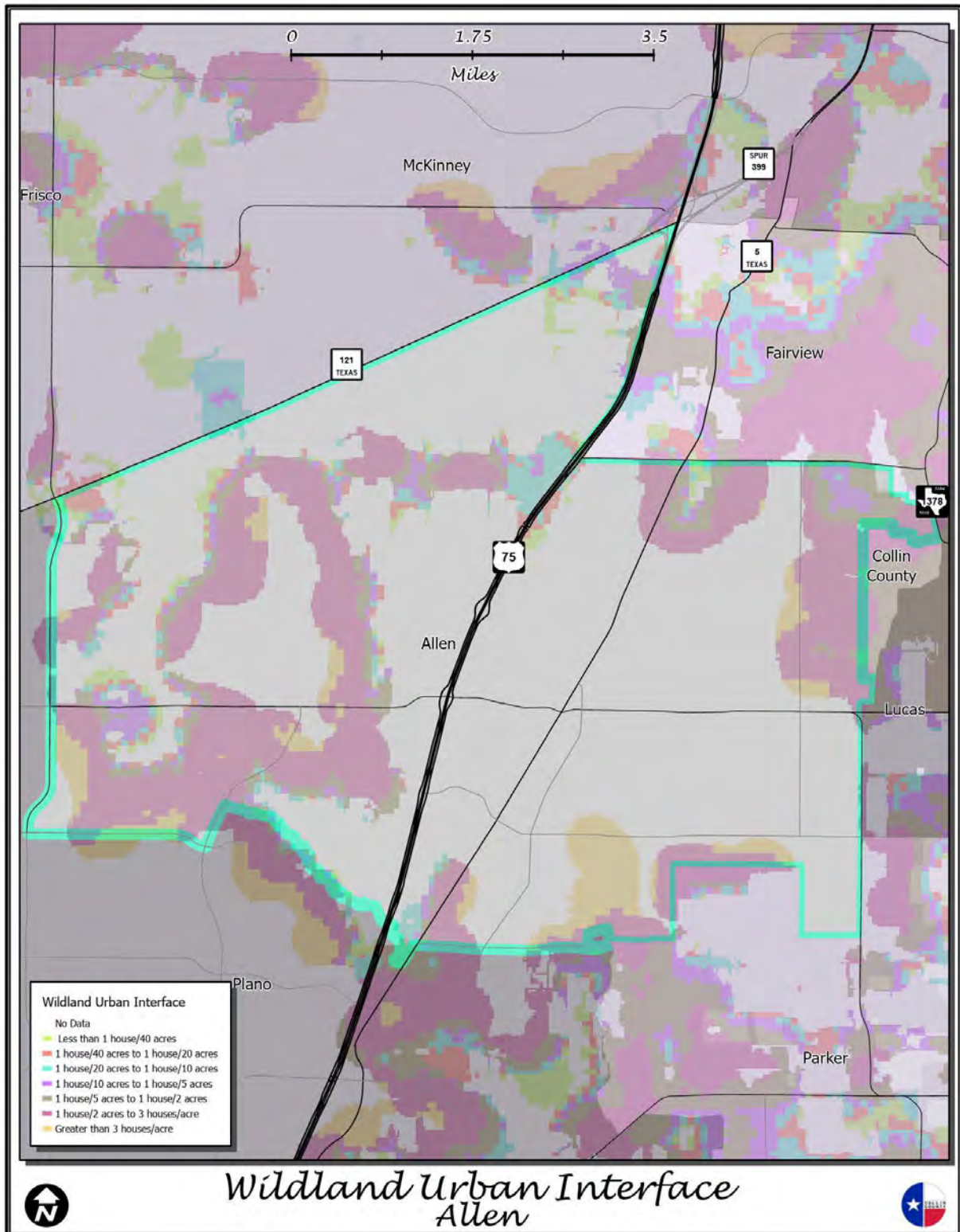


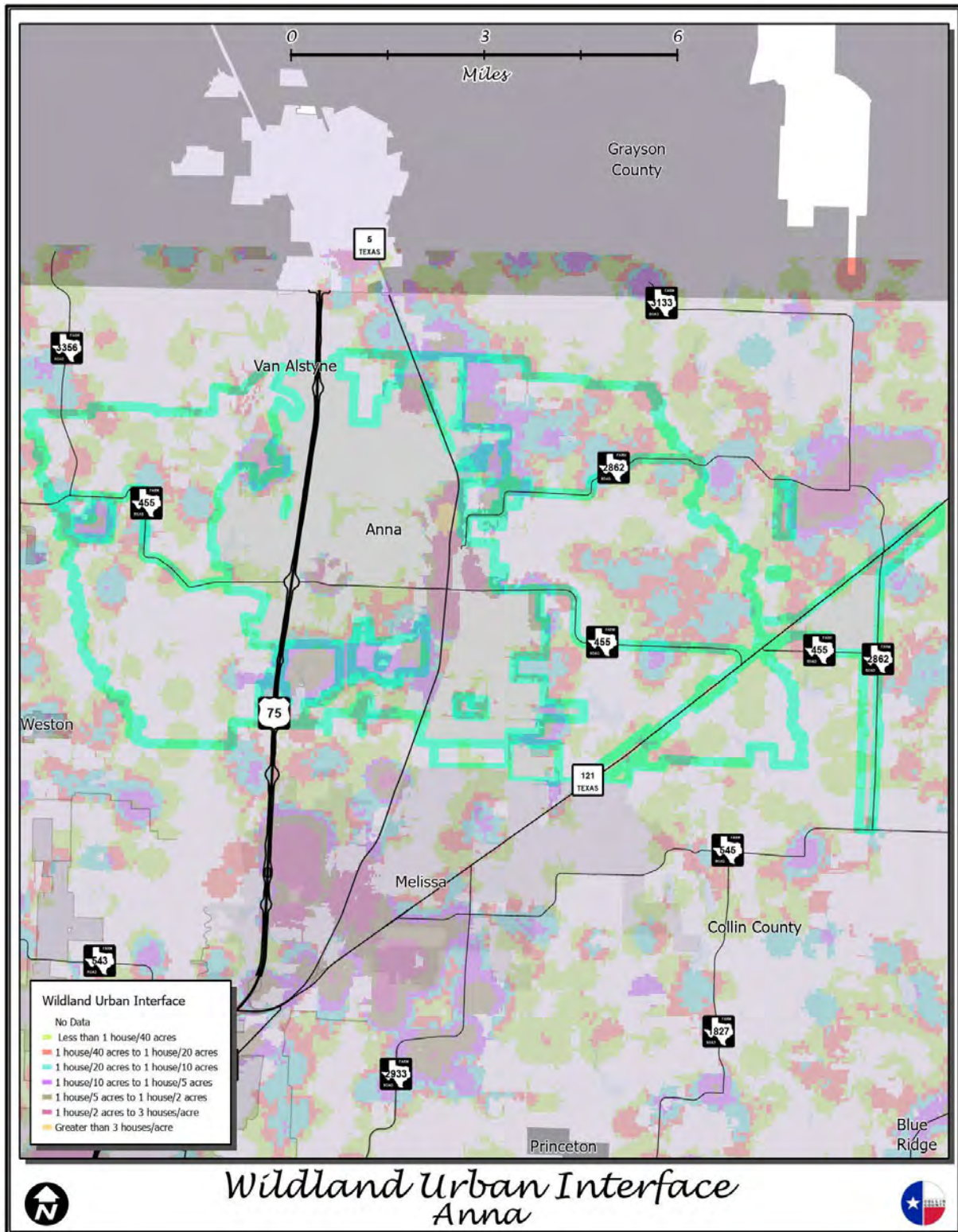


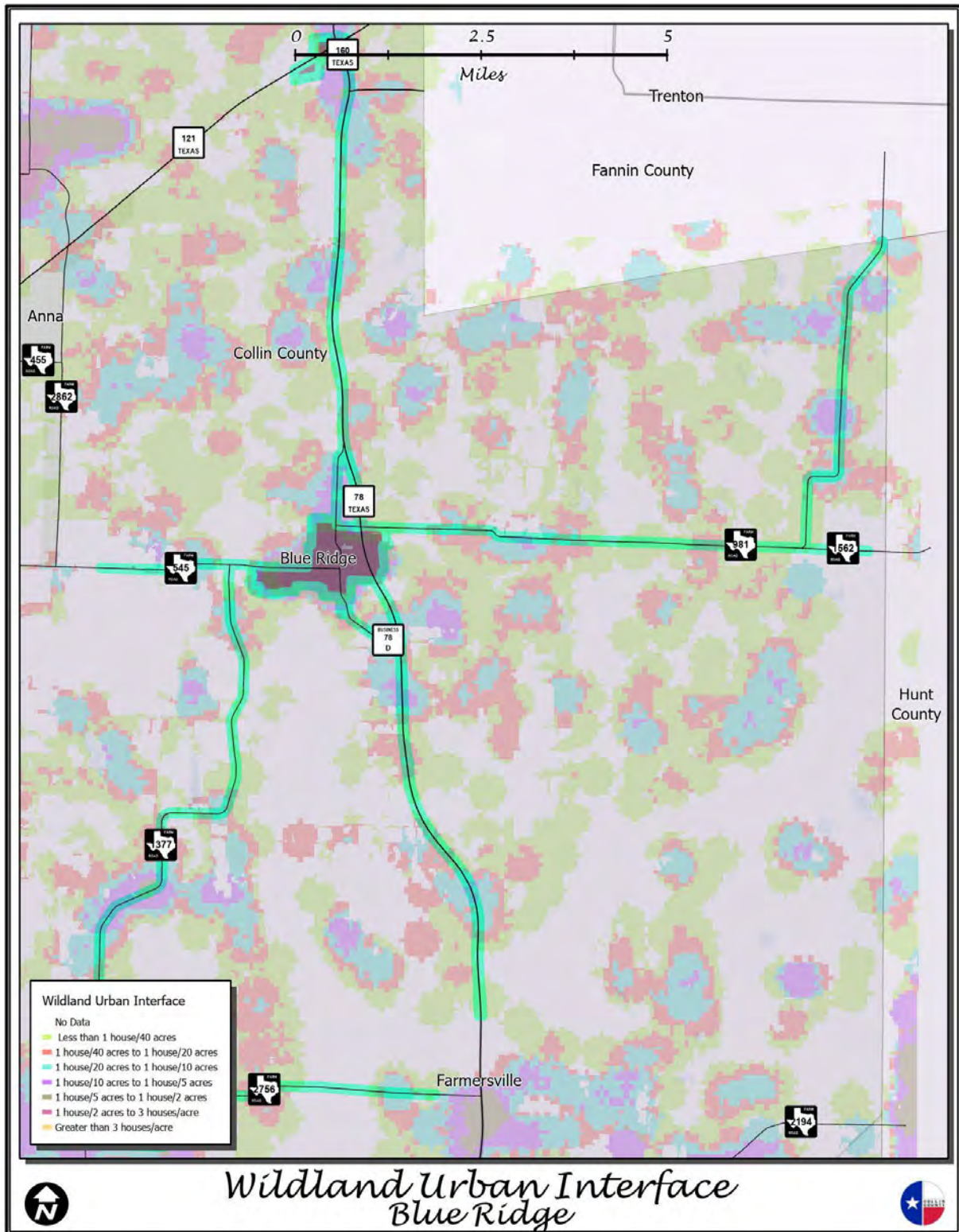


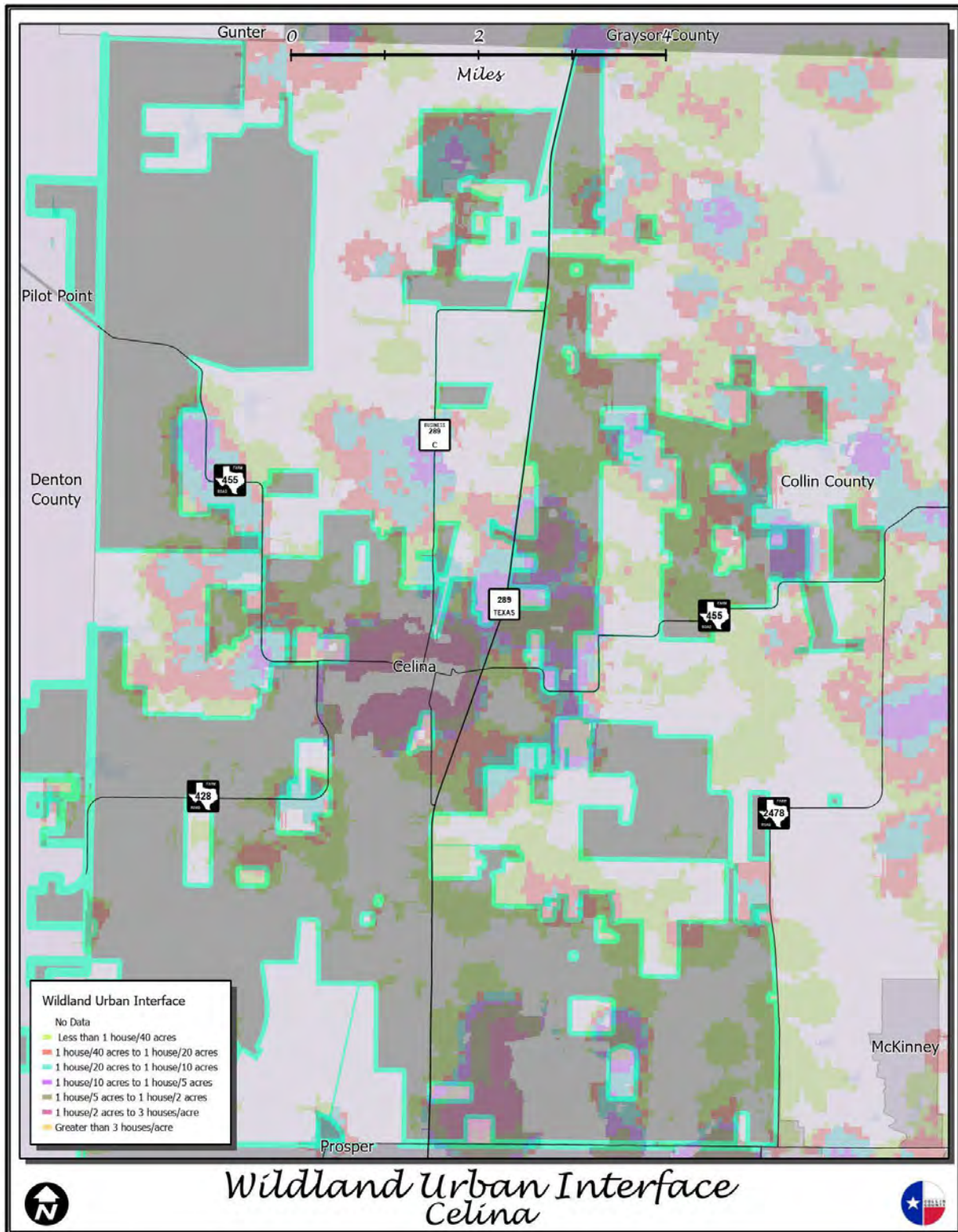
Map Series F – Wildland Urban Interface

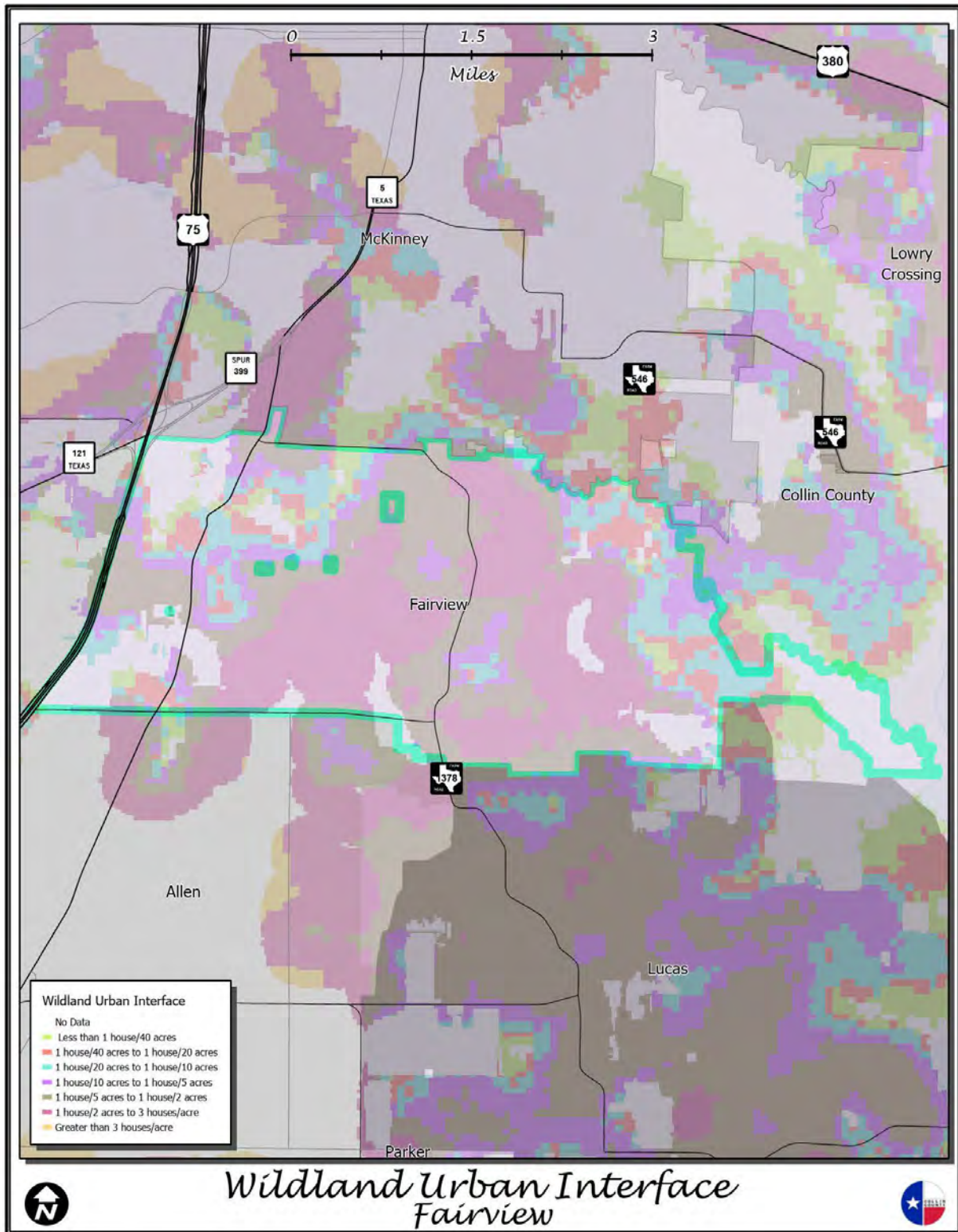


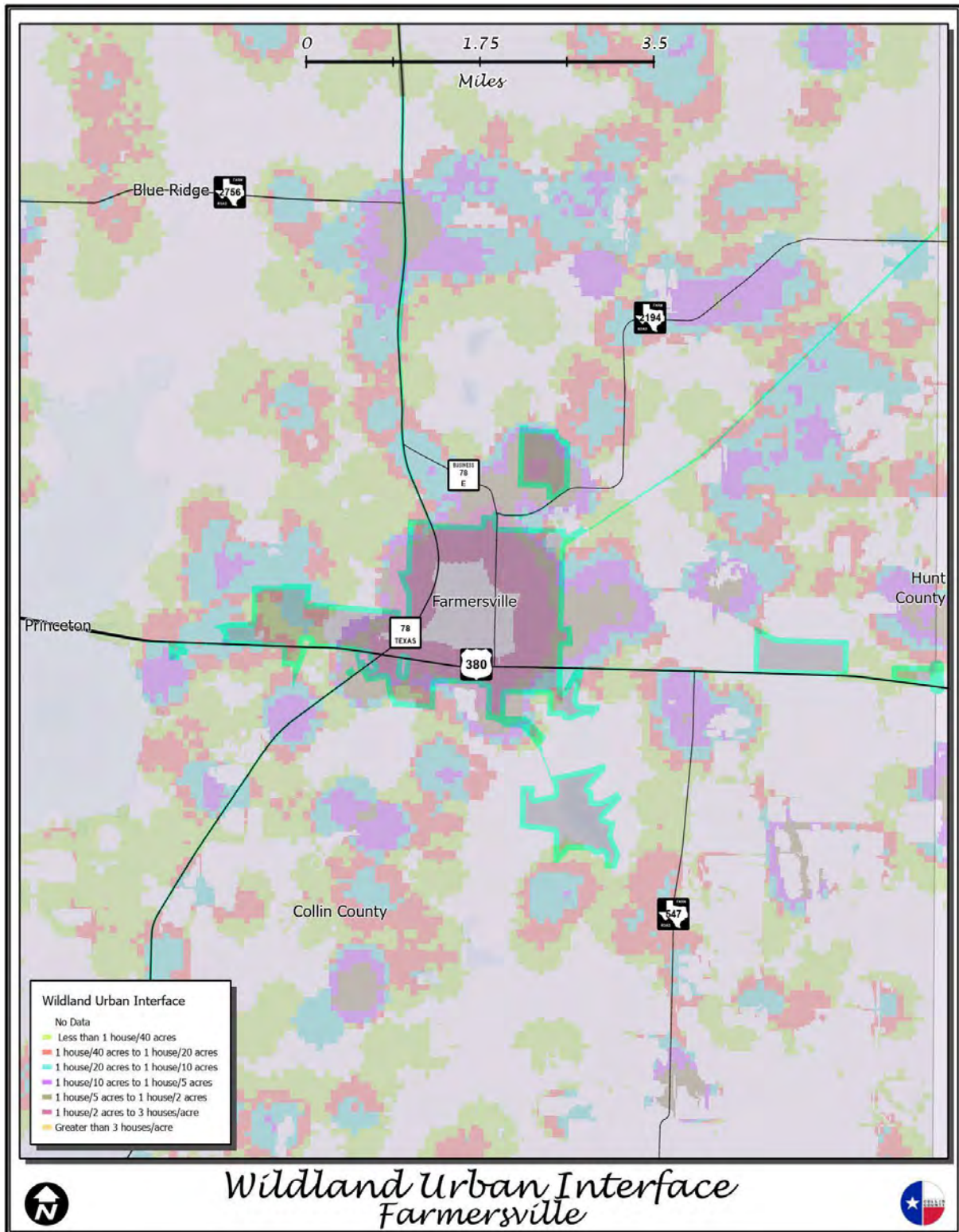


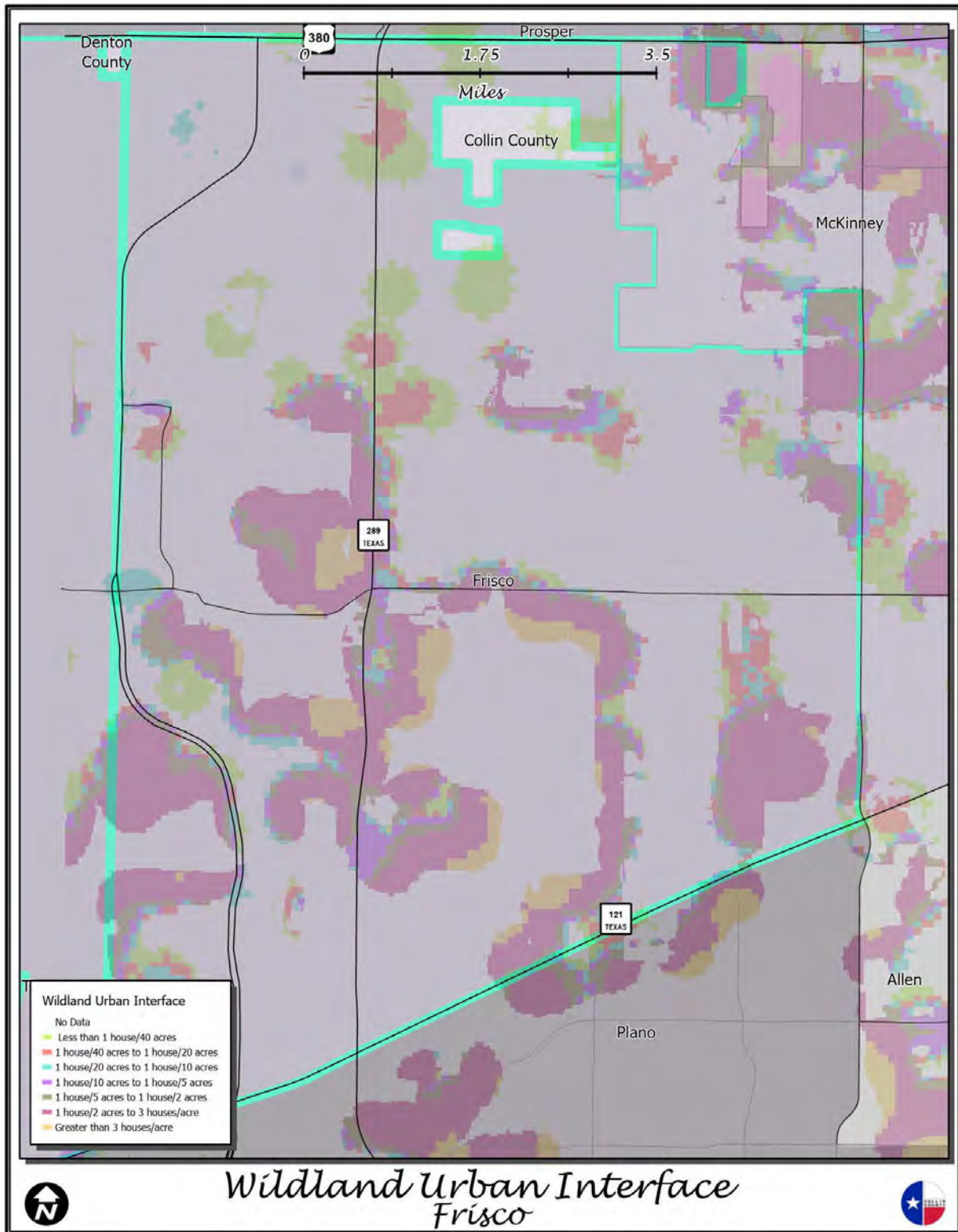


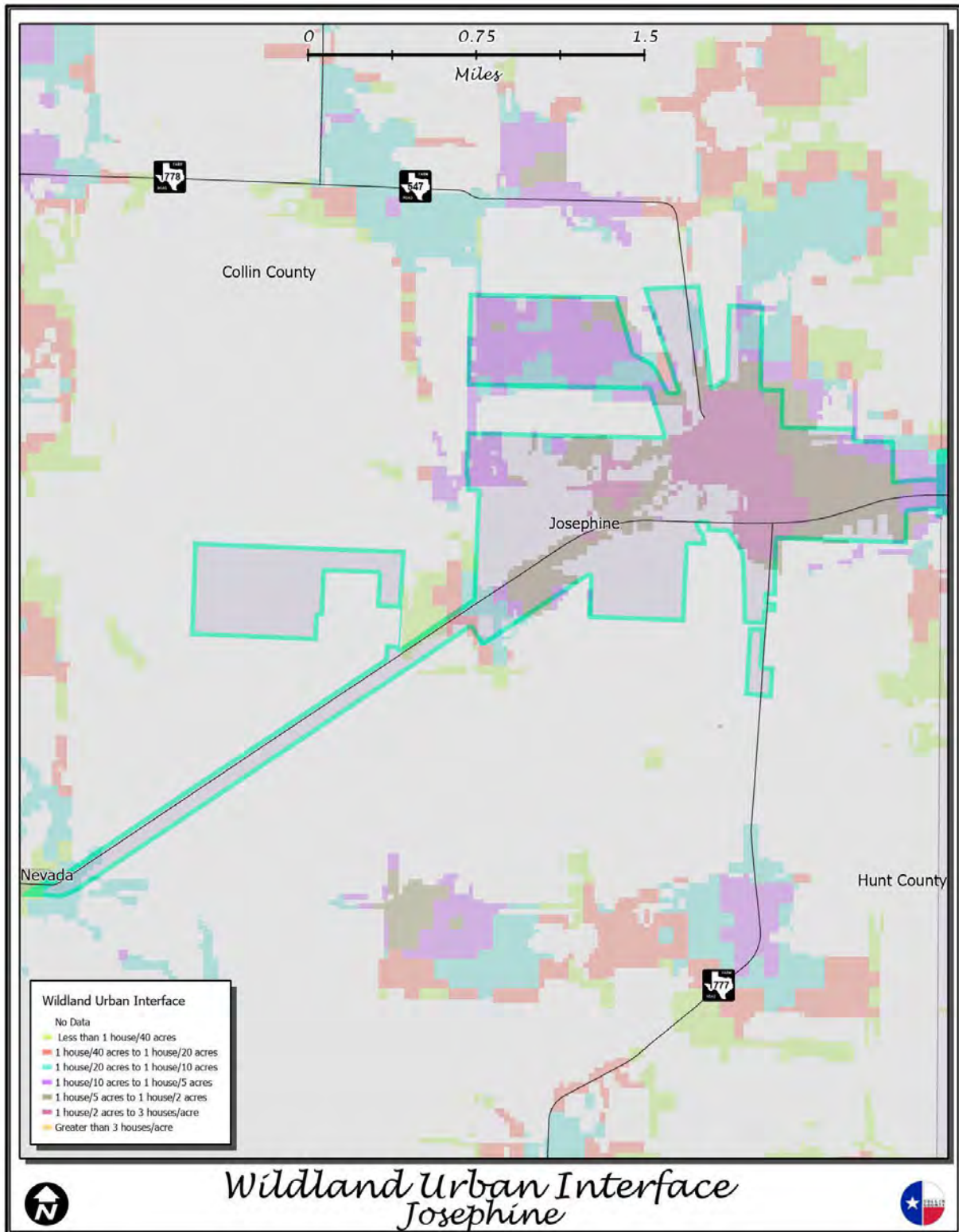


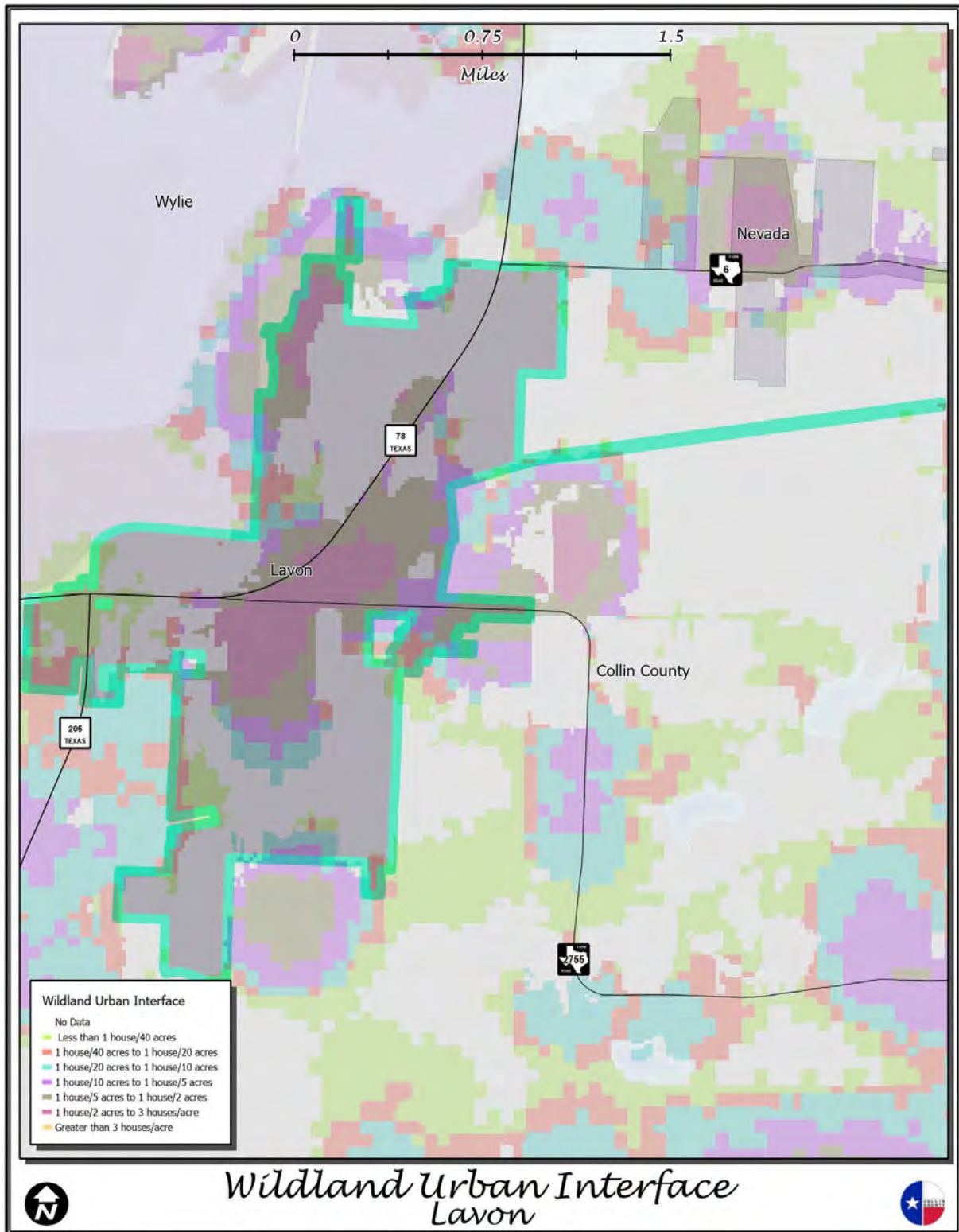


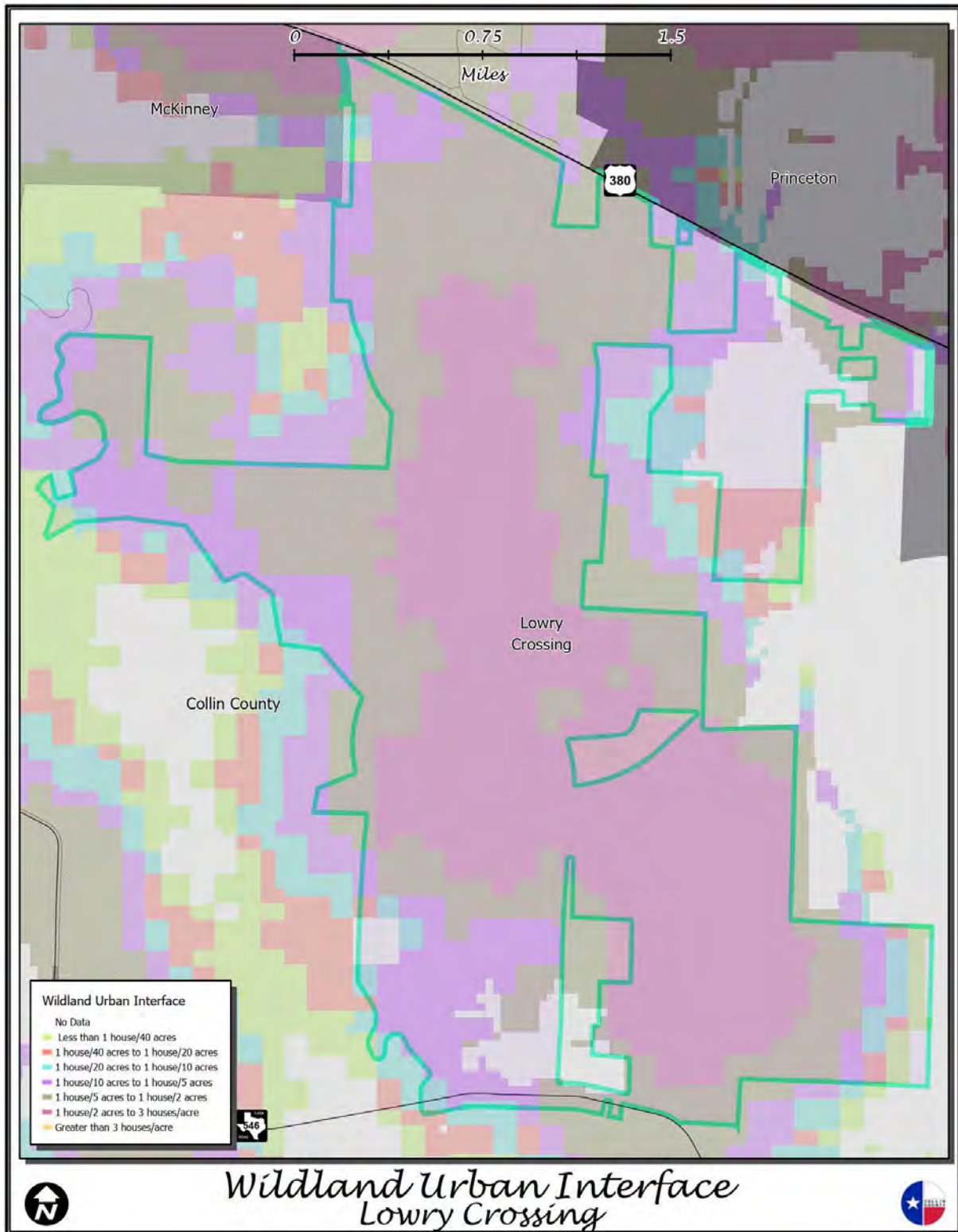


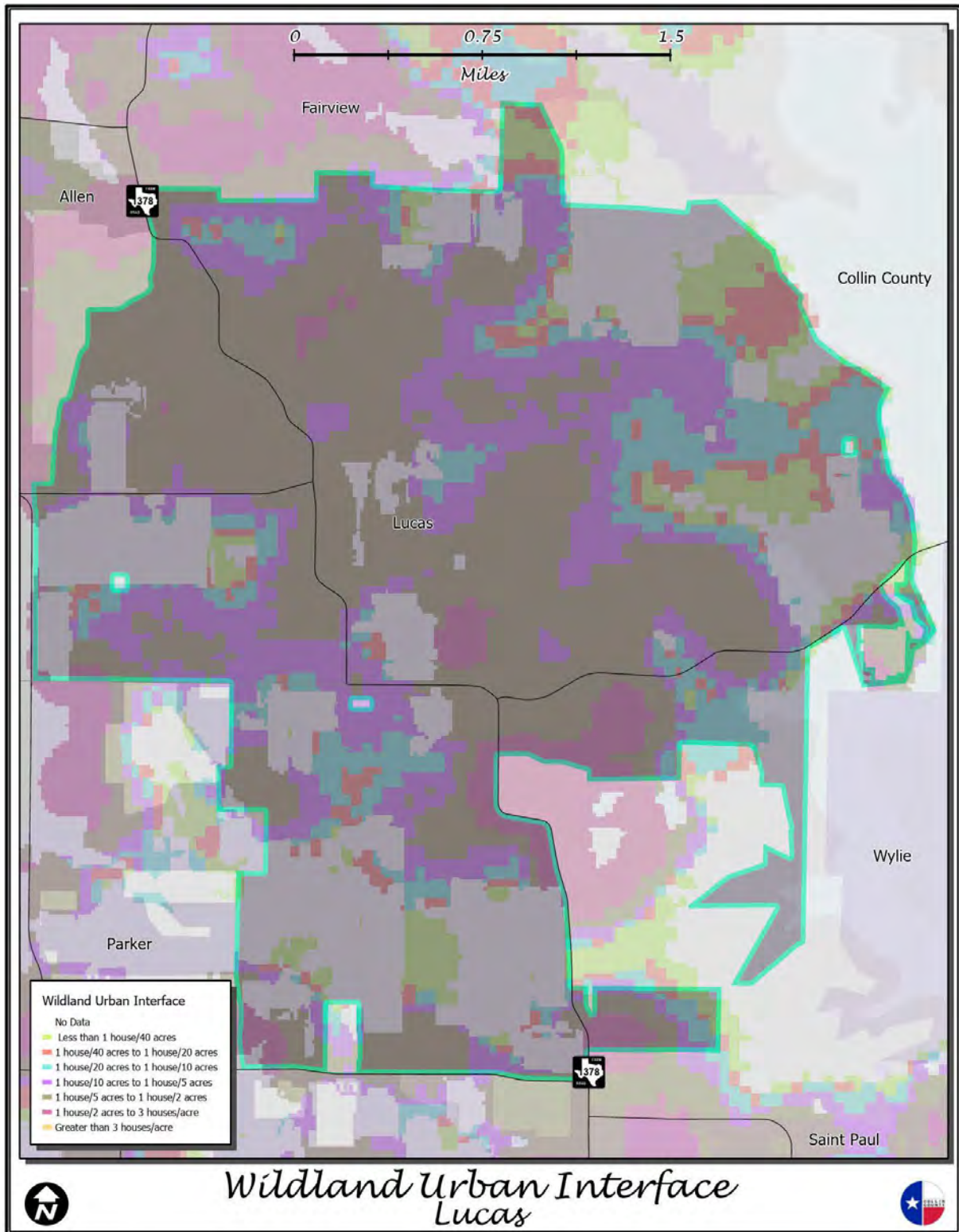


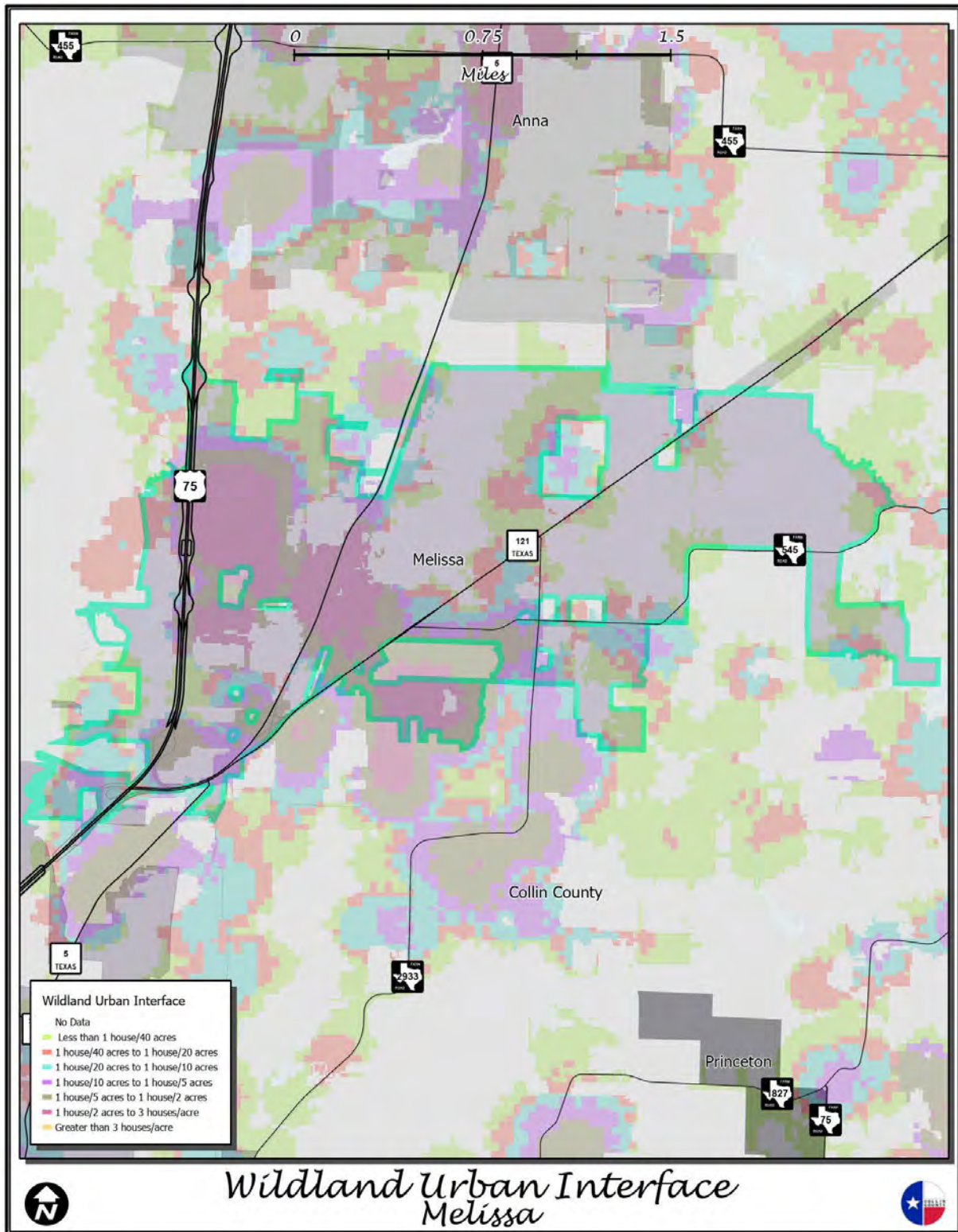


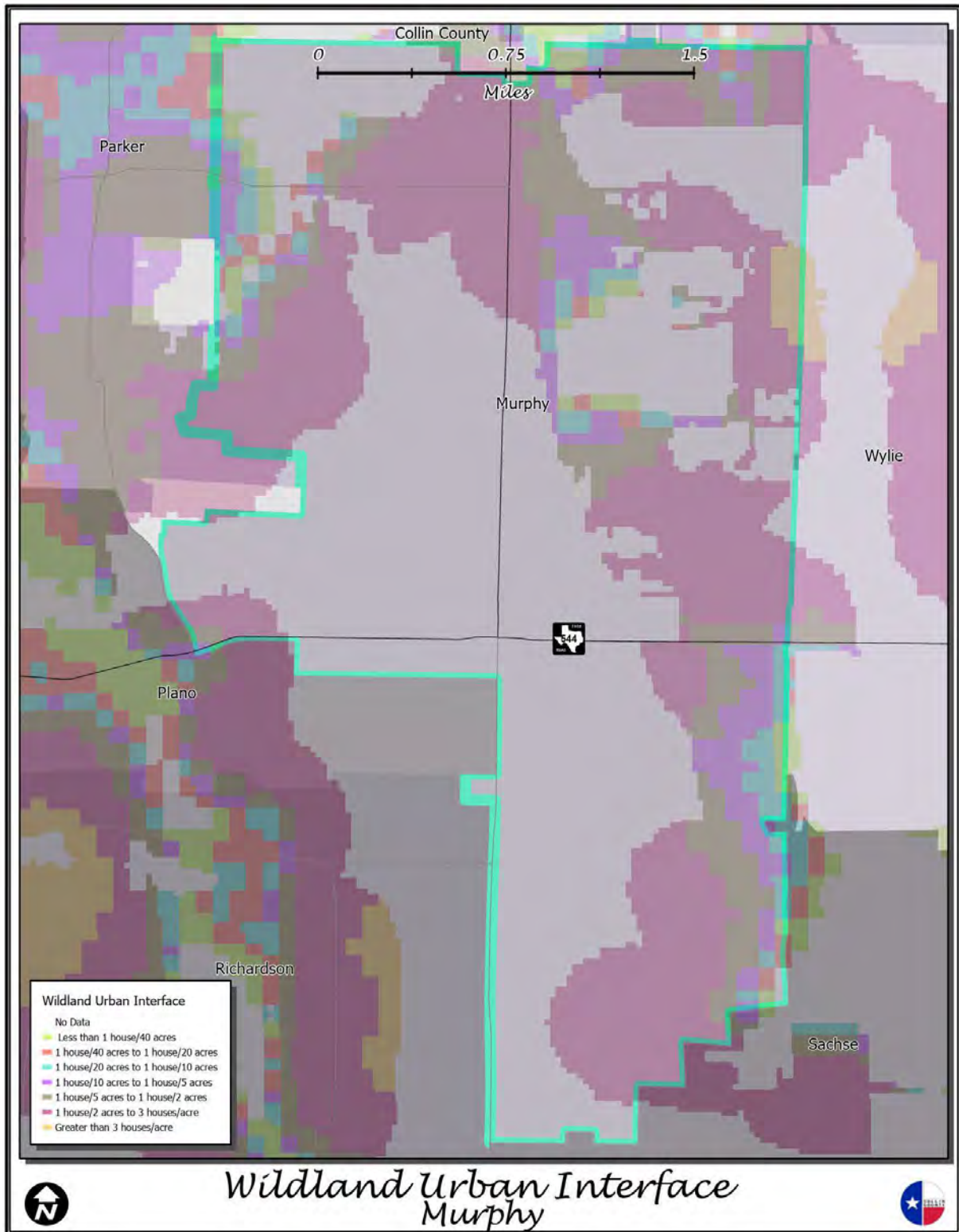


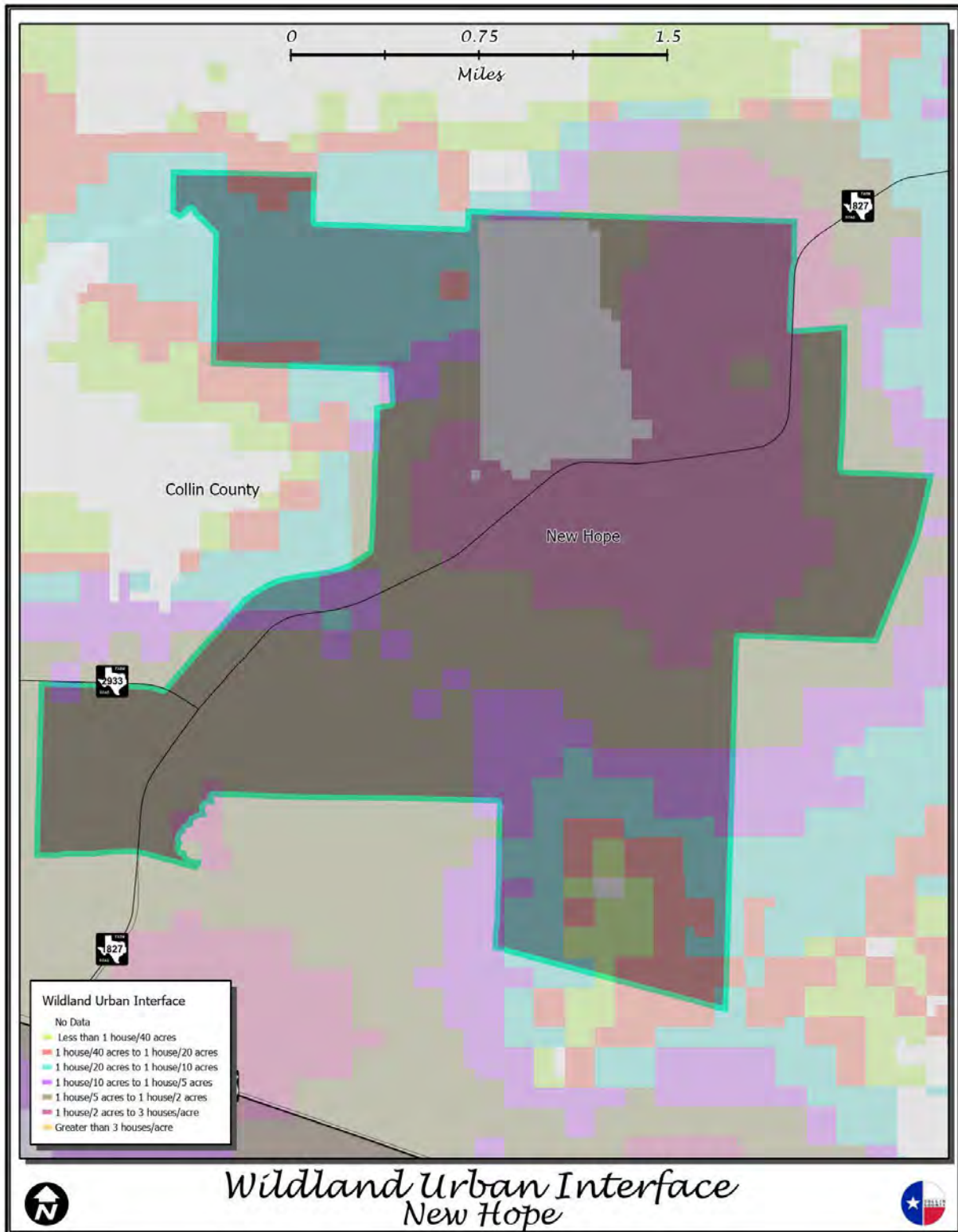


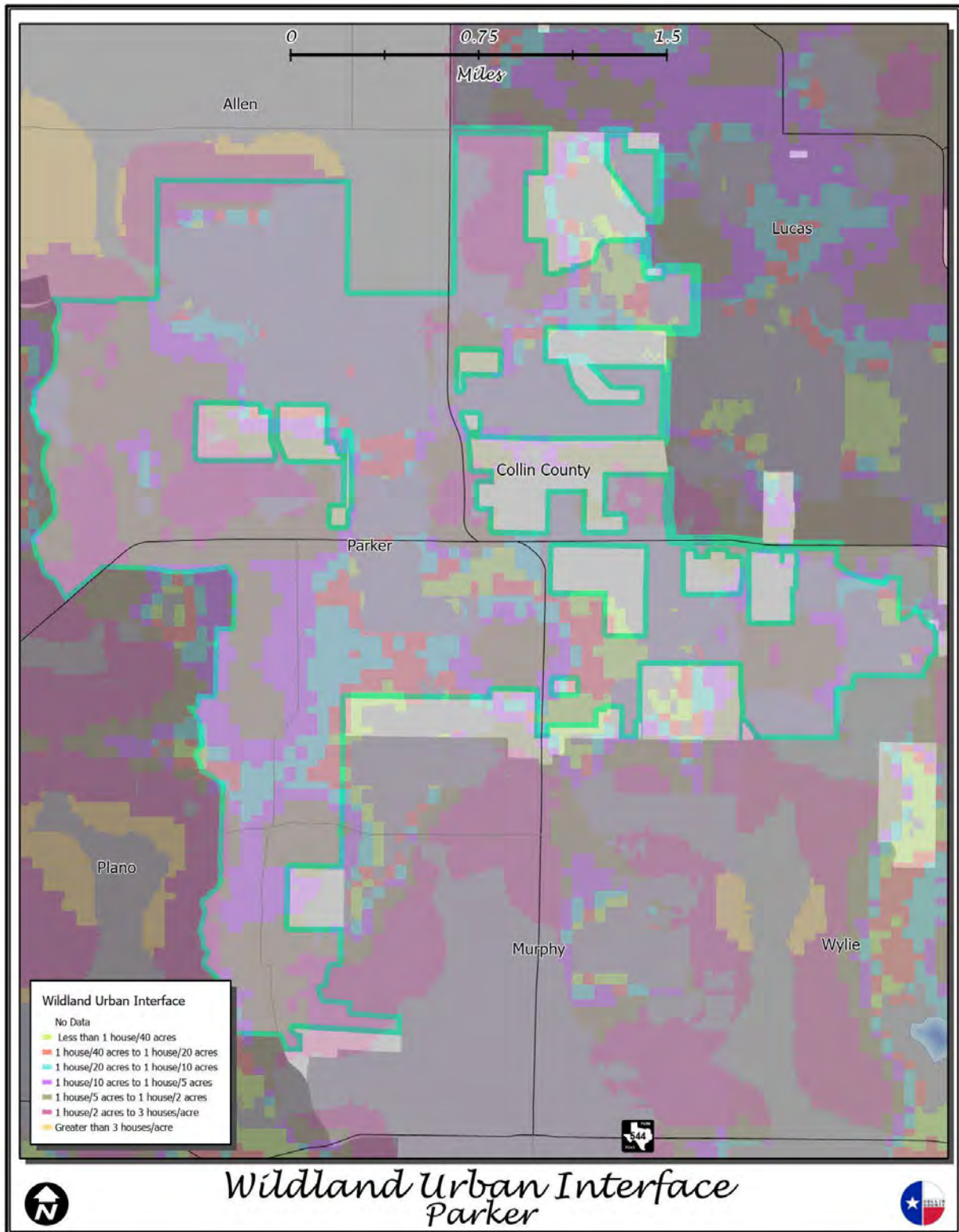


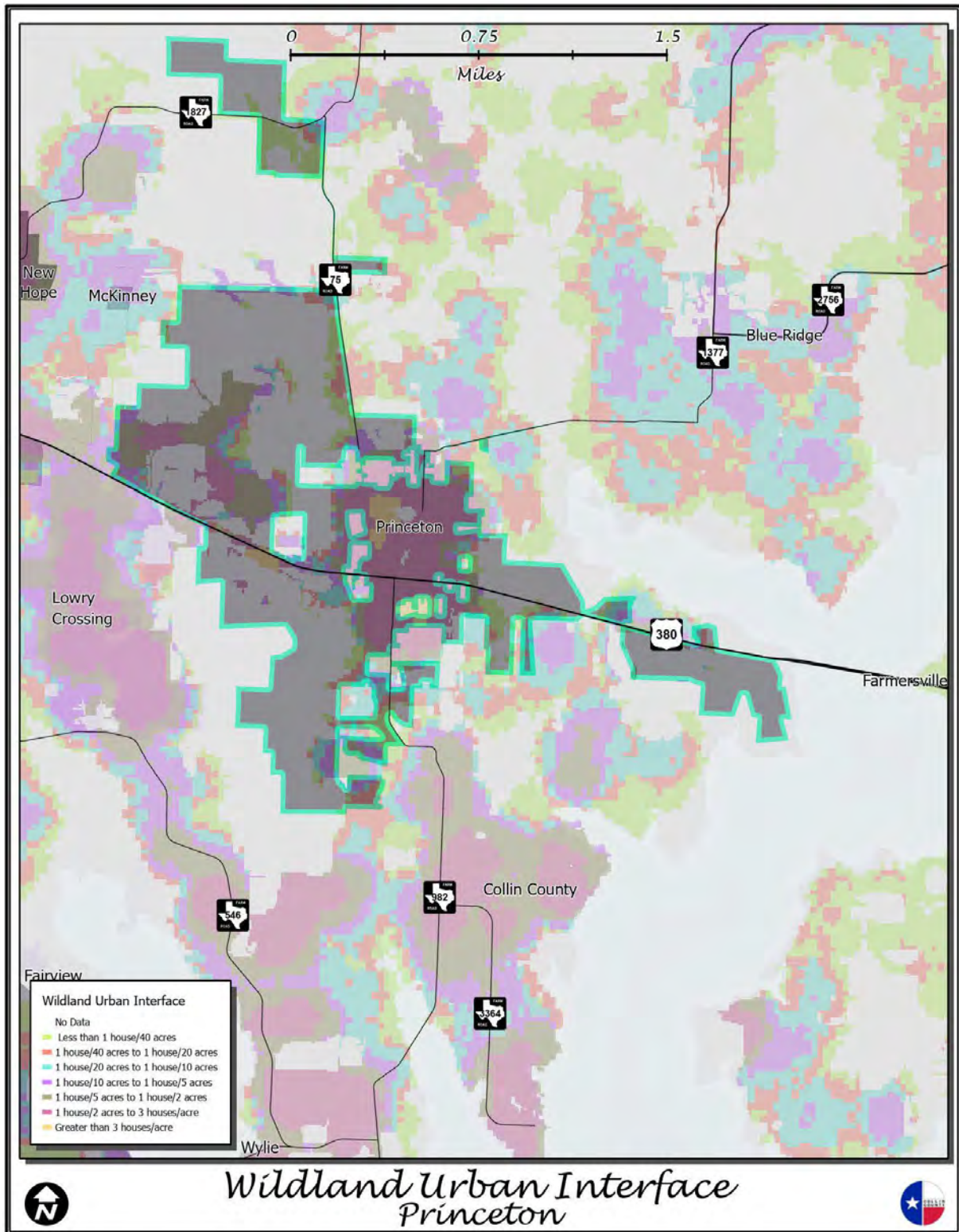


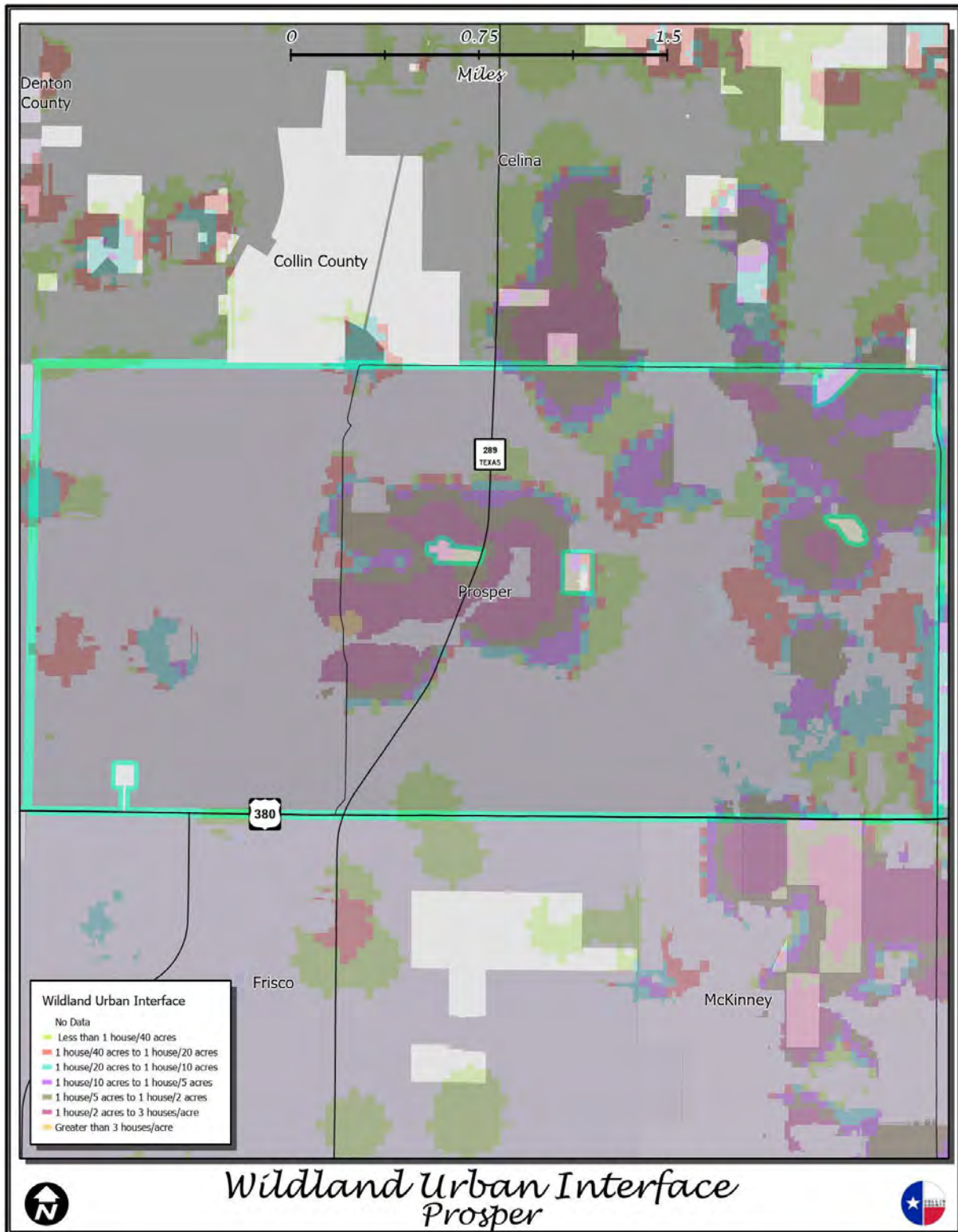


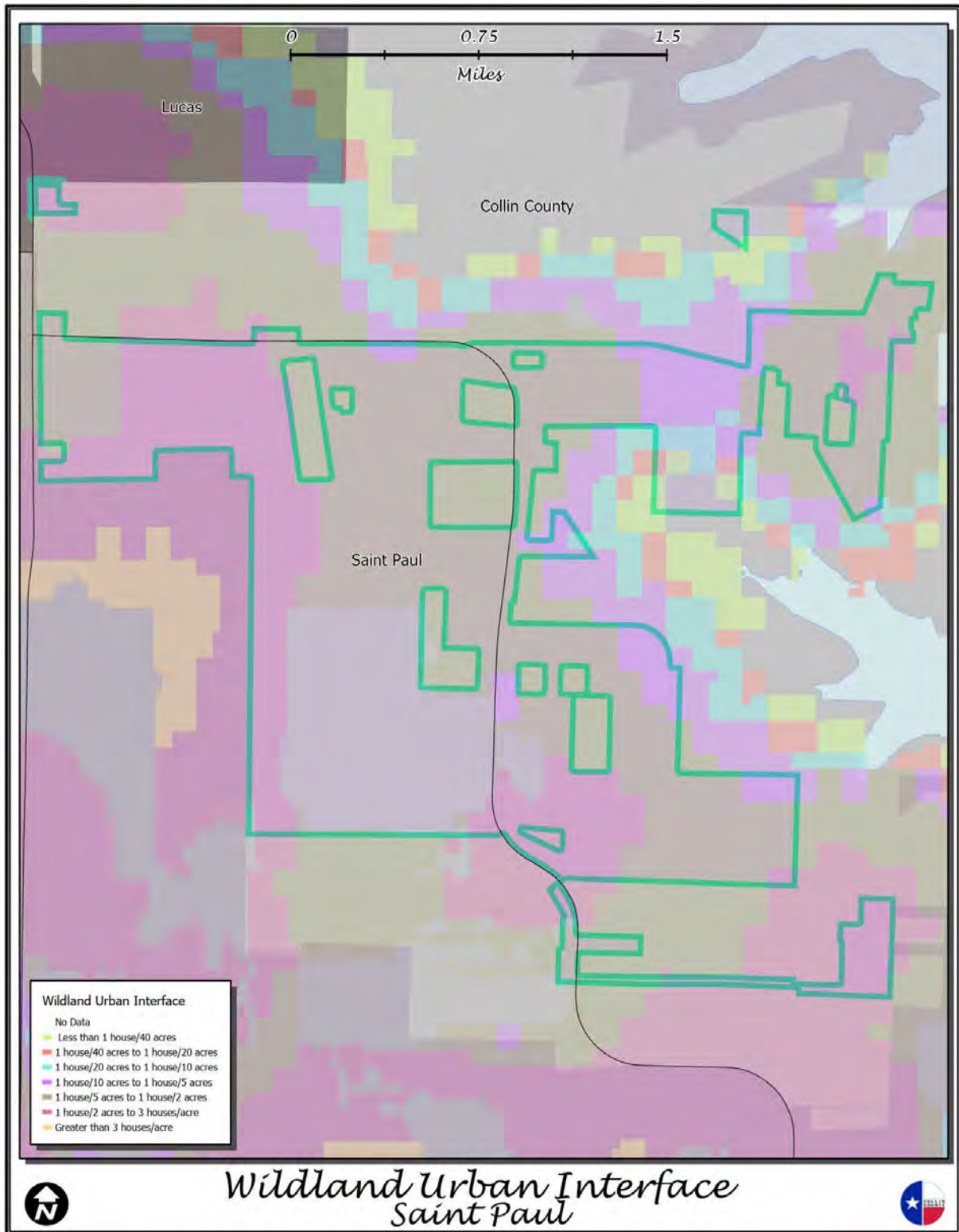


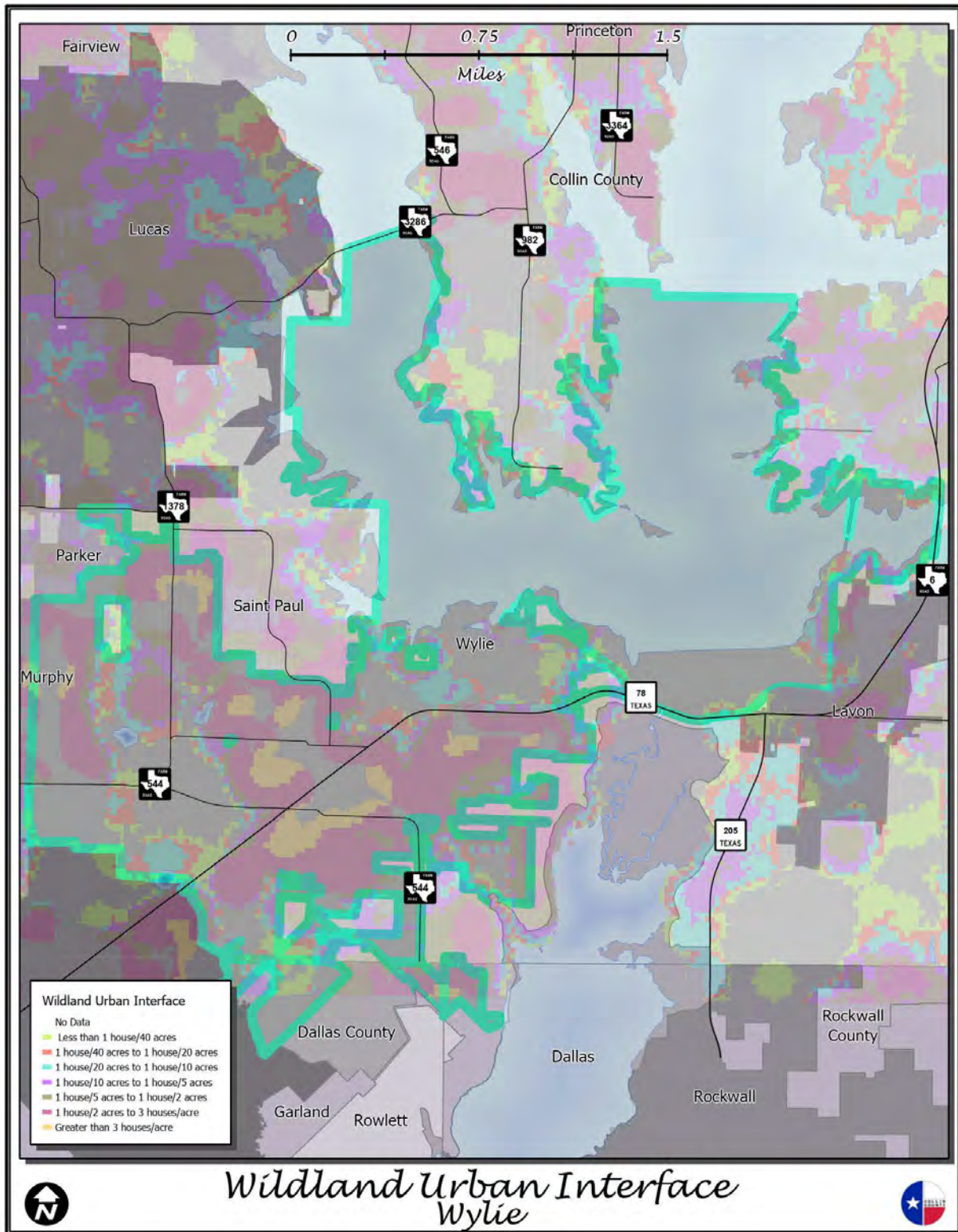












3.3 Extent

Natural Hazards are judged on specific extent scales. The following are the known extent scales for the natural hazards as addressed in the Collin County Hazard Mitigation Action Plan.

Drought

Drought Severity Classification

Category	Description	Possible Impacts	Ranges				
			Palmer Drought Index	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Short and Long-term Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9	21-30	21-30	-0.5 to -0.7	21-30
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested	-2.0 to -2.9	11-20	11-20	-0.8 to -1.2	11-20
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9	6-10	6-10	-1.3 to -1.5	6-10
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9	3-5	3-5	-1.6 to -1.9	3-5
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0-2	0-2	-2.0 or less	0-2

Short-term drought indicator blends focus on 1-3 month precipitation. Long-term blends focus on 6-60 months. Additional indices used, mainly during the growing season, include the USDA/NASS Topsoil Moisture, Keetch-Byram Drought Index (KBDI), and NOAA/NESDIS satellite Vegetation Health Indices. Indices used primarily during the snow season and in the West include snow water content, river basin precipitation, and the Surface Water Supply Index (SWSI). Other indicators include groundwater levels, reservoir storage, and pasture/range conditions.

PDSI Classifications for Dry and Wet Periods

4.00 or more	Extremely wet
3.00 to 3.99	Very wet
2.00 to 2.99	Moderately wet
1.00 to 1.99	Slightly wet
0.50 to 0.99	Incipient wet spell
0.49 to -0.49	Near normal
-0.50 to -0.99	Incipient dry spell
-1.00 to -1.99	Mild drought
-2.00 to -2.99	Moderate drought
-3.00 to -3.99	Severe drought
-4.00 or less	Extreme drought

Source: <http://drought.unl.edu/whatis/indices.htm>

Drought conditions do occur in this community. The PDSI Classification allows community planners to anticipate the effects of drought and plan preparedness and mitigation activities for future events as they will likely occur. The last event of widespread drought in Collin County was in August 2018.

Collin County and participating jurisdictions have experienced 57 drought events, ranging from Abnormally Dry (D0) to Exceptional Drought (D4), during the time period analyzed for this plan (01/01/1996-09/22/2020). It can be expected that future drought events will be of similar magnitude.

Earthquake: Mercalli & Richter Scales Comparison

Mercalli Scale	Richter Scale	
I.	0 – 1.9	Not felt. Marginal and long period effects of large earthquakes.
II.	2.0 -2.9	Felt by persons at rest, on upper floors, or favorably placed.
III.	3.0 – 3.9	Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.
IV.	4.0 - 4.3	Hanging objects swing. Vibration like passing of heavy trucks. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink the upper range of IV, wooden walls and frame creak.
V.	4.4 - 4.8	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Pendulum clocks stop, start.
VI.	4.9 - 5.4	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Books, etc., off shelves. Pictures off walls. Furniture moved. Weak plaster and masonry D cracked. Small bells ring. Trees, bushes shaken.
VII.	5.5 - 6.1	Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices. Some cracks in masonry C. Waves on ponds. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.
VIII.	6.2 - 6.5	Steering of motor cars affected. Damage to masonry C; partial collapse. Some damage to masonry B. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundations. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.
IX.	6.6 - 6.9	General panic. Masonry D destroyed; masonry C heavily damaged, sometimes with complete collapse; masonry B seriously damaged. (General damage to foundations.) Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. In alluvial areas sand and mud ejected, earthquake fountains, sand craters.
X.	7.0 - 7.3	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.
XI.	7.4 - 8.1	Rails bent greatly. Underground pipelines completely out of service.
XII.	> 8.1	Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.

Masonry A: Good workmanship, mortar, and design; reinforced, especially laterally, and bound together by using steel, concrete, etc.; designed to resist lateral forces.

Masonry B: Good workmanship and mortar; reinforced, but not designed in detail to resist lateral forces.

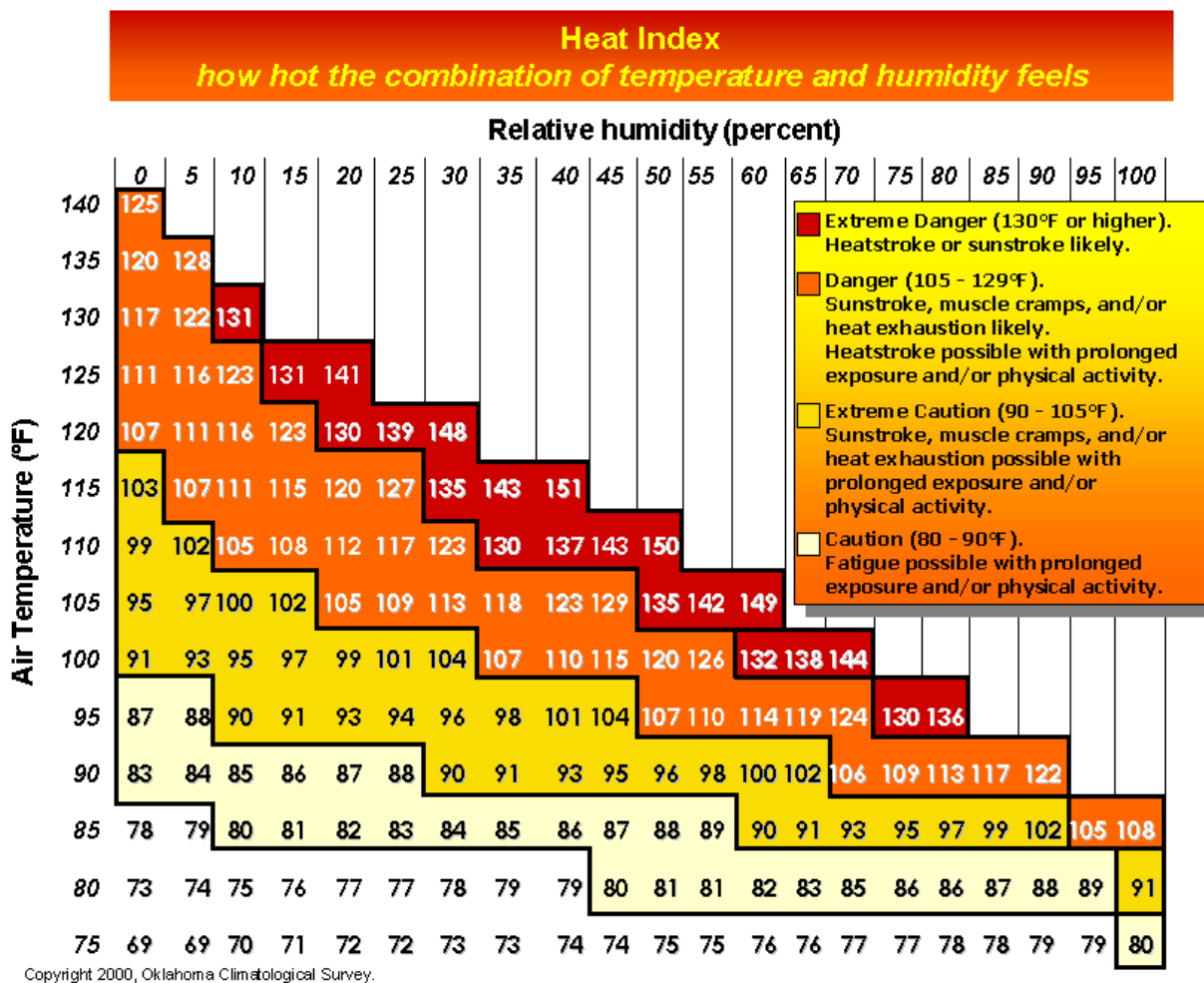
Masonry C: Ordinary workmanship and mortar; no extreme weaknesses like failing to tie in at corners, but neither reinforced nor designed against horizontal forces.

Masonry D: Weak materials, such as adobe; poor mortar; low standards of workmanship; weak horizontally.

Source: <http://www.abag.ca.gov/bayarea/eqmaps/doc/mmigif/m10.html>.

The Mercalli and Richter Scales allow planners to assess the impact earthquakes have. There have been no recorded earthquakes in Collin County. Collin County and participating jurisdictions did not experience any earthquakes during the time period analyzed for this plan (01/01/1996 – 09/22/2020). There is the potential for future earthquake events. At this time, due to Collin County not experiencing any earthquakes in recent history, there is no way to quantify the impacts on Collin County.

Extreme Heat / Heat Index



Source: <http://www.ima.army.mil/southwest/sites/divisions/Safety/Heat%20Index.gif>

The Heat Index chart displays the relative danger in regards to air temperature and relative humidity. Extreme heat is a hazard this community faces on an annual basis during the summer season. A combination of high temperatures and high humidity prompt heat advisories. This chart allows communities to assess the citizen's danger in regards to heat index. According to the National Centers for Environmental Information, there have been 8 extreme heat events recorded in Collin County since 1/1/1996.

Collin County and participating jurisdictions experienced 19 excessive heat events during the time period analyzed for this plan (01/01/1996 – 09/22/2020). The whole North Texas region experienced over a month of 100-degree plus temperatures during this time. It can be expected that any future heat or excessive heat incidents will be similar in magnitude.

Expansive Soils



Swelling Clays Map

Source: U.S. Geological Survey; Swelling Clays Map of the Conterminous U.S.

The U.S. Geological Survey map above shows the varying types of expansive soils found in Texas. The type of soil predominate in Collin County is generally comprised of less than 50% of clay that has a high swelling potential.

Flooding

Flood Zones

Zone A	The 100-year or Base Floodplain. There are six types of A zones:	
	A	The base floodplains mapped by approximate methods, i.e., BFEs are not determined. This is often called an unnumbered A zone or an approximate A 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 BFE (old format).
	AE	The base floodplain where base flood elevations are provided. AE zones are now used on new format FIRMs instead of A1-30 zones.
	AO	The base floodplain with sheet flow, ponding, or shallow flooding. Base flood depths (feet above ground) are provided.
	AH	Shallow flooding base floodplain. BFE's are provided.
	A99	Area to be protected from base flood by levees or Federal flood protection systems under construction. BFEs are not determined.
	AR	The base floodplain that results from the de-certification of a previously accredited flood protection system that is in the process of being restored to provide a 100-year or greater level of flood protection
	V	The coastal area subject to velocity hazard (wave action) where BFEs are not determined on the FIRM.
	VE	The coastal area subject to velocity hazard (wave action) where BFEs are provided on the FIRM.
Zone V and VE		
Zone B and Zone X (shaded)		Area of moderate flood hazard, usually the area between the limits of the 100-year and the 500-year floods. B zones are also used to designate base floodplains or lesser hazards, such as areas protected by levees from the 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
Zone C and Zone X (unshaded)		Area of minimal flood hazard, usually depiction FIRMs as exceeding the 500-year flood level. Zone C may have ponding and local drainage problems that do not warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood.
Zone D		Area of undetermined but possible flood hazards.

Source: <http://www.fema.gov/floodplain-management/flood-zones>

Flood hazard areas are identified as a Special Flood Hazard Area (SFHA). SFHAs are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. SFHAs are labeled as Zone A, Zone V, and Zone VE. Moderate flood hazard areas, labeled Zone B or Zone X, are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are defined as Zone C or Zone X. These flood zone identifications allow planners to determine appropriate land use in designated zones.

The planning communities are participants in the National Flood Insurance Program and actively take measures to plan land use. The communities are subject to flash flooding hazards such as the event in 6/26/2007 that occurred in the City of Celina. According to the National Centers for Environmental Information, the flash flood event resulted in \$20,000 worth of property damage.

Collin County and participating jurisdictions experienced 86 flood and flash flood events during the time period analyzed for this plan (01/01/1996 - 09/22/2020). Most of the flood and flash flood events were a result of excessive rainfall over a short amount of time. These events resulted mainly in over-the-road

flooding and minor to moderate property damage. Floodwaters during these events ranged from 2-5 inches to feet. It can be expected that any future flood or flash flood events will be similar in magnitude.

Due to many variables, the full extent and impacts of flooding is not fully known at this time. Collin County typically sees more nuisance flooding and flash flooding. Some of this is temporary in nature to construction and can be difficult to know the impacts until an event occurs. An example of this, was in September of 2018. Highway 75 was under construction in Plano and the area received over 5 inches of rain. Typically the roadway does not flood, but due to temporary barriers installed, this area became a river. Once the construction was completed, and the barriers removed, the same area no longer floods. As stated previously, determine the exact impacts from flooding could use more data to help predict where flooding is more likely to occur, even out of flood zones, and then assist in the development of potential action items to mitigate those impacts.

Hail

Combined NOAA/TORRO Hailstorm Intensity Scales

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

Source: <http://www.torro.org.uk/site/hscale.php>

The Hailstorm Intensity Scale is representative of the damage from hailstorms this community has experienced in the past and will likely experience in the future. The Hailstorm Intensity Scale allows planners to gauge past damage and mitigate for future expected damage. For example, according to the National Centers for Environmental Information, on 5/21/2011, 2.00in (H6/egg size) hail caused \$25,000 of property damage in the City of Celina.

Collin County and participating jurisdictions experienced 459 hail events ranging from magnitude H2 (.75 inch diameters) to magnitude H10 (4+ inch diameters), during the time period analyzed for this plan (01/01/1985—09/22/2020). It can be expected that any future hail events will be similar in magnitude.

High Winds

Beaufort Wind Scale

Force	Wind (Knots)	WMO Classification	Appearance of Wind Effects	
			On the Water	On Land
0	Less than 1	Calm	Sea surface smooth and mirror-like	Calm, smoke rises vertically
1	1-3	Light Air	Scaly ripples, no foam crests	Smoke drift indicates wind direction, still wind vanes
2	4-6	Light Breeze	Small wavelets, crests glassy, no breaking	Wind felt on face, leaves rustle, vanes begin to move
3	7-10	Gentle Breeze	Large wavelets, crests begin to break, scattered whitecaps	Leaves and small twigs constantly moving, light flags extended
4	11-16	Moderate Breeze	Small waves 1-4 ft. becoming longer, numerous whitecaps	Dust, leaves, and loose paper lifted, small tree branches move
5	17-21	Fresh Breeze	Moderate waves 4-8 ft. taking longer form, many whitecaps, some spray	Small trees in leaf begin to sway
6	22-27	Strong Breeze	Larger waves 8-13 ft., whitecaps common, more spray	Larger tree branches moving, whistling in wires
7	28-33	Near Gale	Sea heaps up, waves 13-20 ft., white foam streaks off breakers	Whole trees moving, resistance felt walking against wind
8	34-40	Gale	Moderately high (13-20 ft.) waves of greater length, edges of crests begin to break into spindrift, foam blown in streaks	Whole trees in motion, resistance felt walking against wind
9	41-47	Strong Gale	High waves (20 ft.), sea begins to roll, dense streaks of foam, spray may reduce visibility	Slight structural damage occurs, slate blows off roofs
10	48-55	Storm	Very high waves (20-30 ft.) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	56-63	Violent Storm	Exceptionally high (30-45 ft.) waves, foam patches cover sea, visibility more reduced	
12	64+	Hurricane	Air filled with foam, waves over 45 ft., sea completely white with driving spray, visibility greatly reduced	

Source: <http://www.spc.noaa.gov/faq/tornado/beaufort.html>.

The Beaufort Wind Scale is representative of the damage from high winds this community may endure. The Beaufort Wind Scale allows planners in the community to assess historical data and mitigate for future high windstorms. For example, according to the National Centers for Environmental Information, in 2010 the City of Wylie experienced Force 12 (64+ knots) winds that blew down trees and fences, which caused \$50,000 worth of damage.

Collin County and participating jurisdictions experienced 369 high wind events ranging from Force 0 to Force 12 (0 knots to 64+ knots), during the time period analyzed for this plan (01/01/1950—09/22/2020). It can be expected that any future high wind events will be similar in magnitude.

Lightning Activity Level Grid

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

Source: <http://www.nws.noaa.gov/forecasts/wfo/definitions/defineLAL.html>

The Lightning Activity Level grid provides a way to gauge the average number of strikes that may accompany a given type of storm. The average number of strikes is given since the density of lightning strikes varies from storm to storm.

Typically Collin County would see LAL 5 and lower. Dry lightning is not typically found in our area as we receive moisture from the Gulf of Mexico.

Collin County and participating jurisdictions experienced 56 lightning events during the time period analyzed for this plan (01/01/1996—09/22/2020). It can be expected that any future lightning events will be similar in magnitude.

Tornado Fujita Scale

F-Scale Number	Intensity Phrase	Wind Speed	Type of Damage
F0	Gale tornado	40-72 mph	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.
F1	Moderate tornado	73-112 mph	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; manufactured homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
F2	Significant tornado	113-157 mph	Considerable damage. Roofs torn off frame houses; manufactured homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe tornado	158-206 mph	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted
F4	Devastating tornado	207-260 mph	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	Incredible tornado	261-318 mph	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel reinforced concrete structures badly damaged.
F6	Inconceivable tornado	319-379 mph	These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly identified as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies

Source: <http://tornadoproject.com/fscale/fscale.htm>

On February 1, 2007, the Fujita scale was decommissioned in favor of the more accurate Enhanced Fujita Scale, which replaced it. None of the tornados recorded on or before January 31, 2007 will be re-categorized. Therefore maintaining the Fujita scale will be necessary when referring to previous events.

Enhanced Fujita Scale

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

Source: <http://www.spc.noaa.gov/efscale/>.

The Enhanced Fujita Scale is representative of the damage from tornadoes this community has faced in the past and will no doubt face in the future. The Enhanced Fujita Scale allows planners to prepare and mitigate future potential damage by assessing the historical nature of tornadoes in the planning community. For example, according to the National Centers for Environmental Information in 2007, an F0 tornado occurred in the City of Wylie. The tornado caused \$500,000 worth of property damage.

Collin County and participating jurisdictions experienced 48 tornado events ranging from EF0 to F3 (65mph to 206mph), during the time period analyzed for this plan (01/01/1950 — 09/22/2020). It can be expected that any future tornado events will be similar in magnitude.

Wildfire

Keetch-Byram Drought Index

KBDI	Fire Potential
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 still not readily ignite and burn. Also, expect smoldering and the resulting smoke to carry into and possibly through the night.
400-600	Fire intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.
600-800	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.

Source: <http://www.tamu.edu/ticc/KBDI%20Fact%20Sheet.pdf>

The index scale ranges from 0 to 800 and represents moisture deficiency in hundredths of an inch. By looking at indicators of moisture deficiency in the soil in this chart, communities are able to assess when they are at a heightened danger for a wildfire. According to the National Centers for Environmental Information, there have been four wildfire events in Collin County since 1/1/1996. In 9/5/2011, a wildfire caused \$50,000 in property damage.

Collin County and participating jurisdictions experienced four wildfire events during the time period analyzed for this plan (01/01/1996 — 9/22/2020). These fires ranged from grassfires that destroyed 12 bales of hay, five homes, and caused one death, to a wildfire that burned 100 acres. It can be expected that any future wildland fire events will be similar in magnitude.

Fire Danger

Rating	Basic Description	Detailed Description
CLASS 1: Low Danger (L) COLOR CODE: Green	fires not easily started	Fuels do not ignite readily from small firebrands. Fires in open or cured grassland may burn freely a few hours after rain, but wood fires spread slowly by creeping or smoldering and burn in irregular fingers. There is little danger of spotting.
CLASS 2: Moderate Danger (M) COLOR CODE: Blue	fires start easily and spread at a moderate rate	Fires can start from most accidental causes. Fires in open cured grassland will burn briskly and spread rapidly on windy days. Woods fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel – especially draped fuel – may burn hot. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious and control is relatively easy.
CLASS 3: High Danger (H) COLOR CODE: Yellow	fires start easily and spread at a rapid rate	All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High intensity burning may develop on slopes or in concentrations of fine fuel. Fires may become serious and their control difficult, unless they are hit hard and fast while small.
CLASS 4: Very High Danger (VH) COLOR CODE: Orange	fires start very easily and spread at a very fast rate	Fires start easily from all causes and immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high-intensity characteristics - such as long-distance spotting - and fire whirlwinds, when they burn into heavier fuels. Direct attack at the head of such fires is rarely possible after they have been burning more than a few minutes.
CLASS 5: Extreme (E) COLOR CODE: Red	fire situation is explosive and can result in extensive property damage	Fires under extreme conditions start quickly, spread furiously and burn intensely. All fires are potentially serious. Development into high-intensity burning will usually be faster and occur from smaller fires than in the Very High Danger class (4). Direct attack is rarely possible and may be dangerous, except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions, the only effective and safe control action is on the flanks, until the weather changes or the fuel supply lessens.

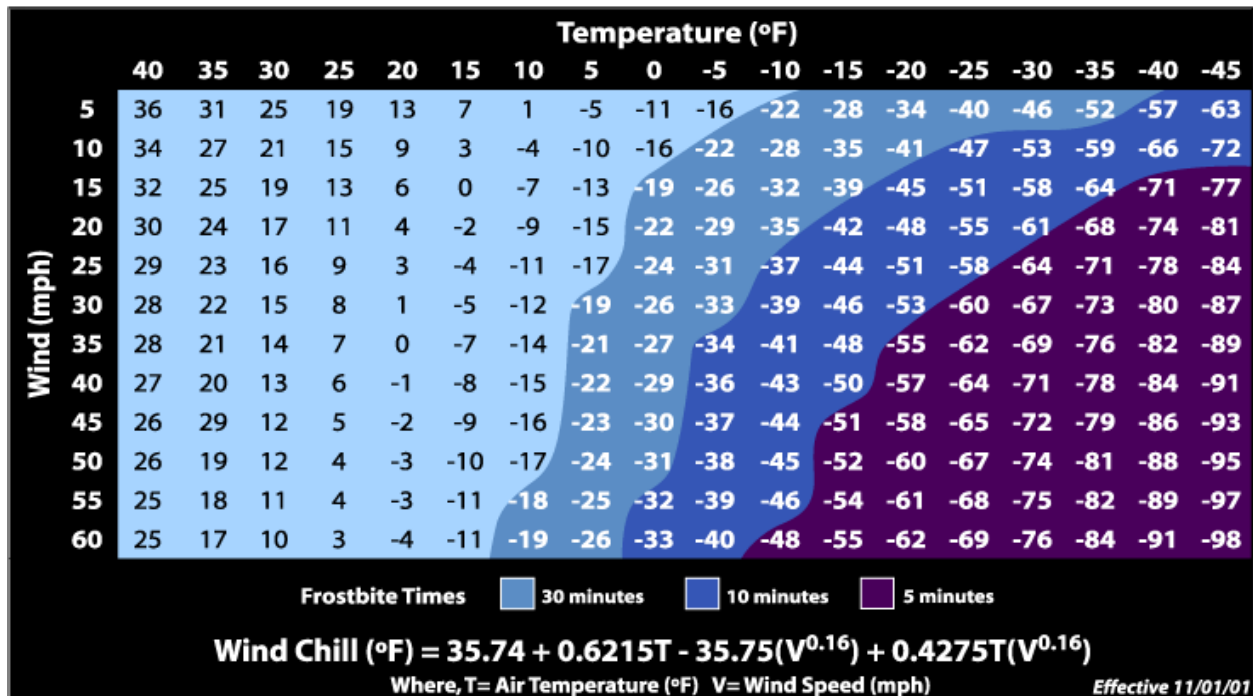
Source: <http://www.wfas.net/index.php/fire-danger-rating-fire-potential--danger-32/class-rating-fire-potential-danger-51?task=view>

Wind Chill

Wind Chill 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° day would feel just as cold as a calm day with 0° temperatures. The index was created in 1870, and on November 1, 2001, the National Weather Service released a more scientifically accurate equation, which we use today. Here is a chart for calculating wind chill. (Please note that it is not applicable in calm winds or when the temperature is over 50°.)



Wind Chill Chart



Source: National Weather Service and NOAA

The Wind Chill Chart displays the frostbite times in regard to temperature and wind. This chart allows the communities to prepare for severe winter storm or an ice event. These events are infrequent but can cause damage. The primary areas of concern are on bridges and roadways. For example, according to the National Centers for Environmental Information, on 2/11/2010, a heavy snowstorm caused \$1,000,000 in property damage across Collin County.

Collin County and participating jurisdictions experienced 56 winter storm events ranging from heavy snow to ice, during the time period analyzed for this plan (01/01/1996—09/22/2020). Accumulations during these events ranged from 1-3 inches of sleet, .25-1.5 inches of ice, and .5 to 12 inches of snow. It can be expected that any future events will be similar in magnitude.

Local Extent. Having identified the extent scales by which hazards are ranked, the participating jurisdictions have utilized the following definitions to determine the expected extent/severity for their planning area.

	High	Medium	Low
Dam Failure	- Greater than 50% of city structures are in the inundation zone. - Greater than 50% of the city's critical infrastructure in the identified inundation zone	20%-50% of city structures are in the inundation zone. 20%-50% of the city's critical infrastructure in the inundation zone	- Less than 20% of city structures are in the inundation zone. - Less than 20% of the city's critical infrastructure in the inundation zone
Drought	- PDSI -3.00- -4.00 or less - Severe to extreme drought conditions	- PDSI -1.00- -2.99 - Mild to moderate drought conditions	- PDSI -4.00 or more - -0.99 - Extremely wet to incipient dry spells
Earthquake	- Mercalli Scale: VIII-XII - Richter Scale: 6.2->8.1 - Driving will be difficult, increase in damage to infrastructures and objects can be thrown	- Mercalli Scale: VI-VII - Richter Scale: 4.9-6.1 - All will feel the event, walking will be difficult, glassware will break, irrigation ditches damaged	- Mercalli Scale: I-V - Richter Scale: 0-4.8 - Range of feeling the event is cannot be felt to being felt outdoors. Doors may swing close and liquids may be disturbed.
Expansive Soils	- EI Expansion Potential: 91-130 (High) - EI Expansion Potential: >130 (Very High)	EI Expansion Potential: 51-90 (Medium)	- EI Expansion Potential: 21-50 (Low) - EI Expansion Potential: 0-21 (Very Low)
Extreme Heat	- Heat Index >130F - Heatstroke or sunstroke likely	- Heat Index 105F-129F - Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity.	- Heat Index 80F-105F - Fatigue possible with prolonged exposure and/or physical activity, Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Flooding	100yr Flood Zone, Zone A - The extent of severity in the 100yr Flood Zone will be dependent on the structures and livestock located in the identified area.	500yr Flood Zone, Zone B - The extent of severity in the 500yr Flood Zone will be dependent on the structures and livestock located in the identified area.	- Outside of 100yr and 500yr Flood Zones, Zone C, F, X - Potential for flooding due to local drainage problem
Hail	- H7-H10, 2.4"->4" - There will be severe damage. Including roof and structural damage and risk of serious injuries to fatalities.	- H5-H6, 1.6"-2.4" - There will be a range of severe damage from well-constructed houses being destroyed to houses being swept away.	- H0-H4, 0"-1.6" - There will be a variance of destruction to vegetation and slight damage to glass.
High Winds	- Force: 8-12 - Knots: 28-64+ - Whole trees moving to considerable structure damage	- Force: 4-6 - Knots: 11-27 - Dust, leaves, and loose paper lifted. Small to Large branches moving.	- Force: 0-3 - Knots: <1-10 - Calm, leaves rustle, light flags extended

	High	Medium	Low
Tornado	- EF3-EF5 - There will be a range of severe damage from well-constructed houses being destroyed to houses being swept away	- EF1-EF2 - There will be a range of moderate to considerate damage. Roofs will be severely stripped, manufactured homes overturned, and cars lifted off of the ground	- EF0 - There will be light damage. Roofs will be peeled off, gutters damaged, and branches broken
Wildland Fire	- KBDI 600-800 - Associated with severe drought. Intense, deep-burning fires with significant downwind spotting.	- KBDI 200-400 - Ranges from lower litter and duff layers are drying and beginning to contribute to fire intensity to them causing the fire to burn actively.	- KBDI 0-200 - Soil moisture and large class fuel moistures are high and do not contribute much to fire intensity.
Winter Storms	- Temperatures 15F- :45F - Wind Chill 7F- :98F - At wind chill of :19 frostbite will occur in 30 minutes increasing in severity to occurrence in 5 minutes.	- Temperatures 30F- 20F - Wind Chill 25F- :4F - Bridges and roadways are at risk to ice	- Temperatures 40F- 35F - Wind Chill 36F-17F - Vulnerable populations and agriculture at risk to lower temperatures and wind chill.
Lightning	Lightning is ranked based on LAL, see page 91. It is not typically ranked based on severity, but based on frequency; however, even one lightning strike can have the same, if not more, impacts than many lightning strikes depending on what it impacts/strikes. Unlike other hazards that are typically ranked/rated on severity. See Page 91 for LAL scale and information.		

The charts below depict the estimated average of extent as ranked by the jurisdictions.

	Collin County	Allen	Anna	Blue Ridge	Celina
Dam Failure	Low	None	Medium	None	Low
Drought	Medium	Low	Medium	Medium	Medium
Earthquake	Medium	None	None	Low	None
Expansive Soils	Medium	None	Low	Low	Low
Extreme Heat	Medium	Medium	Low	Medium	Medium
Flooding	Low	Low	Low	Medium	High
Hail	High	Medium	Low	Low	Low
High Winds	Medium	Medium	Medium	Medium	Low
Lightning	Low	Low	Low	Low	Medium
Tornado	Medium	Medium	Medium	High	High
Wildland Fire	Medium	No	Low	Medium	Medium
Winter Storms	Low	Medium	Medium	Medium	Medium

Collin County Hazard Mitigation Action Plan

	Fairview	Farmersville	Frisco	Josephine	Lavon
Dam Failure	None	Medium	Low	None	Low
Drought	Medium	Medium	Low	Medium	Low
Earthquake	Low	Low	Medium	Low	Low
Expansive Soils	Low	Low	Medium	Low	Low
Extreme Heat	Low	Low	Low	Low	Medium
Flooding	Low	Low	Low	Low	Low
Hail	Low	Low	Medium	Low	Low
High Winds	Low	Medium	Medium	Low	Low
Lightning	Low	Low	Medium	Low	Low
Tornado	Medium	Medium	Medium	Medium	High
Wildland Fire	Low	Medium	Low	Medium	Medium
Winter Storms	Low	Medium	High	Medium	Medium

	Lowry Crossing	Lucas	Melissa	Murphy	New Hope
Dam Failure	None	None	Low	None	Low
Drought	Medium	Medium	Medium	Medium	Low
Earthquake	Low	Low	Low	Low	Low
Expansive Soils	Low	Low	Low	Low	Low
Extreme Heat	Low	Medium	Low	Medium	Medium
Flooding	Low	Medium	Low	Low	Low
Hail	Low	Low	Low	Low	Medium
High Winds	Low	Low	Low	Low	Low
Lightning	Low	Medium	Low	Medium	Low
Tornado	Medium	Medium	Medium	Low	Medium
Wildland Fire	Low	Medium	Medium	Low	Low
Winter Storms	Medium	Medium	Medium	Medium	Medium

	Parker	Princeton	Prosper	St. Paul	Wylie
Dam Failure	None	None	Low	None	Low
Drought	Medium	Medium	Medium	Medium	Low
Earthquake	None	Low	Low	Low	Low
Expansive Soils	Low	Low	Low	Low	Low
Extreme Heat	Low	Medium	Medium	Low	Low
Flooding	Low	Medium	Medium	Low	Low
Hail	Low	Low	Medium	Low	Medium
High Winds	Low	Medium	Medium	Low	Low
Lightning	Low	Low	High	Low	Low
Tornado	Low	Medium	High	Medium	High
Wildland Fire	Low	Low	Medium	Medium	Low
Winter Storms	Low	Medium	Medium	Medium	Medium

3.4 Geographic Information System Based Analysis

For the Geographic Information System-based assessment, digital data was collected from local, state, and national sources. ESRI® ArcMap™ 10.2 was used to assess risk utilizing digital data, which included local tax records for individual parcels and geo-referenced point locations for buildings and critical facilities.

The objective of the Geographic Information System-based analysis was to determine the estimated vulnerability of the five categories of assets to the identified hazards for Collin County using best available geospatial data. Local databases made available through Collin County, such as local tax assessor records, parcel boundaries, building footprints and critical and emergency facilities data, were used in combination with digital hazard data obtained from the National Centers for Environmental Information and the FEMA Resilience and Planning Tool. The results of the analysis provided an estimated number of people, as well as the numbers and values of buildings and critical facilities determined to be potentially at risk to hazards with delineable geographic hazard boundaries.

For some of the hazards, the Geographic Information System analysis was supplemented with a statistical analysis conducted on the historical data obtained from National Centers for Environmental Information and the Texas Forest Service for wildfires. The data included both casualty and property losses from hazard events that occurred in Collin County from 1/1/1950 or 1/1/1985 or 1/1/1996 to 9/22/2020. Annualized personal and property losses were calculated by dividing the total losses by the number of years for which data was available (i.e. 24 or 35 or 70 years).

Drought

Because drought impacts large areas that cross jurisdictional boundaries, all of the improved property and population in Collin County are considered to be exposed to this hazard. However, drought impacts are mostly experienced in water shortages and crop losses on agricultural lands, with little to no impact on buildings.

Since crop losses are expected to be the most vulnerable assets for this hazard, agricultural land acreage was acquired from the USGS land cover classification data to estimate the relative area of Collin County that would be affected by this event. *Table 3.1* below provides the distribution of agricultural land for each jurisdiction in Collin County. Collin County as a whole has a total of 263,746.98 acres of agricultural lands, which represents approximately 58.65% of Collin County territory, with the vast majority located in the unincorporated areas.

Table 3.1 Agricultural Land in Collin County

Jurisdiction	Total Acres	Agricultural Land Acres	Percentage (%) of Total Acres
Unincorporated County	288,727	215,882	74.77%
Allen	16,899.45	1,228.98	7.27%
Anna	10,273.53	7,240	70.47%
Blue Ridge	1,066.43	427.11	40.05%
Celina	21,575.35	14,727.29	68.26%
Fairview	5,672.38	1,036.25	18.27%
Farmersville	2,2724.78	635.73	23.33%
Frisco	27,747.7	6,425.11	23.16%
Josephine	1,132.93	643.3	56.77%
Lavon	2112	621.79	29.44%
Lowry Crossing	1,644.51	685.42	41.68%
Lucas	10,196.92	2530.5	24.82%
Melissa	7,583.93	1,785.22	23.54%
Murphy	3632.7	70.93	2.00%
New Hope	896.65	717.95	80.10%
Parker	5,431.27	1,900.84	35.00%
Princeton	6,792.03	2,005.08	29.52%
Prosper	11,677.37	4,103.97	35.14%
St. Paul	894.62	199.11	22.26%

Jurisdiction	Total Acres	Agricultural Land Acres	Percentage (%) of Total Acres
Wylie	23,170.14	880.4	3.80%
Total	449,690.42	263,746.98	58.65%

Sources: Texas Forest Service, U.S. Geological Survey, and local jurisdictions

Based on the available information, vulnerability to drought was assessed using two techniques: (1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from the Texas Hazard Mitigation Package was used to predict expected monetary and human losses from the event; (2) in fulfillment of Element A of *Requirement 201.6(c)(2)(ii)(A)*, geographical hazard areas identified for drought and the nature of the impacts expected from drought events were used to identify the assets, including existing structures, vulnerable to this hazard. The vulnerability to future structures was not conducted at this time due to unattainable data. Therefore, compliance with Element B of *Requirement 201.6(c)(2)(ii)(A)*, describing vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities will be an objective in the five-year planning cycle.

Table 3.2 presents Collin County's recorded historical losses due to drought events as provided in the hazard events database obtained from the National Centers for Environmental Information . Property and personal losses in each expected in each jurisdiction are presented in Table 3.2.

Table 3.2 Historical Losses Due to Drought (1/1/1996-9/22/2020)

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin (Zone)	8/1/1996	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	7/1/1998	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	8/1/2000	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	9/1/2000	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	5/1/2005	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	6/1/2005	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	7/1/2005	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	8/1/2005	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	9/1/2005	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	10/1/2005	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	11/1/2005	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	12/1/2005	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	1/1/2006	0:00	Drought		0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin (Zone)	2/1/2006	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	3/1/2006	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	4/1/2006	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	5/1/2006	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	6/6/2006	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	7/1/2006	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	8/1/2006	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	9/1/2006	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	10/1/2006	0:00	Drought		0	0	\$500,000	\$500,000
Collin (Zone)	11/1/2006	0:00	Drought		0	0	\$0	\$800,000
Collin (Zone)	3/21/2011	0:00	Drought		0	0	\$0	\$8,000
Collin (Zone)	4/1/2011	0:00	Drought		0	0	\$0	\$10,000
Collin (Zone)	8/1/2011	0:00	Drought		0	0	\$0	\$10,000
Collin (Zone)	9/1/2011	0:00	Drought		0	0	\$0	\$25,000
Collin (Zone)	10/1/2011	0:00	Drought		0	0	\$0	\$5,000
Collin (Zone)	8/7/2012	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	9/25/2012	0:00	Drought		0	0	\$0	\$2,000
Collin (Zone)	11/1/2012	0:00	Drought		0	0	\$0	\$3,000
Collin (Zone)	12/1/2012	0:00	Drought		0	0	\$0	\$2,000
Collin (Zone)	1/1/2013	0:00	Drought		0	0	\$0	\$3,000
Collin (Zone)	2/1/2013	0:00	Drought		0	0	\$0	\$2,000
Collin (Zone)	3/1/2013	0:00	Drought		0	0	\$2,000	\$0
Collin (Zone)	7/9/2013	0:00	Drought		0	0	\$0	\$1,000
Collin (Zone)	8/1/2013	0:00	Drought		0	0	\$0	\$3,000
Collin (Zone)	9/1/2013	0:00	Drought		0	0	\$0	\$3,000
Collin (Zone)	3/1/2014	0:00	Drought		0	0	\$0	\$4,000

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin (Zone)	4/1/2014	0:00	Drought		0	0	\$0	\$3,000
Collin (Zone)	5/1/2014	0:00	Drought		0	0	\$	\$3,000
Collin (Zone)	6/1/2014	0:00	Drought		0	0	\$	\$3,000
Collin (Zone)	7/1/2014	0:00	Drought		0	0	\$	\$3,000
Collin (Zone)	8/1/2014	0:00	Drought		0	0	\$	\$2,000
Collin (Zone)	9/1/2014	0:00	Drought		0	0	\$5,000	\$0
Collin (Zone)	10/1/2014	0:00	Drought		0	0	\$0	\$3,000
Collin (Zone)	11/1/2014	0:00	Drought		0	0	\$0	\$2,000
Collin (Zone)	12/1/2014	0:00	Drought		0	0	\$0	\$5,000
Collin (Zone)	1/1/2015	0:00	Drought		0	0	\$0	\$2,000
Collin (Zone)	2/1/2015	0:00	Drought		0	0	\$0	\$2,000
Collin (Zone)	3/1/2015	0:00	Drought		0	0	\$0	\$1,000
Collin (Zone)	4/1/2015	0:00	Drought		0	0	\$0	\$1,000
Collin (Zone)	9/1/2015	0:00	Drought		0	0	\$0	\$1,000
Collin (Zone)	10/1/2015	0:00	Drought		0	0	\$2,000	\$0
Collin (Zone)	11/21/2017	0:00	Drought		0	0	\$0	\$0
Collin (Zone)	12/1/2017	0:00	Drought		0	0	\$0	\$1,000
Collin (Zone)	8/1/2018	0:00	Drought		0	0	\$0	\$1,000
Totals:					0	0	\$509,000	\$1,414,000

Source: National Centers for Environmental Information (NCEI)

As observed in Table 3.2 Historical Losses Due to Drought, calculations of annualized losses were conducted using historical data obtained from the National Centers for Environmental Information. The annualized loss value can be interpreted as the impact expected from drought in terms of annualized human losses and human injuries, and annualized property losses. As observed in *table 3.2*, Collin County can expect approximately an annual \$21,208.33 in property losses and \$58,916.67 of crop losses each year as a result of drought, however values may be underestimated due to lack of accurate reporting. No injuries or deaths are expected from this event.

Since the geographical occurrence of drought is typically regional, the area of potential impacts corresponds to all of Collin County's territory. However, due to the nature of this event, property losses are more likely related to crop damage. Buildings and infrastructure are not expected to be directly impacted by drought events. Therefore, improved property, emergency and critical facilities, and critical structures are not exposed to this hazard.

In compliance to *Requirement 201.6(c)(2)(ii)*, vulnerability to drought and impacts to assets expected from drought events can be summarized as follows:

- **Population**: According to National Centers for Environmental Information(NCEI) no recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events. All the population of Collin County is exposed to this hazard.
- **Improved Property**: According to National Centers for Environmental Information(NCEI), a loss of \$21,208.33 per year can be expected in property loss due to damage from drought though values are underestimated due to lack of accurate reporting. Available historical data indicates that the expected losses from drought correspond to crop losses in the amount of \$58,916.67 per year, mostly experienced in water shortages and crop losses on agricultural lands though values are underestimated due to lack of accurate reporting.
- **Emergency Facilities**: Because of the nature of this hazard, there are no losses or direct impacts expected on emergency facilities due to drought events.
- **Critical Facilities**: Because of the nature of this hazard, there are no losses or direct impacts expected on critical facilities due to drought events.
- **Critical Infrastructure**: Because of the nature of this hazard, there are no losses or direct impacts expected on critical infrastructure due to drought events.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

Flood

Floods impact large areas and cross jurisdictional boundaries. All five categories of assets are considered vulnerable and can be exposed to this hazard. Based on the available information, vulnerability to flooding was assessed using two techniques: (1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from National Centers for Environmental Information was used to predict expected monetary and human losses from the event; (2) in fulfillment of Element A of *Requirement 201.6(c)(2)(ii)(A)*, geographical data was used to identify the assets, including existing structures, vulnerable to flooding. The vulnerability to future structures was not assessed at this time due to unattainable data. Therefore, compliance with Element B of *Requirement 201.6(c)(2)(ii)(A)*, describing vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities will be an objective in the five-year planning cycle.

Table 3.3 presents Collin County's recorded historical losses due to flooding as provided in the hazard events database obtained by National Centers for Environmental Information (NCEI). Although specific data is provided by jurisdiction, the figures presented may reflect the place where the event was more relevant or where it started. There were no recorded floods or flash flood events for the following jurisdictions: Josephine, Lowry Crossing, Lucas, New Hope, and St. Paul.

Table 3.3 Historical Losses Due to Flood Events (1/1/1996-9/22/2020)

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Frisco	10/27/1996	21:20	Flash Flood		0	0	\$0	\$0
Melissa	11/7/1996	0:30	Flash Flood		0	0	\$10,000	\$0
Plano	2/19/1997	16:30	Flash Flood		0	0	\$0	\$0
Mc Kinney	2/19/1997	16:51	Flash Flood		0	0	\$0	\$0
Lolaville	2/19/1997	18:00	Flash Flood		0	0	\$0	\$0
Farmersville	2/19/1997	18:25	Flash Flood		0	0	\$0	\$0
Mc Kinney	4/4/1997	22:25	Flash Flood		0	0	\$0	\$0
Plano	5/19/1997	18:15	Flash Flood		0	0	\$0	\$0
Plano	5/19/1997	19:02	Flash Flood		0	0	\$10,000	\$0
Plano	5/19/1997	19:30	Flash Flood		0	0	\$0	\$0
Plano	6/9/1997	20:48	Flash Flood		0	0	\$0	\$0
Allen	6/9/1997	21:00	Flash Flood		0	0	\$0	\$0
Plano	12/20/1997	20:00	Flash Flood		0	0	\$0	\$0
Mc Kinney	1/4/1998	16:40	Flash Flood		0	0	\$0	\$0
Mc Kinney	1/4/1998	16:45	Flash Flood		0	0	\$0	\$0
Blue Ridge	1/4/1998	16:50	Flash Flood		0	0	\$0	\$0
Princeton	1/4/1998	17:52	Flash Flood		0	0	\$0	\$0
Prosper	1/4/1998	21:09	Flash Flood		0	0	\$0	\$0
Nevada	12/4/1998	1:00	Flash Flood		0	0	\$0	\$0
Central Portion	12/4/1998	1:00	Flash Flood		0	0	\$0	\$0
Lavon	5/17/1999	15:33	Flash Flood		0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Plano	6/8/1999	19:00	Flash Flood		0	0	\$0	\$0
Farmersville	6/4/2000	2:15	Flash Flood		0	0	\$0	\$0
Murphy	6/11/2000	12:55	Flash Flood		0	0	\$0	\$0
Wylie	6/15/2000	2:00	Flash Flood		0	0	\$0	\$0
Countywide	2/16/2001	1:34	Flash Flood		0	0	\$0	\$0
Countywide	2/16/2001	3:51	Flash Flood		0	0	\$0	\$0
McKinney	5/6/2001	1:28	Flash Flood		0	0	\$0	\$0
Melissa	10/19/2002	2:05	Flash Flood		0	0	\$25,000	\$0
Plano	12/30/2002	14:30	Flash Flood		0	0	\$0	\$0
Plano	8/15/2005	19:45	Flash Flood		0	0	\$0	\$0
Countywide	3/19/2006	15:00	Flash Flood		0	0	\$0	\$0
McKinney	1/12/2007	17:15	Flash Flood		0	0	\$0	\$0
McKinney	3/30/2007	20:00	Flash Flood		0	0	\$0	\$0
Plano	4/3/2007	18:52	Flash Flood		0	0	\$0	\$0
Celina	4/24/2007	20:09	Flash Flood		0	0	\$0	\$0
Frisco	5/2/2007	19:00	Flash Flood		0	0	\$50,000	\$0
Lavon	5/27/2007	9:06	Flash Flood		0	0	\$0	\$0
McKinney	5/30/2007	8:30	Flash Flood		0	0	\$10,000	\$0
Anna	6/18/2007	2:00	Flash Flood		0	0	\$10,000	\$0
Melissa	6/18/2007	8:00	Flash Flood		0	0	\$0	\$0
Celina	6/26/2007	15:01	Flash Flood		0	0	\$20,000	\$0
Farmersville	6/27/2007	17:43	Flash Flood		0	0	\$0	\$0
Wylie	7/5/2007	13:30	Flash Flood		0	0	\$0	\$0
Plano	7/11/2007	16:42	Flash Flood		0	0	\$0	\$0
Plano	10/15/2007	7:42	Flash Flood		0	0	\$80,000	\$0
Plano	3/18/2008	11:54	Flash Flood		0	0	\$0	\$0
Biggers	3/18/2008	14:38	Flash Flood		0	0	\$0	\$0
Wylie	3/18/2008	16:54	Flash Flood		0	0	\$0	\$0
McKinney	3/18/2008	17:00	Flash Flood		0	0	\$4,000	\$0
Melissa	4/23/2008	22:55	Flash Flood		0	0	\$2,000	\$0
Parker	8/20/2008	6:00	Flash Flood		0	0	\$0	\$0
McKinney	8/20/2008	6:00	Flash Flood		0	0	\$20,000	\$0
Wylie	8/20/2008	6:45	Flash Flood		0	0	\$4,000	\$0
Forest Grove	8/20/2008	15:00	Flash Flood		0	0	\$0	\$0
Plano	5/2/2009	18:25	Flash Flood		0	0	\$20,000	\$0
McKinney	5/2/2009	20:38	Flash Flood		0	0	\$2,000	\$0
Blue Ridge	5/3/2009	4:05	Flash Flood		0	0	\$0	\$0
Celina	10/25/2009	21:21	Flash Flood		0	0	\$3,000	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
McKinney	10/25/2009	22:44	Flash Flood		0	0	\$3,000	\$0
Desert	11/20/2009	11:00	Flood		0	0	\$20,000	\$0
Celina	1/25/2012	5:00	Flood		0	0	\$50,000	\$0
Lolaville	3/20/2012	0:00	Flood		0	0	\$0	\$0
Anna	7/31/2014	7:15	Flash Flood		0	0	\$0	\$0
Weston	5/9/2015	10:19	Flash Flood		0	0	\$0	\$0
Shepton	5/9/2015	11:13	Flash Flood		0	0	\$0	\$0
Shepton	5/9/2015	15:30	Flood		0	0	\$0	\$0
Fairview	5/17/2015	7:45	Flood		0	0	\$0	\$0
Allen	5/29/2015	5:14	Flash Flood		0	0	\$0	\$0
Plano Shiloh	5/29/2015	5:15	Flash Flood		0	0	\$0	\$0
Prosper	5/29/2015	8:30	Flash Flood		0	0	\$0	\$0
Shepton	5/30/2015	6:05	Flash Flood		0	0	\$0	\$0
Lavon	6/21/2015	7:29	Flash Flood		0	0	\$1,000	\$0
Celina	11/27/2015	6:45	Flood		0	0	\$0	\$0
Parker	12/26/2015	19:53	Flash Flood		0	0	\$0	\$0
Frisco	6/12/2016	16:40	Flash Flood		0	0	\$0	\$0
Celina	7/5/2017	19:50	Flash Flood		0	0	\$0	\$0
Princeton	7/5/2017	19:50	Flash Flood		0	0	\$0	\$0
Melissa	7/5/2017	19:56	Flash Flood		0	0	\$0	\$0
Lavon	8/17/2017	5:30	Flood		0	0	\$0	\$0
Lake Lavon	8/17/2017	7:27	Flood		0	0	\$0	\$0
Plano	9/21/2018	19:00	Flash Flood		0	0	\$10,000	\$0
Renner	9/21/2018	19:30	Flash Flood		0	0	\$0	\$0
Prosper	10/19/2018	15:00	Flood		0	0	\$0	\$0
Wylie	4/23/2019	22:02	Flash Flood		0	0	\$10,000	\$0
Fayburg	3/18/2020	4:15	Flash Flood		0	0	\$0	\$0
Totals:					0	0	\$364,000	\$0

Source: National Centers for Environmental Information

NFIP repetitive losses due to flood events. Some events may duplicate NCEI reported events.

Table 3.4 NFIP Losses Due to Flood Events

Location	Date	Type	Total Payments for Damages
Collin County	05/12/1982	Flood	\$137,421.75
Collin County	10/13/1981	Flood	\$56,653.53
Collin County	03/18/2008	Flood	\$30,538.62
Collin County	03/19/2006	Flood	\$2,804.32
Collin County	12/20/1991	Flood	\$15,420.52
Fairview	03/15/1997	Flood	\$8,234.44

Location	Date	Type	Total Payments for Damages
Fairview	06/01/1994	Flood	\$10,533.74
Fairview	04/11/1991	Flood	\$15,263.41
Fairview	01/31/1990	Flood	\$8,844.92
Fairview	05/16/1989	Flood	\$6,033.50
Fairview	01/04/1998	Flood	\$5,701.14
Fairview	05/16/1989	Flood	\$6,532.68
Murphy	04/12/1991	Flood	\$69,726.51
Murphy	05/02/1990	Flood	\$10,137.18
Murphy	05/17/1989	Flood	\$37,866.00
Murphy	05/12/1982	Flood	\$9,283.31
Murphy	10/31/1981	Flood	\$14,429.25
Parker	04/12/1991	Flood	\$4,962.09
Parker	05/02/1990	Flood	\$4,880.80
Parker	04/11/1991	Flood	\$9,256.63
Parker	05/02/1990	Flood	\$2,298.37
Parker	08/20/2008	Flood	\$20,750.05
Parker	12/29/2006	Flood	\$15,835.07
Parker	04/11/1991	Flood	\$24,872.33
Parker	05/02/1990	Flood	\$8,110.35
Parker	05/16/1989	Flood	\$30,207.89
Parker	08/19/2008	Flood	\$118,111.47
Parker	04/11/1991	Flood	\$45,394.51
Parker	05/01/1990	Flood	\$2,971.26
Parker	05/16/1989	Flood	\$8,714.54

As observed in Table 3.3, Historical Losses Due to Flood Events, calculations of annualized losses were conducted using historical data obtained from National Centers for Environmental Information. The annualized loss value can be interpreted as the impact expected from flooding in terms of annualized human losses and human injuries, and annualized property losses. As observed in *Table 3.3*, Collin County can expect a total property loss of \$15,166.67 each year as a result of flooding, with no injuries, no fatalities, and no crop losses. Property damage and crop damage values may be underestimated due to lack of accurate reporting.

In order to assess flood risk and vulnerability of the identified assets, a Geographic Information System-based analysis was conducted to estimate exposure to flood events using Federal Emergency Management Agency's digital 100-year floodplain in combination with Collin County Central Appraisal District property records and the geo-referenced assets provided by Regional Hazard Assessment Tool.

By overlaying the geo-referenced assets and the floodplain layers using Geographic Information System, the number of emergency facilities, critical facilities, and critical infrastructure located within the 100-year floodplain was calculated. Although, having a facility located within the floodplain does not necessarily imply that would be impacted by the 100-year storm event (e.g., the building could be flood-proofed, or

the buildings may be constructed above the 100-year elevation), it provides with a good approximation of potential impacts from flooding.

According to the analysis conducted, no emergency or critical facilities are located within the 100-year floodplain. Critical infrastructure located within the 100-year floodplain is presented in *Table 3.5*.

Table 3.5 Critical Infrastructure Located in 100-year FEMA Floodplain

Jurisdiction	Critical Infrastructure											
	Railway/ Highway Bridges		Dams		Water Treatment Facilities		Waste Water Treatment Facilities		Natural Gas		Airports	
	Total	Percentage (%)	Total	Percentage (%)	Total	Percentage (%)	Total	Percentage (%)	Total	Percentage (%)	Total	Percentage (%)
Collin County	142	34.4 %	67	48.6 %	0	0%	13	61.9%	0	0%	0	0%
Total	142	34.4 %	67	48.6 %	0	0%	13	61.9%	0	0%	0	0%

Source: Regional Hazard Assessment Tool and local jurisdictions

As noted in *Table 3.5*, the total and percentage of critical infrastructure located within the 100-year floodplain corresponds to approximately 48.6% of dams and 61.9% of wastewater treatment works. Additionally, treated wastewater is typically discharged towards streams, which makes portions of wastewater treatment facilities likely to be located within the floodplain. However, some of the critical facilities located within the 100-year floodplain may be subject to impacts from flooding.

Vulnerability to flooding can also be measured by assessing the number of people and buildings exposed to flood events. *Table 3.6* shows Residential Parcels and Improved Property at risk from flooding events.

The determination of residential parcel vulnerability was calculated by adding the total residential parcel counts from 2013 that had at least some portion located within the 100-year floodplain. The determination of commercial and utility property value at-risk (exposure) was calculated adding the total assessed building values for only those parcels that were confirmed to have at least one building located within the 100-year floodplain.

Table 3.6 Residential Parcels and Buildings potentially located within the 100-year FEMA Floodplain

Jurisdiction	Residential Parcels located in the 100-year Floodplain	Percentage of Total Residential Parcels located in the 100-year Floodplain	Commercial and Utility parcels in the 100-year Floodplain	Percentage of Commercial and Utility Parcels in the 100-year Floodplain
Collin County*	989	4.67%	72	9.41%

Jurisdiction	Residential Parcels located in the 100-year Floodplain	Percentage of Total Residential Parcels located in the 100-year Floodplain	Commercial and Utility parcels in the 100-year Floodplain	Percentage of Commercial and Utility Parcels in the 100-year Floodplain
Allen	350	1.13%	71	6.31%
Anna	139	1.82%	8	3.56%
Blue Ridge	18	3.65%	3	4.17%
Celina	332	4.16%	22	8.43%
Fairview	280	7.52%	2	2.02%
Farmersville	79	5.25%	21	7.00%
Frisco	410	1.22%	142	7.28%
Josephine	92	10.13%	23	60.53%
Lavon	14	0.66%	2	3.28%
Lowry Crossing	128	20.03%	2	9.52%
Lucas	335	12.84%	4	5.8%
Melissa	54	0.91%	8	4.02%
Murphy	185	3.10%	19	11.24%
New Hope	2	0.73%	1	11.11%
Parker	230	12.09%	10	38.46%
Princeton	101	1.31%	13	5.28%
Prosper	152	1.86%	36	10.34%
St. Paul	3	0.82%	1	2.56%
Wylie	427	2.7%	80	10.61%
Total	4,320	2.71%	543	7.96%

Source: Regional Hazard Assessment Tool, National Centers for Environmental Information , and local jurisdictions
*Collin County unincorporated areas

As it can be observed in *Table 3.6*, approximately 2.71% of the residential parcels in Collin County, and 7.96% of its commercial and utility parcels are located within the 100-year floodplain.

Since Collin County is composed by large areas used for cropland, an analysis was conducted to determine the vulnerability of the land to flooding relative to the type of land cover (*Table 3.7*). The calculations were made using Geographic Information System. The USGS land cover shapefile was

clipped with the 100-year floodplain to calculate the area (acreage) of each land cover type potentially affected by flooding. Reservoirs, streams, and channels were excluded from the calculations.

Table 3.7 Land Cover Types and Acreage located within the 100-year FEMA Floodplain

Land Cover Type	Total Areas For Collin County (Acres)	Total Area Affected By 100-year Flood (Acres)	Percentage of Area Affected By 100-year Flood (%)
Commercial	53,547.25	17,666.73	32.99
Utilities	4674.94	1671.4	35.75%
Residential	114,382.69	13,086.41	11.44%
Farmland/Undeveloped	340,108.98	186,590.25	54.86%
Total	512,713.86	219,014.79	42.72%

Source: USGS

As observed, on average approximately 42.72% of the total area of Collin County is located within the 100-year floodplain. Note, that a higher percentage than the average of the total farm and undeveloped land (54.86%) located within the floodplain, while commercial (32.99%), utilities (35.75%), and residential (11.44%) are all below the total average area.

In compliance to *Requirement 201.6(c)(2)(ii)* Collin County vulnerability from flooding and impacts to assets expected from flooding can be summarized as follows:

- **Population:** Based on historical data, flooding produces an expected annualized zero injuries and fatalities per year. In total, portions of the Collin County population are vulnerable to the 100-year floodplain.
- **Improved Property:** Based on historical data, a loss of \$15,166.67 per year can be expected in property loss due to flooding with no expected crop losses, however these values could be underestimated due to lack of accurate reporting. Based on geographic information and assuming that a facility within the 100-year floodplain is exposed to impact, 2.40% of the total assessed value of improvements in Collin County is at risk from the 100-year storm event.
- **Emergency Facilities:** Based on geographic information and assuming that a facility within the 100-year floodplain is exposed to impact, there are no emergency facilities at imminent risk from the 100-year storm event.
- **Critical Facilities:** Based on geographic information and assuming that a facility within the 100-year floodplain is exposed to impact, there are no critical facilities at imminent risk from the 100-year storm event.
- **Critical Infrastructure:** Based on geographic information and assuming that a critical infrastructure within the 100-year floodplain is exposed to impact, 13 wastewater treatment facilities and 142 railway and highway bridges are at risk from the 100-year storm event. Note that treated wastewater is typically discharged towards streams, which makes portions of wastewater treatment facilities likely to be located within the floodplain.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

Repetitive Loss

As per Requirement 201.6(c)(2)(ii) "The risk assessments in all plans approved after October 1, 2008 must also address National Flood Insurance Program (NFIP) insured structures that have been

repetitively damaged by floods.” Repetitive Loss Property information provides local jurisdictions with the properties that had submitted insurance claims due to flooding damage to buildings and its contents. The information provided by Federal Emergency Management Agency included repetitive loss properties in Collin County as of 5/31/2014 (*Table 3.8*).

Address information available for repetitive loss properties recorded allowed those properties to be geo-referenced using ESRI® ArcMap™ 10.2. The probability of future repetitive losses on those properties was estimated using Geographic Information System by overlying the geo-referenced properties with the 100-year floodplain layer. *Table 3.8* summarizes with the number of properties located within the 100-year floodplain as obtained using this approach.

Table 3.8 Repetitive Loss Properties located within the 100-year FEMA Floodplain

Jurisdiction	Total Number of Repetitive Loss Properties	Properties within 100-year Floodplain			Total Number of Repetitive Loss Properties Within 100-year Floodplain	Percent of Repetitive Loss Properties Within 100-year Floodplain
		Single Family	Other Residential	Non Residential		
Collin County*	2	2	0	0	1	50%
Allen	0	0	0	0	0	0
Anna	0	0	0	0	0	0
Blue Ridge	0	0	0	0	0	0
Celina	0	0	0	0	0	0
Fairview	2	2	0	0	1	50%
Farmersville	0	0	0	0	0	0
Frisco	0	0	0	0	0	0
Josephine	0	0	0	0	0	0
Lavon	0	0	0	0	0	0
Lowry Crossing	0	0	0	0	0	0
Lucas	0	0	0	0	0	0
Melissa	0	0	0	0	0	0
Murphy	1	1	0	0	1	100%
New Hope	0	0	0	0	0	0
Parker	5	5	0	0	5	100%
Princeton	0	0	0	0	0	0
Prosper	0	0	0	0	0	0
St. Paul	0	0	0	0	0	0
Wylie	0	0	0	0	0	0
Total	10	10	0	0	8	80%

Source: Federal Emergency Management Agency

As noted in *Table 3.8* there are few repetitive loss properties located within the 100-year floodplain in Unincorporated Collin County and all participating jurisdictions. In compliance with *Requirement 201.6(c)(2)(ii)*, *Table 3.7* provides the type (residential, commercial, institutional, etc.) and numbers of repetitive loss properties located in the identified flood hazard zones within Collin County.

Table 3.9 shows the repetitive loss property statistics for the zero properties recorded in the Collin County classified by jurisdiction. The numbers provided can be used to estimate the vulnerability to repetitive loss properties in terms of dollar losses.

Table 3.9 Repetitive Loss Property Statistics

Unincorporated Collin County	Years	Properties	Number of losses	Payments
Single Family	1981, 1982, 1991, 2006, 2008	2	5	\$242,838.74
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	1981, 1982, 1991, 2006, 2008	2	5	\$242,838.74

Allen	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Anna	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Blue Ridge	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Celina	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00

Collin County Hazard Mitigation Action Plan

Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Fairview	Years	Properties	Number of losses	Payments
Single Family	1989-1991, 1994, 1997, 1998	2	7	\$61,143.83
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	1989-1991, 1994, 1997, 1998	2	7	\$61,143.83

Farmersville	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Frisco	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Josephine	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Lavon	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00

Collin County Hazard Mitigation Action Plan

Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Lowry Crossing	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Lucas	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Melissa	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Murphy	Years	Properties	Number of losses	Payments
Single Family	1981, 1982, 1989, 1990	1	5	\$141,442.25
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

New Hope	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00

Collin County Hazard Mitigation Action Plan

Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Parker	Years	Properties	Number of losses	Payments
Single Family	1989, 1990, 1991, 2006, 2008	5	13	\$296,365.36
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	1989, 1990, 1991, 2006, 2008	5	13	\$296,365.36

Princeton	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Prosper	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

St. Paul	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00
Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Wylie	Years	Properties	Number of losses	Payments
Single Family	0	0	0	\$0.00
Other Residential	0	0	0	\$0.00

Collin County Hazard Mitigation Action Plan

Non Residential	0	0	0	\$0.00
Total	0	0	0	\$0.00

Source: Federal Emergency Management Agency

The dollar amounts in the tables represent the payments made for insurance claims due to flood damage to buildings and contents.

Although both repetitive loss information (*Tables 3.8 and 3.9*) and the historical annualized losses expected from flooding (*Table 3.3*) represent actual historical information, the data cannot be compared or correlated to each other. The repetitive loss information presents insurance claims on properties and buildings, whereas the historical annualized losses represent property losses in the community due to flood events.

Hail

As described in section 3.3, damage from hail events is determined by the intensity of the storm, which, based on the hail diameter, ranges from hard hail to super hailstorm. These events are unpredictable, and all areas Collin County can be affected. All five categories of assets are exposed to this hazard and could potentially be impacted. However, the most vulnerable assets are those related to property and infrastructure, particularly roofs and structures. Damages from hail can potentially translate into significant insurance claims and expenses.

Based on the available information, vulnerability to hail was assessed using two techniques: (1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from the National Centers for Environmental Information was used to predict expected monetary and human losses from the event; (2) in fulfillment of Element A of *Requirement 201.6(c)(2)(ii)(A)*, geographical hazard areas identified for hail and the nature of the impacts expected from hail were used to identify the assets, including existing structures, vulnerable to this hazard event. The vulnerability to future structures was not conducted at this time due to unattainable data. Therefore, compliance with Element B of *Requirement 201.6(c)(2)(ii)(A)*, describing vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities will be an objective in the five-year planning cycle.

Table 3.10 presents Collin County's recorded historical losses due to hailstorm events as provided in the hazard events database obtained from the National Centers for Environmental Information. Based on the starting location of the hailstorm event, these events were geo-referenced using ESRI® ArcMap™ 10.2. The resulting layer was overlaid with the jurisdiction boundary layer to determine the property and personal losses in each jurisdiction.

Table 3.10 Historical Losses Due to Hail Events (1/1/1985-9/22/2020)

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin Co.	4/29/1985	20:58	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	7/2/1985	15:35	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	3/11/1986	18:58	Hail	1.75 in.	0	0	\$0	\$0
Collin Co.	4/12/1986	0:15	Hail	1.75 in.	0	0	\$0	\$0
Collin Co.	4/12/1986	0:50	Hail	1.00 in.	0	0	\$0	\$0
Collin Co.	5/24/1986	10:00	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	5/24/1986	10:34	Hail	1.00 in.	0	0	\$0	\$0
Collin Co.	5/3/1987	21:03	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	5/14/1987	15:10	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	7/2/1987	23:30	Hail	1.50 in.	0	0	\$0	\$0
Collin Co.	4/1/1988	14:02	Hail	1.00 in.	0	0	\$0	\$0
Collin Co.	4/5/1988	16:35	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	5/8/1988	6:50	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	11/15/1988	15:00	Hail	1.00 in.	0	0	\$0	\$0
Collin Co.	11/15/1988	15:29	Hail	1.75 in.	0	0	\$0	\$0
Collin Co.	4/28/1989	19:25	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	4/28/1989	20:10	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	4/28/1989	20:30	Hail	1.00 in.	0	0	\$0	\$0
Collin Co.	4/28/1989	21:50	Hail	1.00 in.	0	0	\$0	\$0
Collin Co.	7/2/1989	15:43	Hail	1.00 in.	0	0	\$0	\$0
Collin Co.	7/2/1989	16:06	Hail	4.50 in.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin Co.	7/2/1989	16:21	Hail	1.75 in.	0	0	\$0	\$0
Collin Co.	4/15/1990	20:52	Hail	1.00 in.	0	0	\$0	\$0
Collin Co.	4/27/1990	15:00	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	4/27/1990	15:30	Hail	1.75 in.	0	0	\$0	\$0
Collin Co.	3/22/1991	6:12	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	4/18/1991	18:12	Hail	1.00 in.	0	0	\$0	\$0
Collin Co.	4/27/1991	2:30	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	6/22/1991	19:10	Hail	1.75 in.	0	0	\$0	\$0
Collin Co.	6/22/1991	19:20	Hail	2.00 in.	0	0	\$0	\$0
Collin Co.	10/28/1991	16:45	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	3/24/1992	14:05	Hail	1.74 in.	0	0	\$0	\$0
Collin Co.	5/11/1992	20:16	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	5/11/1992	20:28	Hail	1.75 in.	0	0	\$0	\$0
Collin Co.	5/11/1992	21:15	Hail	1.75 in.	0	0	\$0	\$0
Collin Co.	5/11/1992	21:30	Hail	1.75 in.	0	0	\$0	\$0
Collin Co.	5/11/1992	21:45	Hail	1.75 in.	0	0	\$0	\$0
Collin Co.	5/11/1992	22:00	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	5/14/1992	9:15	Hail	1.75 in.	0	0	\$0	\$0
Collin Co.	6/10/1992	21:55	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	6/25/1992	4:30	Hail	1.75 in.	0	0	\$0	\$0
Collin Co.	8/2/1992	15:12	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	8/2/1992	15:47	Hail	0.88 in.	0	0	\$0	\$0
Collin Co.	9/2/1992	23:15	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	9/2/1992	23:20	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	9/3/1992	0:15	Hail	0.75 in.	0	0	\$0	\$0
Collin Co.	10/7/1992	16:12	Hail	1.75 in.	0	0	\$0	\$0
Wylie	4/19/1993	17:15	Hail	0.88 in.	0	0	\$0	\$0
Garland	4/19/1993	18:00	Hail	1.00 in.	0	0	\$0	\$0
Airport	4/19/1993	18:30	Hail	1.75 in.	0	0	\$0	\$0
Love Field	4/19/1993	18:30	Hail	1.75 in.	0	0	\$0	\$0
Plano	9/20/1993	17:50	Hail	1.00 in.	0	0	\$0	\$0
Melissa	10/19/1993	4:00	Hail	0.75 in.	0	0	\$0	\$0
Frisco	4/25/1994	18:25	Hail	0.88 in.	0	0	\$0	\$0
McKinney	4/29/1994	1:45	Hail	1.00 in.	0	0	\$0	\$0
Wylie	5/2/1994	13:56	Hail	0.75 in.	0	0	\$0	\$0
Frisco	5/2/1994	14:20	Hail	0.75 in.	0	0	\$0	\$0
Lake Lavon	5/14/1994	17:40	Hail	0.75 in.	0	0	\$0	\$0
Farmersville	5/14/1994	18:01	Hail	0.75 in.	0	0	\$0	\$0
Nevada	5/14/1994	19:23	Hail	0.75 in.	0	0	\$0	\$0
Allen	7/12/1994	19:50	Hail	0.75 in.	0	0	\$0	\$0
Plano	7/15/1994	17:39	Hail	0.75 in.	0	0	\$0	\$0
Plano	8/7/1994	13:25	Hail	0.75 in.	0	0	\$0	\$0
Plano	10/21/1994	12:45	Hail	0.75 in.	0	0	\$0	\$0
Plano	10/21/1994	13:33	Hail	0.75 in.	0	0	\$0	\$0
Meridian	4/22/1995	15:39	Hail	0.75 in.	0	0	\$0	\$0
Plano	4/22/1995	15:40	Hail	1.75 in.	0	0	\$0	\$0
Westminster	5/1/1995	1:08	Hail	0.75 in.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
McKinney	5/7/1995	22:40	Hail	0.75 in.	0	0	\$0	\$0
Plano	5/24/1995	16:37	Hail	1.75 in.	0	0	\$0	\$0
Anna	5/24/1995	17:05	Hail	0.75 in.	0	0	\$0	\$0
Princeton	5/25/1995	17:05	Hail	1.00 in.	0	0	\$0	\$0
Farmersville	2/27/1996	9:15	Hail	0.75 in.	0	0	\$0	\$0
Copeville	2/27/1996	10:15	Hail	0.75 in.	0	0	\$0	\$0
Allen	3/18/1996	0:10	Hail	0.75 in.	0	0	\$0	\$0
Plano	3/24/1996	15:10	Hail	0.75 in.	0	0	\$0	\$0
Plano	3/24/1996	15:20	Hail	1.00 in.	0	0	\$0	\$0
Plano	3/24/1996	15:27	Hail	1.25 in.	0	0	\$0	\$0
Mc Kinney	3/24/1996	15:40	Hail	0.75 in.	0	0	\$0	\$0
Princeton	4/4/1996	1:40	Hail	0.88 in.	0	0	\$0	\$0
Mc Kinney	4/12/1996	12:38	Hail	0.88 in.	0	0	\$0	\$0
Anna	4/12/1996	12:38	Hail	0.88 in.	0	0	\$0	\$0
Frisco	4/12/1996	16:45	Hail	0.75 in.	0	0	\$0	\$0
Anna	4/12/1996	16:48	Hail	0.75 in.	0	0	\$0	\$0
Wylie	4/12/1996	17:26	Hail	0.75 in.	0	0	\$0	\$0
Mc Kinney	4/13/1996	21:39	Hail	0.88 in.	0	0	\$0	\$0
Weston	4/13/1996	21:48	Hail	1.00 in.	0	0	\$0	\$0
Murphy	4/13/1996	22:08	Hail	0.75 in.	0	0	\$0	\$0
Lucas	5/27/1996	4:14	Hail	1.00 in.	0	0	\$0	\$0
Murphy	5/28/1996	17:42	Hail	1.50 in.	0	0	\$0	\$0
Culleoka	5/28/1996	18:10	Hail	1.00 in.	0	0	\$0	\$0
Plano	6/12/1996	17:10	Hail	1.00 in.	0	0	\$0	\$0
Mc Kinney	6/17/1996	16:50	Hail	0.75 in.	0	0	\$0	\$0
Mc Kinney	6/17/1996	16:55	Hail	0.88 in.	0	0	\$0	\$0
Mc Kinney	7/23/1996	12:30	Hail	0.75 in.	0	0	\$0	\$0
Princeton	7/30/1996	19:08	Hail	1.75 in.	0	0	\$0	\$0
Plano	10/21/1996	10:50	Hail	0.75 in.	0	0	\$0	\$0
Plano	10/21/1996	14:35	Hail	2.00 in.	0	0	\$0	\$0
Plano	10/21/1996	14:50	Hail	2.00 in.	0	0	\$0	\$0
Prosper	4/22/1997	3:30	Hail	1.00 in.	0	0	\$0	\$0
Celina	5/25/1997	22:04	Hail	1.00 in.	0	0	\$0	\$0
Plano	6/9/1997	20:14	Hail	1.00 in.	0	0	\$0	\$0
Plano	6/9/1997	20:19	Hail	0.75 in.	0	0	\$0	\$0
Allen	6/9/1997	20:19	Hail	0.75 in.	0	0	\$0	\$0
Plano	6/9/1997	20:45	Hail	1.00 in.	0	0	\$0	\$0
Plano	6/16/1997	19:03	Hail	0.75 in.	0	0	\$0	\$0
Plano	6/16/1997	19:10	Hail	0.88 in.	0	0	\$0	\$0
Anna	8/13/1997	16:10	Hail	0.88 in.	0	0	\$0	\$0
Mc Kinney	1/4/1998	16:22	Hail	0.75 in.	0	0	\$0	\$0
Allen	1/4/1998	16:25	Hail	1.00 in.	0	0	\$0	\$0
Branch	1/4/1998	16:30	Hail	1.00 in.	0	0	\$0	\$0
Murphy	1/21/1998	16:25	Hail	1.00 in.	0	0	\$0	\$0
Anna	2/25/1998	19:39	Hail	0.75 in.	0	0	\$0	\$0
Prosper	2/25/1998	19:40	Hail	0.75 in.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Celina	4/16/1998	0:30	Hail	1.75 in.	0	0	\$0	\$0
Desert	5/2/1998	21:28	Hail	1.00 in.	0	0	\$0	\$0
Anna	5/2/1998	21:35	Hail	0.75 in.	0	0	\$0	\$0
Mc Kinney	5/8/1998	20:25	Hail	1.00 in.	0	0	\$0	\$0
Frisco	5/8/1998	20:35	Hail	1.75 in.	0	0	\$0	\$0
Mc Kinney	5/8/1998	20:53	Hail	0.75 in.	0	0	\$0	\$0
Melissa	5/8/1998	20:54	Hail	1.75 in.	0	0	\$0	\$0
Frisco	5/8/1998	21:26	Hail	0.75 in.	0	0	\$0	\$0
Mc Kinney	5/8/1998	21:54	Hail	1.75 in.	0	0	\$0	\$0
Mc Kinney	5/8/1998	21:55	Hail	1.75 in.	0	0	\$0	\$0
Blue Ridge	10/2/1998	18:20	Hail	1.00 in.	0	0	\$0	\$0
Frisco	2/6/1999	19:54	Hail	1.75 in.	0	0	\$0	\$0
Farmersville	2/6/1999	20:50	Hail	0.75 in.	0	0	\$0	\$0
Celina	4/3/1999	5:11	Hail	1.00 in.	0	0	\$0	\$0
Weston	5/4/1999	12:10	Hail	1.00 in.	0	0	\$0	\$0
Wylie	5/25/1999	18:18	Hail	1.00 in.	0	0	\$0	\$0
Lavon	2/25/2000	23:17	Hail	0.75 in.	0	0	\$0	\$0
Prosper	3/2/2000	18:10	Hail	1.75 in.	0	0	\$0	\$0
Plano	3/2/2000	18:15	Hail	1.00 in.	0	0	\$0	\$0
Plano	3/2/2000	18:24	Hail	1.75 in.	0	0	\$0	\$0
Mc Kinney	3/2/2000	18:29	Hail	1.00 in.	0	0	\$0	\$0
Farmersville	3/2/2000	18:50	Hail	1.00 in.	0	0	\$0	\$0
Plano	3/10/2000	10:45	Hail	0.75 in.	0	0	\$0	\$0
Wylie	3/16/2000	21:28	Hail	0.75 in.	0	0	\$0	\$0
Parker	5/12/2000	16:40	Hail	0.75 in.	0	0	\$0	\$0
Wylie	5/27/2000	16:50	Hail	0.75 in.	0	0	\$0	\$0
Plano	3/11/2001	14:40	Hail	0.88 in.	0	0	\$0	\$0
Plano	5/6/2001	18:22	Hail	1.00 in.	0	0	\$0	\$0
Plano	5/6/2001	18:43	Hail	3.00 in.	0	0	\$0	\$0
Allen	5/6/2001	19:00	Hail	1.00 in.	0	0	\$0	\$0
Blue Ridge	4/16/2002	23:15	Hail	0.75 in.	0	0	\$0	\$0
Mc Kinney	5/9/2002	23:10	Hail	0.75 in.	0	0	\$0	\$0
Frisco	12/30/2002	13:30	Hail	1.75 in.	0	0	\$0	\$0
Plano	12/30/2002	14:30	Hail	1.00 in.	0	0	\$0	\$0
Plano	4/5/2003	22:16	Hail	2.00 in.	0	0	\$0	\$0
Plano	4/5/2003	22:32	Hail	3.00 in.	0	0	\$0	\$0
Plano	4/6/2003	12:55	Hail	1.00 in.	0	0	\$0	\$0
Plano	4/6/2003	13:00	Hail	1.00 in.	0	0	\$0	\$0
Blue Ridge	5/13/2003	5:22	Hail	1.00 in.	0	0	\$0	\$0
Nevada	5/24/2003	21:30	Hail	0.75 in.	0	0	\$0	\$0
Mc Kinney	5/24/2003	22:47	Hail	1.00 in.	0	0	\$0	\$0
Allen	6/14/2003	16:23	Hail	1.50 in.	0	0	\$0	\$0
Plano	6/14/2003	16:40	Hail	1.00 in.	0	0	\$0	\$0
Celina	7/2/2003	16:15	Hail	0.75 in.	0	0	\$0	\$0
Anna	7/22/2003	15:46	Hail	0.75 in.	0	0	\$0	\$0
Mc Kinney	7/22/2003	16:22	Hail	1.00 in.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Plano	7/22/2003	16:45	Hail	0.75 in.	0	0	\$0	\$0
Mc Kinney	6/5/2004	16:35	Hail	1.75 in.	0	0	\$0	\$0
Frisco	6/19/2004	13:22	Hail	0.88 in.	0	0	\$0	\$0
Plano	1/12/2005	17:15	Hail	1.25 in.	0	0	\$0	\$0
Wylie	2/22/2005	23:21	Hail	1.00 in.	0	0	\$0	\$0
Blue Ridge	2/23/2005	0:15	Hail	0.75 in.	0	0	\$0	\$0
Westminster	2/23/2005	0:25	Hail	1.75 in.	0	0	\$0	\$0
Plano	4/5/2005	15:50	Hail	1.00 in.	0	0	\$0	\$0
Frisco	4/5/2005	16:00	Hail	0.88 in.	0	0	\$0	\$0
Frisco	4/5/2005	16:12	Hail	0.75 in.	0	0	\$0	\$0
Frisco	4/5/2005	16:14	Hail	1.00 in.	0	0	\$0	\$0
Anna	4/5/2005	16:58	Hail	1.75 in.	0	0	\$0	\$0
Blue Ridge	4/5/2005	17:50	Hail	1.00 in.	0	0	\$0	\$0
Plano	5/25/2005	12:30	Hail	0.75 in.	0	0	\$0	\$0
Farmersville	6/13/2005	22:52	Hail	0.88 in.	0	0	\$0	\$0
Melissa	5/9/2006	21:04	Hail	1.75 in.	0	0	\$5,000	\$0
Plano	4/3/2007	18:05	Hail	1.25 in.	0	0	\$0	\$0
Plano	4/3/2007	18:23	Hail	1.00 in.	0	0	\$0	\$0
Melissa	4/24/2007	14:26	Hail	1.00 in.	0	0	\$0	\$0
Blue Ridge	4/24/2007	14:52	Hail	1.75 in.	0	0	\$5,000	\$0
McKinney	5/30/2007	8:45	Hail	0.75 in.	0	0	\$0	\$0
Murphy	5/30/2007	9:05	Hail	0.75 in.	0	0	\$0	\$0
Wylie	6/4/2007	14:50	Hail	0.88 in.	0	0	\$0	\$0
Melissa	6/9/2007	13:44	Hail	0.88 in.	0	0	\$0	\$0
Westminster	6/20/2007	5:05	Hail	1.00 in.	0	0	\$0	\$0
Anna	2/5/2008	2:20	Hail	1.75 in.	0	0	\$5,000	\$0
Wylie	2/5/2008	14:00	Hail	0.75 in.	0	0	\$0	\$0
Allen	2/16/2008	6:40	Hail	1.00 in.	0	0	\$0	\$0
McKinney	2/16/2008	6:40	Hail	1.75 in.	0	0	\$25,000	\$0
Foot	2/16/2008	6:45	Hail	1.00 in.	0	0	\$0	\$0
Melissa	2/16/2008	6:47	Hail	1.00 in.	0	0	\$0	\$0
Anna	2/16/2008	6:54	Hail	1.75 in.	0	0	\$5,000	\$0
McKinney	4/4/2008	1:15	Hail	1.75 in.	0	0	\$10,000	\$0
Plano	4/4/2008	2:40	Hail	1.00 in.	0	0	\$0	\$0
Allen	4/4/2008	2:50	Hail	1.00 in.	0	0	\$0	\$0
Plano	4/8/2008	22:20	Hail	1.00 in.	0	0	\$0	\$0
Allen	4/8/2008	22:33	Hail	0.75 in.	0	0	\$0	\$0
Lucas	4/8/2008	22:48	Hail	0.88 in.	0	0	\$0	\$0
Copeville	4/8/2008	23:19	Hail	1.00 in.	0	0	\$0	\$0
Shepton	4/8/2008	23:44	Hail	0.75 in.	0	0	\$0	\$0
Princeton	4/17/2008	21:01	Hail	0.88 in.	0	0	\$0	\$0
Anna	5/7/2008	16:19	Hail	0.88 in.	0	0	\$0	\$0
Melissa	5/7/2008	16:30	Hail	1.75 in.	0	0	\$5,000	\$0
Celina	6/28/2008	16:50	Hail	0.75 in.	0	0	\$0	\$0
Melissa	2/10/2009	22:03	Hail	1.00 in.	0	0	\$0	\$0
Celina	4/12/2009	22:09	Hail	1.00 in.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Melissa	4/12/2009	22:32	Hail	1.00 in.	0	0	\$2,000	\$0
McKinney	5/2/2009	13:47	Hail	1.00 in.	0	0	\$0	\$0
Melissa	5/2/2009	19:10	Hail	1.25 in.	0	0	\$0	\$0
Parker	7/19/2009	13:15	Hail	0.75 in.	0	0	\$0	\$0
Farmersville	10/24/2010	15:41	Hail	2.00 in.	0	0	\$500	\$0
Allen	3/15/2011	15:10	Hail	0.88 in.	0	0	\$0	\$0
Plano	4/4/2011	4:04	Hail	0.75 in.	0	0	\$0	\$0
Rockhill	4/10/2011	23:29	Hail	1.50 in.	0	0	\$10,000	\$0
Prosper	4/10/2011	23:34	Hail	2.75 in.	0	0	\$200,000	\$0
Plano	4/14/2011	21:39	Hail	1.00 in.	0	0	\$0	\$0
Shepton	4/14/2011	21:40	Hail	1.25 in.	0	0	\$20,000	\$0
Shepton	4/14/2011	21:45	Hail	1.75 in.	0	0	\$25,000	\$0
Plano	4/14/2011	21:48	Hail	1.00 in.	0	0	\$0	\$0
Allen	4/14/2011	21:49	Hail	1.00 in.	0	0	\$0	\$0
Melissa	4/14/2011	22:32	Hail	0.88 in.	0	0	\$0	\$0
Plano	4/19/2011	16:25	Hail	1.25 in.	0	0	\$0	\$0
Prosper	4/24/2011	18:53	Hail	1.75 in.	0	0	\$15,000	\$0
Wylie	4/24/2011	21:35	Hail	1.00 in.	0	0	\$0	\$0
Wylie	4/25/2011	9:48	Hail	1.00 in.	0	0	\$0	\$0
Melissa	4/25/2011	15:04	Hail	0.75 in.	0	0	\$0	\$0
Wylie	4/26/2011	16:28	Hail	1.00 in.	0	0	\$0	\$0
Plano	5/1/2011	22:03	Hail	0.88 in.	0	0	\$0	\$0
Plano	5/1/2011	22:05	Hail	0.75 in.	0	0	\$0	\$0
Wylie	5/2/2011	0:18	Hail	1.25 in.	0	0	\$0	\$0
Frisco	5/2/2011	1:20	Hail	0.75 in.	0	0	\$0	\$0
Shepton	5/20/2011	13:25	Hail	0.88 in.	0	0	\$0	\$0
Shepton	5/20/2011	13:25	Hail	1.25 in.	0	0	\$0	\$0
Plano	5/20/2011	14:19	Hail	1.00 in.	0	0	\$0	\$0
Lucas	5/20/2011	15:58	Hail	1.50 in.	0	0	\$0	\$0
Renner	5/23/2011	11:39	Hail	0.88 in.	0	0	\$0	\$0
Celina	5/24/2011	20:48	Hail	2.00 in.	0	0	\$25,000	\$0
Frisco	5/24/2011	21:10	Hail	0.88 in.	0	0	\$0	\$0
Prosper	9/18/2011	18:05	Hail	1.00 in.	0	0	\$0	\$0
McKinney	9/18/2011	18:25	Hail	1.00 in.	0	0	\$0	\$0
McKinney	9/18/2011	18:38	Hail	1.25 in.	0	0	\$0	\$0
Plano	9/18/2011	19:01	Hail	1.00 in.	0	0	\$0	\$0
Shepton	10/17/2011	20:25	Hail	0.75 in.	0	0	\$0	\$0
McKinney	10/23/2011	0:20	Hail	0.75 in.	0	0	\$0	\$0
Frisco	4/3/2012	13:50	Hail	1.75 in.	0	0	\$800,000	\$0
Frisco	4/3/2012	13:50	Hail	2.00 in.	0	0	\$1,000,000	\$0
Allen	4/3/2012	16:10	Hail	1.00 in.	0	0	\$0	\$0
Allen	5/14/2012	17:53	Hail	0.88 in.	0	0	\$0	\$0
Plano	5/30/2012	22:30	Hail	0.75 in.	0	0	\$0	\$0
Murphy	5/30/2012	22:45	Hail	0.75 in.	0	0	\$0	\$0
Plano	6/6/2012	14:50	Hail	0.75 in.	0	0	\$0	\$0
Frisco	6/6/2012	15:12	Hail	1.50 in.	0	0	\$0	\$0
Frisco	6/6/2012	15:15	Hail	0.75 in.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Wylie	6/6/2012	15:50	Hail	1.00 in.	0	0	\$0	\$0
Shepton	6/13/2012	16:45	Hail	1.75 in.	0	0	\$80,000	\$0
Shepton	6/13/2012	16:52	Hail	2.00 in.	0	0	\$75,000	\$0
McKinney	6/13/2012	19:03	Hail	1.00 in.	0	0	\$60,000	\$0
Parker	6/13/2012	19:34	Hail	3.25 in.	0	0	\$800,000	\$0
Shepton	8/17/2012	20:52	Hail	1.00 in.	0	0	\$0	\$0
Shepton	8/17/2012	20:53	Hail	1.00 in.	0	0	\$0	\$0
Shepton	8/17/2012	20:54	Hail	0.88 in.	0	0	\$0	\$0
Shepton	8/17/2012	21:00	Hail	1.25 in.	0	0	\$0	\$0
Shepton	8/17/2012	21:13	Hail	1.50 in.	0	0	\$2,000	\$0
Plano	8/17/2012	21:15	Hail	0.88 in.	0	0	\$0	\$0
Foot	3/23/2013	14:09	Hail	0.88 in.	0	0	\$0	\$0
Valdasta	3/31/2013	6:34	Hail	0.88 in.	0	0	\$0	\$0
Prosper	3/31/2013	6:43	Hail	1.00 in.	0	0	\$0	\$0
Blue Ridge	3/31/2013	6:50	Hail	1.00 in.	0	0	\$0	\$0
Farmersville	3/31/2013	7:20	Hail	0.88 in.	0	0	\$0	\$0
McKinney	3/27/2014	19:18	Hail	1.50 in.	0	0	\$5,000	\$0
Princeton	3/27/2014	19:24	Hail	1.00 in.	0	0	\$0	\$0
Farmersville	3/27/2014	19:43	Hail	0.75 in.	0	0	\$0	\$0
Blue Ridge	3/28/2014	14:23	Hail	1.50 in.	0	0	\$3,000	\$0
Anna	4/3/3014	15:53	Hail	1.00 in.	0	0	\$0	\$0
Anna	4/3/3014	16:02	Hail	.75 in.	0	0	\$0	\$0
Prosper	4/3/3014	17:48	Hail	1.00 in.	0	0	\$5,000	\$0
Celina	4/3/3014	17:49	Hail	1.50 in.	0	0	\$0	\$0
Roland	4/3/3014	18:15	Hail	1.75 in.	0	0	\$0	\$0
Mc Kinney	4/3/3014	18:37	Hail	1.00 in.	0	0	\$0	\$0
Frisco	4/3/3014	18:40	Hail	1.50 in.	0	0	\$60,000	\$0
Allen	4/3/3014	18:50	Hail	1.75 in.	0	0	\$70,000	\$0
Allen	4/3/3014	19:00	Hail	1.25 in.	0	0	\$0	\$0
McKinney	4/3/3014	19:00	Hail	2.00 in.	0	0	\$100,000	\$0
Allen	4/3/3014	19:07	Hail	2.00 in.	0	0	\$80,000	\$0
Melissa	4/3/3014	19:18	Hail	0.75 in.	0	0	\$0	\$0
Lucas	4/3/3014	19:20	Hail	1.50 in.	0	0	\$70,000	\$0
Allen	4/3/3014	19:35	Hail	1.75 in.	0	0	\$175,000	\$0
Allen	4/27/2014	8:00	Hail	0.75 in.	0	0	\$0	\$0
Murphy	4/27/2014	8:15	Hail	1.25 in.	0	0	\$1,000	\$0
Wylie	4/27/2014	8:17	Hail	1.25 in.	0	0	\$1,000	\$0
Wylie	4/27/2014	8:19	Hail	1.00 in.	0	0	\$0	\$0
Frisco	4/24/2015	17:18	Hail	0.88 in.	0	0	\$0	\$0
Farmersville	5/28/2015	17:21	Hail	1.00 in.	0	0	\$0	\$0
Farmersville	5/28/2015	17:26	Hail	1.75 in.	0	0	\$30,000	\$0
Farmersville	5/28/2015	17:30	Hail	1.00 in.	0	0	\$0	\$0
Farmersville	5/28/2015	17:30	Hail	1.00 in.	0	0	\$0	\$0
Parker	8/24/2015	15:40	Hail	0.88 in.	0	0	\$0	\$0
Princeton	3/17/2016	9:30	Hail	1.50 in.	0	0	\$8,000	\$0
Blue Ridge	3/17/2016	10:45	Hail	0.88 in.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Plano	3/23/2016	21:15	Hail	1.75 in.	0	0	\$150,000,000	\$0
Shepton	3/23/2016	21:15	Hail	1.25 in.	0	0	\$0	\$0
Shepton	3/23/2016	21:20	Hail	1.75 in.	0	0	\$150,000,000	\$0
Plano	3/23/2016	21:25	Hail	0.75 in.	0	0	\$0	\$0
Plano	3/23/2016	21:25	Hail	1.75 in.	0	0	\$100,000,000	\$0
Plano	3/23/2016	21:25	Hail	1.25 in.	0	0	\$5,000	\$0
Renner	3/23/2016	21:31	Hail	1.25 in.	0	0	\$0	\$0
Plano	3/23/2016	21:34	Hail	1.25 in.	0	0	\$0	\$0
Allen	3/23/2016	21:35	Hail	1.00 in.	0	0	\$0	\$0
Murphy	3/23/2016	21:35	Hail	1.50 in.	0	0	\$50,000	\$0
Sachse	3/23/2016	21:37	Hail	2.00 in.	0	0	\$100,000,000	\$0
Parker	3/23/2016	21:37	Hail	1.75 in.	0	0	\$100,000,000	\$0
Murphy	3/23/2016	21:40	Hail	1.50 in.	0	0	\$20,000	\$0
Wylie	3/23/2016	21:42	Hail	0.75 in.	0	0	\$0	\$0
Wylie	3/23/2016	21:45	Hail	1.75 in.	0	0	\$50,000,000	\$0
Farmersville	4/11/2016	14:51	Hail	0.75 in.	0	0	\$0	\$0
Frisco	4/11/2016	16:30	Hail	1.50 in.	0	0	\$100,000	\$0
Frisco	4/11/2016	16:42	Hail	1.00 in.	0	0	\$0	\$0
Plano	4/11/2016	16:45	Hail	1.75 in.	0	0	\$100,000	\$0
Frisco	4/11/2016	16:48	Hail	2.00 in.	0	0	\$1,000,000	\$0
Plano	4/11/2016	16:50	Hail	2.50 in.	0	0	\$1,000,000	\$0
Allen	4/11/2016	16:50	Hail	2.00 in.	0	0	\$500,000	\$0
Allen	4/11/2016	16:54	Hail	1.50 in.	0	0	\$500,000	\$0
McKinney	4/11/2016	16:55	Hail	1.25 in.	0	0	\$50,000	\$0
Forest Grove	4/11/2016	16:56	Hail	2.00 in.	0	0	\$5,000,000	\$0
Plano	4/11/2016	17:57	Hail	2.00 in.	0	0	\$1,000,000	\$0
Lucas	4/11/2016	17:03	Hail	1.75 in.	0	0	\$250,000	\$0
Parker	4/11/2016	17:03	Hail	2.00 in.	0	0	\$250,000	\$0
Allen	4/11/2016	17:03	Hail	2.00 in.	0	0	\$1,000,000	\$0
Wylie	4/11/2016	17:07	Hail	1.50 in.	0	0	\$50,000	\$0
Plano	4/11/2016	17:07	Hail	1.50 in.	0	0	\$100,000	\$0
Wylie	4/11/2016	17:12	Hail	2.75 in.	0	0	\$5,000,000	\$0
Wylie	4/11/2016	17:15	Hail	3.50 in.	0	0	\$50,000,000	\$0
Wylie	4/11/2016	17:17	Hail	4.25 in.	0	0	\$100,000,000	\$0
Lavon	4/11/2016	17:18	Hail	2.50 in.	0	0	\$250,000	\$0
Wylie	4/11/2016	17:19	Hail	5.25 in.	0	0	\$60,000,000	\$0
Shepton	5/10/2016	19:25	Hail	0.88 in.	0	0	\$0	\$0
Lolaville	5/10/2016	19:34	Hail	0.88 in.	0	0	\$0	\$0
Allen	5/29/2016	17:45	Hail	0.75 in.	0	0	\$0	\$0
Murphy	5/29/2016	18:25	Hail	0.88 in.	0	0	\$0	\$0
Anna	5/29/2016	18:30	Hail	1.00 in.	0	0	\$0	\$0
Anna	5/29/2016	18:43	Hail	1.00 in.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Frisco	2/27/2017	12:37	Hail	0.88 in.	0	0	\$0	\$0
Frisco	2/27/2017	12:44	Hail	1.00 in.	0	0	\$0	\$0
McKinney	3/26/2017	1930	Hail	2.00 in.	0	0	\$100,000	\$0
Frisco	3/26/2017	19:31	Hail	1.75 in.	0	0	\$10,000	\$0
Frisco	3/26/2017	19:35	Hail	2.00 in.	0	0	\$10,000	\$0
Frisco	3/26/2017	19:36	Hail	2.00 in.	0	0	\$10,000	\$0
Fairview	3/26/2017	19:45	Hail	0.88 in.	0	0	\$0	\$0
Frisco	3/26/2017	19:46	Hail	2.00 in.	0	0	\$10,000	\$0
Frisco	3/26/2017	19:50	Hail	1.75 in.	0	0	\$5,000	\$0
Fairview	3/26/2017	19:57	Hail	1.00 in.	0	0	\$0	\$0
McKinney	3/26/2017	20:00	Hail	2.00 in.	0	0	\$5,000	\$0
Melissa	3/26/2017	20:07	Hail	1.50 in.	0	0	\$0	\$0
Murphy	3/29/2017	2:08	Hail	1.00 in.	0	0	\$0	\$0
Climax	4/4/2017	18:30	Hail	1.00 in.	0	0	\$0	\$0
Culleoka	4/4/2017	18:32	Hail	1.00 in.	0	0	\$0	\$0
Princeton	4/4/2017	18:38	Hail	1.00 in.	0	0	\$0	\$0
Frisco	4/10/2017	13:54	Hail	1.00 in.	0	0	\$2,000	\$0
Allen	4/10/2017	14:04	Hail	1.00 in.	0	0	\$0	\$0
McKinney	4/10/2017	21:30	Hail	1.00 in.	0	0	\$0	\$0
Frisco	4/10/2017	23:22	Hail	1.75 in.	0	0	\$10,000	\$0
Frisco	4/10/2017	23:24	Hail	2.00 in.	0	0	\$	\$0
Frisco	4/10/2017	23:40	Hail	1.75 in.	0	0	\$0	\$0
Prosper	4/10/2017	23:41	Hail	1.00 in.	0	0	\$0	\$0
Celina	4/21/2017	19:29	Hail	1.50 in.	0	0	\$5,000	\$0
Celina	4/21/2017	19:35	Hail	2.50 in.	0	0	\$120,000	\$0
Celina	4/21/2017	19:35	Hail	2.00 in.	0	0	\$10,000	\$0
Prosper	4/21/2017	19:40	Hail	2.75 in.	0	0	\$60,000	\$0
Celina	4/21/2017	19:41	Hail	1.75 in.	0	0	\$10,000	\$0
Prosper	4/21/2017	19:43	Hail	1.75 in.	0	0	\$10,000	\$0
McKinney	4/21/2017	19:47	Hail	1.75 in.	0	0	\$10,000	\$0
McKinney	4/21/2017	19:52	Hail	2.75 in.	0	0	\$20,000	\$0
Fairview	4/21/2017	19:56	Hail	1.25 in.	0	0	\$5,000	\$0
Allen	4/21/2017	20:00	Hail	1.00 in.	0	0	\$5,000	\$0
Fairview	4/21/2017	20:03	Hail	2.50 in.	0	0	\$200,000	\$0
Shepton	4/21/2017	21:54	Hail	1.25 in.	0	0	\$2,000	\$0
Addison Arpt Da	4/21/2017	22:00	Hail	1.50 in.	0	0	\$100,000	\$0
Plano	4/21/2017	22:06	Hail	1.75 in.	0	0	\$120,000	\$0
Allen	1/21/2018	17:36	Hail	0.75 in.	0	0	\$0	\$0
Prosper	4/6/2018	16:30	Hail	1.75 in.	0	0	\$10,000	\$0
Prosper	4/6/2018	16:31	Hail	1.00 in.	0	0	\$0	\$0
Rhea Mills	4/6/2018	16:34	Hail	1.00 in.	0	0	\$0	\$0
Celina	4/6/2018	16:35	Hail	1.50 in.	0	0	\$0	\$0
Prosper	4/6/2018	16:35	Hail	2.50 in.	0	0	\$25,000	\$0
Celina	4/6/2018	16:38	Hail	3.00 in.	0	0	\$100,000	\$0
Prosper	4/6/2018	16:41	Hail	1.50 in.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Foot	4/6/2018	16:44	Hail	1.75 in.	0	0	\$10,000	\$0
Foot	4/6/2018	16:44	Hail	1.75 in.	0	0	\$10,000	\$0
McKinney	4/6/2018	16:52	Hail	1.25 in.	0	0	\$0	\$0
McKinney	4/6/2018	16:54	Hail	2.00 in.	0	0	\$10,000	\$0
Allen	4/6/2018	16:55	Hail	1.00 in.	0	0	\$0	\$0
Allen	4/6/2018	17:00	Hail	1.00 in.	0	0	\$0	\$0
Lebanon	4/6/2018	17:25	Hail	1.00 in.	0	0	\$0	\$0
Allen	4/6/2018	17:34	Hail	1.50 in.	0	0	\$0	\$0
Plano	4/6/2018	17:35	Hail	2.00 in.	0	0	\$10,000	\$0
Plano	4/6/2018	17:35	Hail	2.00 in.	0	0	\$10,000	\$0
Plano	4/6/2018	17:48	Hail	2.00 in.	0	0	\$10,000	\$0
Wylie	4/6/2018	17:49	Hail	2.00 in.	0	0	\$10,000	\$0
Prosper	4/13/2018	16:30	Hail	1.00 in.	0	0	\$	\$0
Foot	4/13/2018	16:35	Hail	0.75 in.	0	0	\$0	\$0
Foot	4/13/2018	16:35	Hail	0.75 in.	0	0	\$0	\$0
Frisco	4/13/2018	16:37	Hail	1.00 in.	0	0	\$0	\$0
Frisco	4/13/2018	16:46	Hail	0.88 in.	0	0	\$0	\$0
McKinney	4/13/2018	16:50	Hail	1.00 in.	0	0	\$0	\$0
McKinney	4/13/2018	16:51	Hail	1.00 in.	0	0	\$0	\$0
Blue Ridge	4/13/2018	17:03	Hail	1.00 in.	0	0	\$0	\$0
McKinney	4/13/2018	17:09	Hail	1.00 in.	0	0	\$0	\$0
McKinney	4/13/2018	17:14	Hail	1.25 in.	0	0	\$0	\$0
McKinney	4/13/2018	17:16	Hail	1.75 in.	0	0	\$0	\$0
Roland	4/13/2018	17:16	Hail	1.00 in.	0	0	\$0	\$0
McKinney	4/13/2018	17:17	Hail	1.00 in.	0	0	\$0	\$0
McKinney	6/5/2018	6:54	Hail	1.00 in.	0	0	\$0	\$0
Plano	6/6/2018	00:18	Hail	1.00 in.	0	0	\$0	\$0
Biggers	6/6/2018	00:29	Hail	1.50 in.	0	0	\$0	\$0
Prosper	11/30/2018	21:34	Hail	1.25 in.	0	0	\$0	\$0
Prosper	3/9/2019	5:14	Hail	1.00 in.	0	0	\$0	\$0
Allen	3/9/2019	5:34	Hail	1.00 in.	0	0	\$0	\$0
Prosper	3/24/2019	17:17	Hail	1.75 in.	0	0	\$10,000	\$0
Fairview	3/24/2019	17:28	Hail	1.75 in.	0	0	\$10,000	\$0
Frisco	3/24/2019	17:33	Hail	1.75 in.	0	0	\$10,000	\$0
Frisco	3/24/2019	17:35	Hail	2.75 in.	0	0	\$100,000	\$0
Fairview	3/24/2019	17:35	Hail	2.00 in.	0	0	\$10,000	\$0
Allen	3/24/2019	17:40	Hail	2.50 in.	0	0	\$50,000	\$0
Allen	3/24/2019	17:40	Hail	3.00 in.	0	0	\$100,000	\$0
Allen	3/24/2019	17:43	Hail	4.50 in.	0	0	\$500,000	\$0
McKinney	3/24/2019	17:47	Hail	2.00 in.	0	0	\$10,000	\$0
Allen	3/24/2019	17:48	Hail	2.00 in.	0	0	\$10,000	\$0
Allen	3/24/2019	17:48	Hail	2.25 in.	0	0	\$50,000	\$0
Frisco	3/24/2019	17:54	Hail	2.00 in.	0	0	\$10,000	\$0
Lucas	3/24/2019	17:55	Hail	1.75 in.	0	0	\$10,000	\$0
Allen	3/24/2019	17:57	Hail	3.00 in.	0	0	\$100,000	\$0
Allen	3/24/2019	18:00	Hail	2.00 in.	0	0	\$10,000	\$0

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Allen	3/24/2019	18:06	Hail	2.50 in.	0	0	\$50,000	\$0
McKinney	3/24/2019	18:12	Hail	2.50 in.	0	0	\$50,000	\$0
Renner	3/24/2019	21:36	Hail	1.00 in.	0	0	\$0	\$0
Plano	3/24/2019	21:39	Hail	1.75 in.	0	0	\$10,000	\$0
Murphy	3/24/2019	21:47	Hail	1.25 in.	0	0	\$0	\$0
Wylie	3/24/2019	21:50	Hail	1.00 in.	0	0	\$0	\$0
Farmersville	5/1/2019	19:55	Hail	0.75 in.	0	0	\$0	\$0
Shepton	5/18/2019	12:29	Hail	1.00 in.	0	0	\$0	\$0
Anna	6/19/2019	15:31	Hail	1.25 in.	0	0	\$0	\$0
Anna	6/19/2019	15:31	Hail	0.75 in.	0	0	\$0	\$0
Desert	6/19/2019	15:44	Hail	1.00 in.	0	0	\$0	\$0
Fayburg	6/19/2019	16:02	Hail	2.50 in.	0	0	\$10,000	\$0
McKinney	6/19/2019	20:04	Hail	0.88 in.	0	0	\$0	\$0
McKinney	6/19/2019	20:08	Hail	1.25 in.	0	0	\$0	\$0
McKinney	6/19/2019	20:10	Hail	1.00 in.	0	0	\$0	\$0
Farmersville	6/19/2019	20:40	Hail	0.88 in.	0	0	\$0	\$0
Farmersville	6/19/2019	20:48	Hail	1.00 in.	0	0	\$0	\$0
Melissa	10/20/2019	23:38	Hail	1.00 in.	0	0	\$0	\$0
Totals:					0	0	\$882,172,000	\$0

Source: National Centers for Environmental Information

As observed in Table 3.10, Historical Losses Due to Hail Events, calculations of annualized losses were conducted using historical data obtained from the National Centers for Environmental Information. The annualized loss value can be interpreted as the impact expected from hail in terms of annualized human losses and human injuries, and annualized property losses. As observed in *Table 3.10*, Collin County can expect a total property loss of \$25,204,914.29 each year as a result of hail, with no injuries, deaths, or crop losses expected from this event.

The geographical occurrence of hailstorm events cannot be predicted; therefore, the area of potential impacts corresponds to all of Collin County's territory. Therefore, all improved property, emergency and critical facilities, and critical structures are exposed to this hazard, including 37 fire stations, 14 police stations, 46 hospitals, 212 schools, and 135 historical properties. As described above, roofs and structures are more vulnerable to this hazard. Therefore, it is expected that building improvements would be most affected.

In compliance to *Requirement 201.6(c)(2)(ii)*, vulnerability to hail and impacts to assets expected from hail events can be summarized as follows:

- **Population:** According to National Centers for Environmental Information (NCEI), no injuries or fatalities have been recorded for hailstorm events. All the population of Collin County is exposed to this hazard, but there are no personal losses expected from hailstorm events.
- **Improved Property:** Based on historical data, a loss of \$25,204,914.29 per year can be expected in property loss due to hailstorm damage though values could be underestimated due to lack of accurate reporting. Because of the unpredictability of the geographical location of hailstorms, all improved property in Collin County is exposed to this hazard. Although some crops are susceptible to hail hazards, available historical data for Collin County indicates that there are no expected crop losses from this event.

- **Emergency Facilities**: Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in Collin County are exposed to this hazard.
- **Critical Facilities**: Because of the unpredictability of the geographical location of hailstorms, all critical facilities in Collin County are exposed to this hazard.
- **Critical Infrastructure**: Because of the unpredictability of the geographical location of hailstorms, all critical infrastructure in Collin County is exposed to this hazard.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

Wildfires

By definition, wildfires are fires occurring in a wildland area (e.g., grassland, forest, brush land) except for fire under prescription. Therefore, impacts from this hazard are related to wildland areas and what is known as Wildland Urban Interface (WUI), which are defined as the area where structures and other human development meet or intermingle with undeveloped wildland. The WUI creates an environment in which fire can move readily between structural and vegetation fuels. The expansion of these areas has increased the likelihood that wildfires will threaten structures and people.

Wildfires can cause significant damage to property and threatens the lives of people who are unable to evacuate WUI areas. All five categories of assets located in these wildfire-prone areas are considered vulnerable and can be exposed to this hazard.

WUI data was obtained from the Texas Forest Service wildfire database. The data provides GIS data for wildfires and households affected. Data from the National Centers for Environmental Information provided the property and crop damage totals for Collin County wildfires. According to the NCEI, there were no specific recorded instances of wildfire during the period studied for Anna, Celina, Fairview, Farmersville, Josephine, Lavon, Lowry Crossing, Lucas, Melissa, Murphy, New Hope, Parker, Prosper, St. Paul, and Wylie.

Table 3.11 provides the magnitude, number of fatalities, property and crop damage caused by fires in the county.

Table 3.11 Historical Losses due to Wildfires (1/1/1996-9/22/2020)

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Princeton	2/15/1996	10:00	Wildfire		0	0	\$0	\$0
Collin (Zone)	6/25/2006	11:00	Wildfire		0	0	\$17,000	\$2,400
Collin (Zone)	9/5/2011	13:00	Wildfire		0	0	\$50,000	\$0
Collin (Zone)	5/23/2012	10:10	Wildfire		1	0	\$0	\$0
Totals:					1	0	\$67,000	\$2,400

Source: National Centers for Environmental Information

In order to assess wildfire risk and vulnerability of the identified assets, a Geographic Information System-based analysis was conducted to estimate exposure to this event using GIS data in combination with Collin Central Appraisal District property records, and the Regional Hazard Assessment Tool.

Wildland fires in Collin County are highly likely to occur in the next year and will impact the county as a whole. Based on previous occurrences, the extent of wildland fires will be very high. Fires will start easily and spread at a rapid rate, which can result in extensive county wide property damage. According to the Texas Forest Service Wildfire Summary Report, 52% of Collin County's population is located in the Wildland Urban Interface.

Table 3.12 Distribution of WUI Interface Communities in Collin County

Jurisdiction	Area (Sq. Mile)	WUI-Interface Community				
		Low Density (Sq. Mile)	Medium Density (Sq. Mile)	High Density (Sq. Mile)	Total (Sq. Mile)	Percentage of Total Area (%)
Unincorporated	451.14	150.16	94.71	7.39	252.26	55.92%
Allen	26.41	0.75	2.41	6.01	9.17	34.72%
Anna	16.05	2.98	2.52	0.89	6.39	39.81%
Blue Ridge	1.67	0.42	0.55	0.52	1.49	89.22%
Celina	33.71	9.02	3.89	1.17	14.08	41.77%
Fairview	8.86	0.91	4.04	2.53	7.48	84.42%
Farmersville	4.26	0.61	1.00	1.22	2.83	66.43%
Frisco	43.36	3.75	3.85	6.6	14.2	32.75%
Josephine	1.77	0.02	0.68	0.21	0.91	51.41%
Lavon	3.05	0.43	0.85	0.32	1.6	52.46%
Lowry Crossing	2.57	0.09	1.41	0.90	2.4	93.39%
Lucas	15.93	1.59	9.75	0.65	11.99	75.27%
Melissa	11.85	2.76	3.05	1.33	7.14	60.25%
Murphy	5.68	0.16	0.92	1.62	2.7	47.54%
New Hope	1.40	0.09	0.84	0.35	1.28	91.43%
Parker	8.49	0.75	3.60	1.14	5.49	64.66%
Princeton	10.61	1.24	1.81	1.57	4.62	43.54%
Prosper	18.25	2.16	3.61	1.20	6.97	38.19%
St. Paul	1.40	0.01	0.80	0.35	1.16	82.86%
Wylie	36.20	2.36	5.19	6.23	13.78	38.07%

Source: Texas Forest Service

The determination of property vulnerability to wildfires was calculated by overlaying the County's parcel data and the Texas Fire Service data. The determination of assessed value at-risk (exposure) to wildfires was calculated by overlaying the improved property shapefile to the WUI polygons, and adding the total assessed building values within each of the low/medium/high density WUI Interface communities (*Table 3.12*).

Table 3.13 Parcels and Assessed Value of Improvements

Jurisdiction	Residential Parcels	Commercial Parcels	Total Assessed Value of Improvements (Buildings & Contents) at Risk	Percentage (%) of Assessed Value of Improvements (Buildings & Contents) at Risk
Collin County	104,743	7,983	\$41,609,034,512	32.19%

Source: Texas Forest Service

As observed in *Table 3.13* approximately 32.19% of Collin County's improved property is vulnerable to wildfires. Based on geographical location, a total of \$41,609,034,512 worth of property value composed of buildings and its contents are vulnerable to this hazard.

In compliance to *Requirement 201.6(c)(2)(ii)* Collin County's vulnerability to wildfire and impacts to assets expected from this event can be summarized as follows:

- **Population**: According to National Centers for Environmental Information (NCEI), no injuries or fatalities have been recorded for hailstorm events. Based on geographical data, approximately 104,743 residential parcels in Collin County are vulnerable to wildfires.
- **Improved Property**: Based on historical data, a loss of \$2,791.67 per year can be expected in property loss and \$100 per year in crop losses due to hailstorm damage though values could be underestimated due to lack of accurate reporting. Based on geographical data, a loss of \$41,609,034,512 worth of buildings and its contents is exposed to wildfires. This corresponds to a 32.19% overall property improvement values across Collin County.
- **Emergency Facilities**: Based on geographic information and assuming that the facilities located within the WUI, there are emergency facilities exposed to the wildfire hazard.
- **Critical Facilities**: Based on geographic information and assuming that the facilities located within the WUI, there are critical facilities exposed to the wildfire hazard.
- **Critical Infrastructure**: Based on geographic information and assuming that the infrastructure located within the WUI, there are critical infrastructure exposed to the wildfire hazard.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

3.5 Statistical Risk Assessment

A statistical risk assessment uses statistical and mathematical tools to predict hazard frequency and hazard estimated impacts. Data collected from National Centers for Environmental Information storm events database (recorded historic hazard events), census block data from the U.S. Census 2010 block data provided by the Texas Forest Service and Regional Hazard Assessment Tool were used to assess vulnerability of the five vulnerable categories of assets: population, improved property, critical facilities, critical infrastructure, and emergency facilities.

The statistical analysis was conducted using the historical data obtained from National Centers for Environmental Information. The data included both casualty and property losses from hazard events that occurred in Collin County from 1/1/1950 or 1/1/1996 to 9/22/2020. Annualized personal and property losses were calculated by dividing the total losses by the number of years for which data was available (i.e. 24 or 70 years).

Extreme Heat

Extreme heat impacts large areas and cross jurisdictional boundaries; therefore, all Collin County and all of the jurisdictions participating on this plan are exposed to this hazard. Improved property, emergency facilities, critical infrastructure, and critical facilities are not considered vulnerable to extreme heat or cold events; therefore, estimated vulnerability to these assets is anticipated to be minimal. However, population is significantly vulnerable to extreme heat.

Based on the available information, vulnerability to extreme heat was assessed using two techniques: 1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from the National Centers for Environmental information was used to predict expected monetary and human losses from the event; 2) in fulfillment of *Requirement 201.6(c)(2)(ii)(A)*, geographical hazard areas identified for extreme heat and the nature of the impacts expected from this hazard event were used to identify the vulnerable assets.

Table 3.14 presents Collin County's recorded historical losses due to extreme heat events as provided in the hazard events database obtained from the National Centers for Environmental Information. The annualized losses due to extreme events were calculated using the methodology described in section 3.3

Table 3.14 Extreme Heat Historical Occurrences Between (1/1/1996-9/22/2020)

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin (Zone)	7/19/1997	18:00	Heat		0	0	\$0	\$0
Collin (Zone)	7/1/1998	0:00	Heat		0	0	\$0	\$0
Collin (Zone)	8/1/1999	0:00	Heat		0	0	\$0	\$0
Collin (Zone)	7/1/2000	0:00	Heat		0	0	\$0	\$0
Collin (Zone)	8/1/2000	0:00	Heat		0	0	\$0	\$0
Collin (Zone)	9/1/2000	0:00	Heat		0	0	\$0	\$0
Collin (Zone)	8/1/2011	6:00	Excessive Heat		1	0	\$0	\$0
Collin (Zone)	8/6/2011	2:21	Heat		1	0	\$0	\$0
Collin (Zone)	7/19/2015	16:00	Excessive Heat		1	0	\$0	\$0
Collin (Zone)	6/14/2016	10:30	Heat		0	0	\$0	\$0
Collin (Zone)	7/19/2016	16:00	Heat		1	0	\$0	\$0
Collin (Zone)	6/20/2019	15:00	Excessive Heat		0	0	\$0	\$0
Collin (Zone)	7/8/2019	12:00	Heat		0	0	\$0	\$0
Collin (Zone)	7/16/2019	12:00	Heat		0	0	\$0	\$0
Collin (Zone)	8/7/2019	11:00	Heat		0	0	\$0	\$0
Collin (Zone)	8/17/2019	11:00	Heat		0	0	\$0	\$0
Collin (Zone)	8/26/2019	13:00	Heat		0	0	\$0	\$0
Totals:					4	0	\$0	\$0

Source: National Centers for Environmental Information

The annualized loss value can be interpreted as the impact expected from extreme heat in terms of annualized human losses and human injuries, and annualized property losses. As observed in *Table 3.14*, Collin County can expect 0.17 fatalities and no injuries per year, and no property or crop losses expected from extreme heat.

The occurrence of extreme heat is regional; therefore the area of potential impacts corresponds to all Collin County's territory. However, according to the recorded historical information, extreme heat does not have a significant impact on property value.

In compliance to *Requirement 201.6(c)(2)(ii)*, vulnerability to extreme heat and impacts to assets expected from these events can be summarized as follows:

- **Population**: Based on historical data, extreme heat can be expected to produce an average of 0.17 fatalities and no injuries per year. All the population of Collin County is exposed to this hazard.
- **Improved Property**: Based on historical data and the negligible impact of extreme heat to developed areas, the improved property in Collin County is not exposed to this hazard.
- **Emergency Facilities**: Based on historical data and the negligible impact of extreme heat to buildings, the existing and future emergency facilities in Collin County are not exposed to this hazard.
- **Critical Facilities**: Based on historical data and the negligible impact of extreme heat to buildings, the existing and future critical facilities in Collin County are not exposed to this hazard.
- **Critical Infrastructure**: Based on historical data and the negligible impact of extreme heat to existing and future critical infrastructure, exposure to this hazard is considered minimal in Collin County.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

High Wind

High wind events impact large areas and cross jurisdictional boundaries; therefore, all of Collin County is exposed to this hazard. Improved property, emergency facilities, critical infrastructure, and critical facilities, and population are considered vulnerable to this hazard.

Based on the available information, vulnerability to high winds was assessed using two techniques: (1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from the National Centers for Environmental Information was used to predict expected monetary and human losses from the event; (2) in fulfillment of *Requirement 201.6(c)(2)(ii)(A)*, geographical hazard areas identified for high winds and the nature of the impacts expected from this hazard event were used to identify the vulnerable assets.

Table 3.15 presents Collin County's recorded historical losses due to high wind events as provided in the hazard events database obtained from the National Centers for Environmental Information. According to the NCEI, there were no recorded high winds events for New Hope, Princeton, and St. Paul.

Table 3.15 High Wind Historical Occurrences Between (1/1/1950-9/22/2020)

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin Co..	11/17/1958	9:50	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	3/5/1959	21:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	3/31/1959	23:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/8/1961	3:27	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/27/1963	19:40	Thunder storm Wind	62 Kts.	0	0	\$0	\$0
Collin Co..	3/3/1970	4:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	4/25/1970	5:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	4/25/1970	5:35	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/23/1971	16:55	Thunder storm Wind	0 Kts.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin Co..	4/15/1972	5:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	9/29/1972	18:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/6/1975	17:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	3/27/1977	7:35	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	3/23/1978	19:15	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	3/23/1978	19:25	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/2/1978	22:15	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/28/1978	15:48	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/28/1978	17:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	7/10/1979	2:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	8/22/1979	1:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	4/24/1980	21:10	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	6/20/1980	3:15	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	10/17/1980	5:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	3/17/1981	20:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin Co..	4/3/1981	18:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	4/28/1981	19:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/23/1981	20:45	Thunder storm Wind	56 Kts.	0	0	\$0	\$0
Collin Co..	8/26/1981	15:42	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/17/1982	1:25	Thunder storm Wind	52 Kts.	0	0	\$0	\$0
Collin Co..	5/31/1982	4:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/22/1983	22:00	Thunder storm Wind	52 Kts.	0	0	\$0	\$0
Collin Co..	7/5/1983	3:55	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	8/12/1983	0:10	Thunder storm Wind	52 Kts.	0	0	\$0	\$0
Collin Co..	3/18/1984	18:20	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	3/27/1984	0:20	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/27/1984	21:40	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	8/30/1984	15:00	Thunder storm Wind	0 Kts.	0	1	\$0	\$0
Collin Co..	12/13/1984	10:45	Thunder storm Wind	0 Kts.	0	5	\$0	\$0
Collin Co..	2/23/1985	2:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin Co..	3/26/1985	22:45	Thunder storm Wind	61 Kts.	0	0	\$0	\$0
Collin Co..	7/22/1985	15:35	Thunder storm Wind	56 Kts.	0	0	\$0	\$0
Collin Co..	3/11/1986	18:58	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	3/11/1986	19:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	4/19/1986	13:15	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	4/19/1986	13:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	4/19/1986	13:49	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/9/1986	20:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	7/21/1986	13:45	Thunder storm Wind	52 Kts.	0	0	\$0	\$0
Collin Co..	9/28/1986	17:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	9/28/1986	17:30	Thunder storm Wind	52 Kts.	0	0	\$0	\$0
Collin Co..	2/14/1987	21:35	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/3/1987	19:47	Thunder storm Wind	51 Kts.	0	0	\$0	\$0
Collin Co..	5/14/1987	16:29	Thunder storm Wind	55 Kts.	0	0	\$0	\$0
Collin Co..	5/28/1987	17:52	Thunder storm Wind	61 Kts.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin Co..	5/28/1987	18:10	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	6/19/1987	19:08	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	6/23/1987	19:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	7/2/1987	10:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	8/23/1988	19:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	9/17/1988	16:40	Thunder storm Wind	0 Kts.	0	2	\$0	\$0
Collin Co..	11/12/1988	6:10	Thunder storm Wind	52 Kts.	0	0	\$0	\$0
Collin Co..	11/15/1988	15:45	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	6/2/1989	20:10	Thunder storm Wind	56 Kts.	0	0	\$0	\$0
Collin Co..	6/4/1989	0:35	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	6/4/1989	2:00	Thunder storm Wind	52 Kts.	0	0	\$0	\$0
Collin Co..	6/4/1989	2:30	Thunder storm Wind	52 Kts.	0	0	\$0	\$0
Collin Co..	6/12/1989	5:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	6/13/1989	4:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	7/2/1989	18:50	Thunder storm Wind	61 Kts.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin Co..	8/6/1989	14:25	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	1/17/1990	7:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	1/17/1990	7:30	Thunder storm Wind	60 Kts.	0	0	\$0	\$0
Collin Co..	1/19/1990	7:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	3/14/1990	9:45	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	4/15/1990	20:45	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/2/1990	22:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	5/11/1990	21:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	8/21/1990	17:30	Thunder storm Wind	62 Kts.	0	0	\$0	\$0
Collin Co..	10/17/1990	16:20	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	4/11/1991	22:30	Thunder storm Wind	0 Kts.	0	4	\$0	\$0
Collin Co..	4/17/1991	17:11	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	4/28/1991	13:10	Thunder storm Wind	52 Kts.	0	0	\$0	\$0
Collin Co..	4/28/1991	13:25	Thunder storm Wind	50 Kts.	0	0	\$0	\$0
Collin Co..	5/4/1991	16:20	Thunder storm Wind	0 Kts.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin Co..	6/5/1991	14:15	Thunder storm Wind	61 Kts.	0	0	\$0	\$0
Collin Co..	7/15/1991	16:55	Thunder storm Wind	65 Kts.	0	0	\$0	\$0
Collin Co..	9/24/1991	12:00	Thunder storm Wind	52 Kts.	0	0	\$0	\$0
Collin Co..	5/11/1992	20:05	Thunder storm Wind	51 Kts.	0	0	\$0	\$0
Collin Co..	5/11/1992	20:55	Thunder storm Wind	51 Kts.	0	0	\$0	\$0
Collin Co..	6/6/1992	2:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	6/8/1992	15:35	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	6/28/1992	5:12	Thunder storm Wind	65 Kts.	0	0	\$0	\$0
Collin Co..	7/28/1992	16:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	8/2/1992	17:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	9/2/1992	22:21	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	9/2/1992	22:40	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	9/2/1992	22:45	Thunder storm Wind	61 Kts.	0	0	\$0	\$0
Collin Co..	9/2/1992	23:05	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
Collin Co..	9/2/1992	23:50	Thunder storm Wind	0 Kts.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin Co.	11/1/1992	1:00	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
McKinney	10/19/1993	4:00	Thunder storm Wind	70 Kts.	0	0	\$50,000	\$0
Frisco	4/2/1994	20:15	Thunder storm Wind	0 Kts.	0	0	\$5,000	\$0
Allen	4/26/1994	23:05	Thunder storm Wind	4 Kts.	0	0	\$0	\$0
Allen	5/13/1994	4:40	Thunder storm Wind	0 Kts.	0	0	\$50,000	\$0
Melissa	5/29/1994	9:15	Thunder storm Wind	0 Kts.	0	0	\$50,000	\$0
Wylie	5/29/1994	9:45	Thunder storm Wind	57 Kts.	0	0	\$0	\$0
Farmersville	6/19/1994	15:00	Thunder storm Wind	0 Kts.	0	0	\$5,000	\$0
Frisco	7/12/1994	19:39	Thunder storm Wind	0 Kts.	0	0	\$5,000	\$0
Wylie	7/12/1994	20:10	Thunder storm Wind	0 Kts.	0	0	\$5,000	\$0
Anna	8/7/1994	12:10	Thunder storm Wind	0 Kts.	0	0	\$500	\$0
McKinney	8/7/1994	12:30	Thunder storm Wind	0 Kts.	0	0	\$500	\$0
Royse City	11/4/1994	22:50	Thunder storm Wind	0 Kts.	0	0	\$5,000	\$0
Celina	4/17/1995	21:05	Thunder storm Wind	0 Kts.	0	0	\$30,000	\$0
Frisco	4/17/1995	21:05	Thunder storm Wind	0 Kts.	0	0	\$40,000	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
.Plano.	4/17/1995	21:30	Thunder storm Wind	0 Kts.	0	0	\$2,000	\$0
.Parker.	5/7/1995	22:10	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
.Culleoka.	5/7/1995	22:39	Thunder storm Wind	0 Kts.	0	0	\$15,000	\$0
.Farmersville.	5/7/1995	22:50	Thunder storm Wind	0 Kts.	0	0	\$200,000	\$0
.Melissa.	5/24/1995	17:00	Thunder storm Wind	0 Kts.	0	0	\$100,000	\$0
.McKinney.	5/24/1995	17:10	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
.Countywide.	5/24/1995	17:30	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
.Arthur City.	5/24/1995	18:45	Thunder storm Wind	0 Kts.	0	0	\$0	\$0
.Celina.	7/4/1995	23:15	Thunder storm Wind	0 Kts.	0	0	\$2,000	\$0
.Plano.	7/5/1995	2:45	Thunder storm Wind	0 Kts.	0	0	\$2,000	\$0
.Melissa.	8/20/1995	17:45	Thunder storm Wind	0 Kts.	0	0	\$75,000	\$0
.McKinney.	8/20/1995	18:00	Thunder storm Wind	0 Kts.	0	0	\$100,000	\$0
.Lucas.	5/27/1996	4:15	Thunder storm Wind	68 Kts.	0	0	\$1,000	\$0
.Prosper.	6/6/1996	21:20	Thunder storm Wind	52 Kts.	0	0	\$0	\$0
.Plano.	3/29/1997	21:52	Thunder storm Wind	52 Kts.	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
.Allen.	3/29/1997	22:16	Thunder storm Wind	52 Kts.	0	0	\$20,000	\$0
.Plano.	5/19/1997	17:58	Thunder storm Wind	57 Kts.	0	0	\$0	\$0
.Plano.	6/16/1997	19:10	Thunder storm Wind	58 Kts.	0	0	\$0	\$0
.McKinney.	5/8/1998	20:25	Thunder storm Wind	53 Kts.	0	0	\$0	\$0
.Frisco.	5/8/1998	20:35	Thunder storm Wind	61 Kts.	0	0	\$100,000	\$0
.McKinney.	5/8/1998	20:50	Thunder storm Wind	61 Kts.	0	0	\$100,000	\$0
.McKinney.	5/8/1998	20:57	Thunder storm Wind	52 Kts.	0	0	\$0	\$0
.Plano.	11/9/1998	23:10	Thunder storm Wind	50 Kts.	0	0	\$0	\$0
.Wylie.	2/25/2000	22:35	Thunder storm Wind	61 Kts. E	0	0	\$0	\$0
.Lavon.	2/25/2000	23:17	Thunder storm Wind	52 Kts. E	0	0	\$0	\$0
.Plano.	2/25/2000	23:40	Thunder storm Wind	61 Kts. E	0	0	\$0	\$0
.Frisco.	5/27/2000	16:20	Thunder storm Wind	57 Kts. M	0	0	\$0	\$0
.Wylie.	5/27/2000	16:50	Thunder storm Wind	61 Kts. E	0	0	\$0	\$0
.McKinney.	5/28/2001	0:08	Thunder storm Wind	57 Kts. E	0	0	\$0	\$0
.Countywide.	6/14/2001	18:45	Thunder storm Wind	58 Kts. E	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
McKinney	6/14/2001	19:00	Thunder storm Wind	61 Kts. E	0	0	\$0	\$0
Melissa	9/18/2001	18:05	Thunder storm Wind	73 Kts. E	0	0	\$0	\$0
Celina	10/10/2001	22:51	Thunder storm Wind	52 Kts. E	0	0	\$0	\$0
McKinney	10/12/2001	20:20	Thunder storm Wind	52 Kts. E	0	0	\$0	\$0
Celina	8/25/2002	14:26	Thunder storm Wind	52 Kts. E	0	0	\$10,000	\$0
McKinney	8/27/2002	5:50	Thunder storm Wind	52 Kts. E	0	0	\$5,000	\$0
Farmersville	5/24/2003	21:20	Thunder storm Wind	52 Kts. ES	0	0	\$20,000	\$0
McKinney	5/24/2003	22:47	Thunder storm Wind	52 Kts. ES	0	0	\$0	\$0
Frisco	6/11/2003	21:55	Thunder storm Wind	52 Kts. ES	0	0	\$5,000	\$0
Plano	8/22/2003	16:10	Thunder storm Wind	61 Kts. ES	0	0	\$0	\$0
Plano	8/22/2003	16:30	Thunder storm Wind	61 Kts. ES	0	0	\$2,000	\$0
McKinney	8/26/2003	14:38	Thunder storm Wind	52 Kts. ES	1	4	\$15,000	\$0
Frisco	8/26/2003	14:58	Thunder storm Wind	61 Kts. ES	0	0	\$5,000	\$0
Nevada	3/4/2004	15:20	Thunder storm Wind	60 Kts. ES	0	0	\$75,000	\$0
Farmersville	3/4/2004	15:41	Thunder storm Wind	61 Kts. ES	0	0	\$250,000	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
McKinney	6/2/2004	18:32	Thunder storm Wind	50 Kts. ES	0	0	\$2,000	\$0
McKinney	4/5/2005	16:50	Thunder storm Wind	58 Kts. MS	0	0	\$0	\$0
Allen	5/25/2005	12:38	Thunder storm Wind	50 Kts. ES	0	0	\$0	\$0
Princeton	7/15/2005	15:53	Thunder storm Wind	55 Kts. MS	0	0	\$0	\$0
Wylie	8/4/2005	16:37	Thunder storm Wind	52 Kts. ES	0	0	\$1,000	\$0
Princeton	9/28/2005	18:35	Thunder storm Wind	50 Kts. ES	0	0	\$15,000	\$0
Frisco	3/13/2006	1:11	Thunder storm Wind	61 Kts. ES	0	0	\$0	\$0
Collin (Zone)	4/7/2006	16:35	Strong Wind	45 Kts. ES	0	0	\$20,000	\$0
Collin (Zone)	6/16/2006	15:20	Strong Wind	48 Kts. ES	0	0	\$2,000	\$0
McKinney	8/12/2006	16:10	Thunder storm Wind	50 Kts. ES	0	0	\$0	\$0
Plano	8/22/2006	16:45	Thunder storm Wind	40 Kts. MS	0	0	\$15,000	\$0
McKinney	8/22/2006	17:10	Thunder storm Wind	50 Kts. ES	0	0	\$0	\$0
McKinney	8/23/2006	17:00	Thunder storm Wind	50 Kts. ES	0	0	\$0	\$0
Plano	8/27/2006	15:30	Thunder storm Wind	50 Kts. ES	0	0	\$5,000	\$0
Frisco	9/17/2006	4:30	Thunder storm Wind	50 Kts. ES	0	0	\$5,000	\$0
Collin (Zone)	10/31/2006	10:00	Strong Wind	32 Kts. EG	0	0	\$2,000	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin (Zone)	11/15/2006	6:00	Strong Wind	40 Kts. MG	0	0	\$20,000	\$0
Collin (Zone)	2/24/2007	12:00	High Wind	50 Kts. EG	0	0	\$200,000	\$0
Murphy	3/30/2007	20:10	Thunder storm Wind	52 Kts. EG	0	0	\$25,000	\$0
Plano	4/3/2007	18:10	Thunder storm Wind	52 Kts. EG	0	0	\$0	\$0
Allen	4/13/2007	18:15	Thunder storm Wind	50 Kts. EG	0	0	\$0	\$0
Allen	4/24/2007	14:23	Thunder storm Wind	50 Kts. EG	0	0	\$5,000	\$0
McKinney	4/24/2007	19:35	Thunder storm Wind	50 Kts. EG	0	0	\$40,000	\$0
Blue Ridge	4/24/2007	20:55	Thunder storm Wind	55 Kts. MG	0	0	\$0	\$0
Plano	5/2/2007	18:20	Thunder storm Wind	52 Kts. EG	0	0	\$0	\$0
Plano	5/2/2007	18:30	Thunder storm Wind	65 Kts. EG	0	0	\$0	\$0
Plano	5/2/2007	18:31	Thunder storm Wind	59 Kts. MG	0	0	\$5,000	\$0
Allen	5/2/2007	18:34	Thunder storm Wind	50 Kts. EG	0	0	\$0	\$0
McKinney	5/2/2007	18:55	Thunder storm Wind	50 Kts. EG	0	0	\$40,000	\$0
Frisco	5/2/2007	19:00	Thunder storm Wind	50 Kts. EG	0	0	\$0	\$0
McKinney	5/2/2007	19:03	Thunder storm Wind	62 Kts. MG	0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Plano	5/30/2007	8:47	Thunder storm Wind	50 Kts. EG	0	0	\$15,000	\$0
Plano	8/29/2007	14:54	Thunder storm Wind	50 Kts. EG	0	0	\$0	\$0
Collin (Zone)	1/29/2008	10:50	High Wind	51 Kts. MG	0	0	\$0	\$0
Collin (Zone)	1/29/2008	7:00	Strong Wind	30 Kts. MS	0	0	\$65,000	\$0
McKinney	4/10/2008	3:03	Thunder storm Wind	56 Kts. MG	0	0	\$0	\$0
McKinney	4/10/2008	3:17	Thunder storm Wind	76 Kts. MG	0	0	\$0	\$0
Celina	6/17/2008	10:20	Thunder storm Wind	50 Kts. EG	0	0	\$1,000	\$0
Plano	6/17/2008	10:38	Thunder storm Wind	52 Kts. EG	0	0	\$0	\$0
McKinney	6/17/2008	10:38	Thunder storm Wind	55 Kts. MG	0	0	\$0	\$0
Plano	6/17/2008	10:45	Thunder storm Wind	50 Kts. EG	0	0	\$0	\$0
Celina	6/28/2008	17:07	Thunder storm Wind	50 Kts. EG	0	0	\$1,000	\$0
Prosper	2/9/2009	4:05	Thunder storm Wind	58 Kts. EG	0	0	\$15,000	\$0
Wylie	2/10/2009	22:00	Thunder storm Wind	65 Kts. EG	0	0	\$50,000	\$0
Frisco	4/30/2009	2:05	Thunder storm Wind	50 Kts. EG	0	0	\$0	\$0
Frisco	5/2/2009	20:50	Thunder storm Wind	55 Kts. EG	0	0	\$5,000	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Celina	5/6/2009	5:07	Thunder storm Wind	50 Kts. EG	0	0	\$2,000	\$0
Wylie	5/6/2009	5:23	Thunder storm Wind	52 Kts. EG	0	0	\$3,000	\$0
Frisco	6/10/2009	18:14	Thunder storm Wind	63 Kts. MG	0	0	\$4,000	\$0
Frisco	6/10/2009	18:15	Thunder storm Wind	65 Kts. EG	0	0	\$10,000	\$0
Frisco	6/10/2009	18:15	Thunder storm Wind	65 Kts. EG	0	0	\$6,000	\$0
Plano	6/10/2009	18:19	Thunder storm Wind	68 Kts. MG	0	0	\$5,000	\$0
Plano	6/10/2009	18:20	Thunder storm Wind	65 Kts. EG	0	0	\$3,000	\$0
Allen	6/10/2009	18:30	Thunder storm Wind	61 Kts. EG	0	0	\$5,000	\$0
Foot	6/10/2009	18:30	Thunder storm Wind	61 Kts. EG	0	0	\$5,000	\$0
McKinney	6/10/2009	18:35	Thunder storm Wind	65 Kts. EG	0	0	\$5,000	\$0
Celina	6/10/2009	18:35	Thunder storm Wind	61 Kts. EG	0	0	\$5,000	\$0
Celina	6/10/2009	18:35	Thunder storm Wind	61 Kts. EG	0	0	\$3,000	\$0
Anna	6/10/2009	18:50	Thunder storm Wind	61 Kts. EG	0	0	\$12,000	\$0
Shepton	7/8/2009	16:10	Thunder storm Wind	52 Kts. EG	0	0	\$6,000	\$0
Plano	7/19/2009	13:13	Thunder storm Wind	50 Kts. EG	0	0	\$8,000	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Melissa	8/5/2009	16:16	Thunder storm Wind	61 Kts. EG	0	0	\$5,000	\$0
Shepton	5/14/2010	12:23	Thunder storm Wind	50 Kts. EG	0	0	\$5,000	\$0
McKinney	8/17/2010	17:10	Thunder storm Wind	52 Kts. EG	0	0	\$100	\$0
Prosper	4/10/2011	23:34	Thunder storm Wind	70 Kts. EG	0	0	\$5,000	\$0
Melissa	4/14/2011	22:32	Thunder storm Wind	56 Kts. EG	0	0	\$0	\$0
Shepton	4/23/2011	22:37	Thunder storm Wind	52 Kts. EG	0	0	\$2,000	\$0
Melissa	4/25/2011	14:58	Thunder storm Wind	50 Kts. EG	0	0	\$0	\$0
Celina	5/24/2011	20:48	Thunder storm Wind	56 Kts. EG	0	0	\$5,000	\$0
Plano	5/24/2011	21:25	Thunder storm Wind	61 Kts. EG	0	0	\$8,000	\$0
Copeville	5/24/2011	21:37	Thunder storm Wind	54 Kts. MG	0	0	\$5,000	\$0
Collin Co.	6/21/2011	2:09	Thunder storm Wind	58 Kts. EG	0	0	\$8,000	\$0
Farmersville	7/2/2011	17:00	Thunder storm Wind	56 Kts. EG	0	0	\$10,000	\$0
Westminster	9/18/2011	18:45	Thunder storm Wind	52 Kts. EG	0	0	\$15,000	\$0
Murphy	9/18/2011	19:10	Thunder storm Wind	61 Kts. EG	0	0	\$15,000	\$0
Frisco	10/23/2011	0:15	Thunder storm Wind	52 Kts. EG	0	0	\$2,000	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
.Plano.	10/23/2011	0:21	Thunder storm Wind	61 Kts. MG	0	0	\$0	\$0
.Celina.	5/4/2012	20:25	Thunder storm Wind	52 Kts. EG	0	0	\$20,000	\$0
.Prosper.	5/4/2012	20:35	Thunder storm Wind	52 Kts. EG	0	0	\$5,000	\$0
.Lolaville.	5/30/2012	2:25	Thunder storm Wind	62 Kts. MG	0	0	\$15,000	\$0
.Forest Grove.	6/6/2012	15:30	Thunder storm Wind	43 Kts. EG	0	0	\$3,000	\$0
.Foot.	6/6/2012	15:35	Thunder storm Wind	52 Kts. EG	0	0	\$5,000	\$0
.Princeton.	7/20/2012	15:10	Thunder storm Wind	52 Kts. EG	0	0	\$160,000	\$0
.McKinney.	7/20/2012	15:20	Thunder storm Wind	52 Kts. EG	0	0	\$2,000	\$0
.Prosper.	8/6/2012	14:30	Thunder storm Wind	52 Kts. EG	0	0	\$2,000	\$0
.Rhea Mills.	8/6/2012	14:36	Thunder storm Wind	55 Kts. EG	0	0	\$8,000	\$0
.Copeville.	12/19/2012	21:30	Thunder storm Wind	65 Kts. EG	0	0	\$150,000	\$0
.Collin (Zone).	12/20/2012	0:00	Strong Wind	43 Kts. EG	0	0	\$13,000	\$0
.Shepton.	2/10/2013	3:05	Thunder storm Wind	50 Kts. EG	0	0	\$1,000	\$0
.Fairview.	5/21/2013	13:33	Thunder storm Wind	56 Kts. EG	0	0	\$50,000	\$0
.Biggers.	5/21/2013	13:33	Thunder storm Wind	59 Kts. MG	0	0	\$50,000	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
McKinney	5/21/2013	13:33	Thunder storm Wind	56 Kts. EG	0	0	\$50,000	\$0
McKinney	5/21/2013	13:33	Thunder storm Wind	56 Kts. EG	0	0	\$50,000	\$0
Princeton	5/21/2013	13:49	Thunder storm Wind	56 Kts. EG	0	0	\$50,000	\$0
Farmersville	5/21/2013	14:00	Thunder storm Wind	54 Kts. EG	0	0	\$40,000	\$0
Allen	6/17/2013	6:45	Thunder storm Wind	35 Kts. EG	0	0	\$2,000	\$0
Anna	8/23/2013	16:05	Thunder storm Wind	43 Kts. EG	2	0	\$10,000	\$0
Farmersville	4/3/2014	18:50	Thunder storm Wind	59 kts. MG	0	0	\$90,000	\$0
McKinney	4/7/2014	18:38	Thunder storm Wind	50 kts. MG	0	0	\$8,000	\$0
Plano	5/12/2014	14:40	Thunder storm Wind	56 kts. EG	0	0	\$17,000	\$0
Lolaville	5/12/2014	14:53	Thunder storm Wind	52 kts. EG	0	0	\$7,000	\$0
Melissa	5/12/2014	15:05	Thunder storm Wind	52 kts. EG	0	0	\$7,000	\$0
Forest Grove	7/14/2014	14:00	Thunder storm Wind	50 kts. EG	0	0	\$0	\$0
Farmersville	10/2/2014	16:10	Thunder storm Wind	50 kts. EG	0	0	\$10,000	\$0
Anna	10/10/2014	22:02	Thunder storm Wind	54 kts. MG	0	0	\$0	\$0
Princeton	10/10/2014	22:05	Thunder storm Wind	61 kts. EG	0	0	\$0	\$5,000

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Allen	10/13/2014	1:18	Thunder storm Wind	50 kts. EG	0	0	\$1,000	\$0
Allen	4/18/2015	19:43	Thunder storm Wind	60 kts. MG	0	0	\$10,000	\$0
Anna	4/18/2015	19:58	Thunder storm Wind	52 kts. MG	0	0	\$5,000	\$0
Anna	4/18/2015	20:03	Thunder storm Wind	52 kts. MG	0	0	\$5,000	\$0
Anna	11/17/2015	4:35	Thunder storm Wind	56 kts. MG	0	0	\$0	\$0
Fairview	12/26/2015	19:30	Thunder storm Wind	48 kts. EG	0	0	\$5,000	\$0
Frisco	3/8/2016	9:00	Thunder storm Wind	56 kts. EG	0	0	\$5,000	\$0
Murphy	3/23/2016	21:37	Thunder storm Wind	60 kts. EG	0	0	\$5,000	\$0
Frisco	4/11/2016	16:45	Thunder storm Wind	61 kts. EG	0	0	\$30,000	\$0
Wylie	4/11/2016	17:15	Thunder storm Wind	50 kts. EG	0	0	\$2,000	\$0
Celina	4/29/2016	15:50	Thunder storm Wind	50 kts. EG	0	0	\$5,000	\$0
Anna	5/29/2016	18:30	Thunder storm Wind	56 kts. EG	0	0	\$5,000	\$0
Shepton	7/15/2016	8:22	Thunder storm Wind	52 kts. EG	0	0	\$1,000	\$0
Allen	1/15/2017	21:30	Thunder storm Wind	56 kts. EG	0	0	\$0	\$0
Frisco	1/15/2017	21:40	Thunder storm Wind	52 kts. EG	0	0	\$2,000	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Murphy	1/15/2017	22:00	Thunder storm Wind	56 kts. EG	0	0	\$0	\$0
Frisco	3/29/2017	1:49	Thunder storm Wind	60 kts. EG	0	0	\$5,000	\$0
Frisco	3/29/2017	1:50	Thunder storm Wind	65 kts. EG	0	0	\$0	\$0
McKinney	3/29/2017	1:50	Thunder storm Wind	60 kts. EG	0	0	\$5,000	\$0
Lolaville	3/29/2017	1:51	Thunder storm Wind	55 kts. MG	0	0	\$0	\$0
Allen	3/29/2017	1:55	Thunder storm Wind	65 kts. EG	0	0	\$5,000	\$0
Allen	3/29/2017	1:58	Thunder storm Wind	52 kts. EG	0	0	\$0	\$0
Lolaville	3/29/2017	2:00	Thunder storm Wind	55 kts. EG	0	0	\$0	\$0
Lolaville	3/29/2017	2:04	Thunder storm Wind	65 kts. EG	0	0	\$0	\$0
McKinney	7/8/2017	14:10	Thunder storm Wind	54 kts. MG	0	0	\$0	\$0
Allen	7/8/2017	14:40	Thunder storm Wind	60 kts. EG	0	0	\$10,000	\$0
Princeton	7/23/2017	20:40	Thunder storm Wind	55 kts. EG	0	0	\$0	\$0
Blue Ridge	8/12/2017	16:00	Thunder storm Wind	50 kts. EG	0	0	\$1,000	\$0
McKinney	5/25/2018	12:20	Thunder storm Wind	48 kts. EG	0	0	\$1,000	\$0
McKinney	6/7/2018	18:21	Thunder storm Wind	43 kts. EG	1	0	\$40,000	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Plano	8/18/2018	19:00	Thunder storm Wind	50 kts. EG	0	0	\$2,000	\$0
Weston	8/18/2018	19:05	Thunder storm Wind	50 kts. EG	0	0	\$0	\$0
Altoga	8/18/2018	19:17	Thunder storm Wind	50 kts. EG	0	0	\$5,000	\$0
Plano Shiloh Arpk Ar	8/18/2018	19:25	Thunder storm Wind	50 kts. EG	0	0	\$5,000	\$0
Renner	3/13/2019	4:12	Thunder storm Wind	67 kts. MG	0	0	\$	\$0
Renner	3/13/2019	4:21	Thunder storm Wind	63 kts. MG	0	0	\$	\$0
McKinney	3/13/2019	4:25	Thunder storm Wind	50 kts. MG	0	0	\$	\$0
Allen	5/18/2019	12:14	Thunder storm Wind	50 kts. EG	0	0	\$	\$0
Chambersville	5/21/2019	5:40	Thunder storm Wind	50 kts. EG	0	0	\$	\$0
McKinney	6/9/2019	12:32	Thunder storm Wind	52 kts. MG	0	0	\$	\$0
Lolaville	6/9/2019	12:57	Thunder storm Wind	50 kts. EG	0	0	\$	\$0
Foot	6/29/2019	17:30	Thunder storm Wind	50 kts. EG	0	0	\$	\$0
Culleoka	10/20/2019	23:39	Thunder storm Wind	74 kts. EG	0	0	\$	\$0
Farmersville	10/20/2019	23:46	Thunder storm Wind	74 kts. EG	0	3	\$	\$0
Nevada	10/21/2019	00:05	Thunder storm Wind	50 kts. EG	0	0	\$	\$0

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Lebanon	10/21/2019	23:15	Thunder storm Wind	48 kts. EG	0	0	\$	\$0
Lolaville	4/28/2020	22:04	Thunder storm Wind	48 kts. EG	0	0	\$	\$0
Total:					4	20	\$4,293,000	\$5,000

Source: National Centers for Environmental Information

The annualized losses due to high wind events were calculated using the methodology described previously. The annualized loss value can be interpreted as the impact expected from high wind in terms of annualized human losses and human injuries, and annualized property losses. As observed in *Table 3.15*, Collin County can expect a per year average of \$61,328.57 in property losses, 0.06 fatalities, 0.29 injuries, and \$71.43 in crop losses from high wind events.

The occurrence of high winds is regional; therefore, the area of potential impacts corresponds to all Collin County's territory. According to the recorded historical information, high winds impact property. Currently, there is no information available that specifically identifies to the type structures that have been historically damaged by high wind events. However, fatalities, injuries, and crop and property damage has occurred. Because of the regional character of this hazard event, all improved property, emergency and critical facilities, and critical structures are exposed to this hazard.

In compliance to *Requirement 201.6(c)(2)(ii)*, vulnerability to high wind and impacts to assets expected from this event can be summarized as follows:

- **Population**: Based on historical data, high wind events can be expected to produce an average of .29 injuries and 0.06 fatalities per year. All the population of Collin County is exposed to this hazard.
- **Improved Property**: Based on historical data, an average loss of \$61,328.57 per year in property losses and \$71.43 in crop losses are expected from this hazard in Collin County.
- **Emergency Facilities**: Because of the expected geographical widespread nature of high winds, all existing and future emergency facilities in Collin County are exposed to this hazard.
- **Critical Facilities**: Because of the expected geographical widespread nature of high winds, all existing and future emergency facilities in Collin County are exposed to this hazard.
- **Critical Infrastructure**: Because of the expected geographical widespread nature of high winds, all existing and future critical infrastructures in Collin County are exposed to this hazard.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

Lightning

Because the location at which a lightning event cannot be predicted, all existing and future buildings, critical facilities, critical infrastructure, emergency facilities, improved property, and population are considered to be exposed to this hazard.

Based on the available information, vulnerability to lightning was assessed using two techniques: (1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from the National Centers for Environmental Information was used to predict expected monetary and human losses from the event; (2) in fulfillment of *Requirement 201.6(c)(2)(ii)(A)*, geographical hazard areas identified for lightning and the nature of the impacts expected from this hazard event were used to identify the vulnerable assets.

Table 3.16 presents Collin County's recorded historical losses due to lightning events as provided in the hazard events database obtained from the National Centers for Environmental Information. According to the NCEI, there were no recorded lightning events for the Fairview, Farmersville, Josephine, Lowry Crossing, Melissa, New Hope, Parker, Princeton, St. Paul, and Wylie.

Table 3.16 Historical Lightning Occurrences between (1/1/1996-9/22/2020)

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
Weston	7/8/1996	16:30	Lightning		0	0	\$100,000	\$0
Plano	7/23/1996	12:45	Lightning		0	0	\$80,000	\$0
Plano	5/19/1997	17:45	Lightning		0	0	\$50,000	\$0
Blue Ridge	1/4/1998	22:00	Lightning		0	0	\$20,000	\$0
Allen	10/9/1999	6:00	Lightning		0	0	\$5,000	\$0
Plano	12/12/1999	8:00	Lightning		0	0	\$30,000	\$0
Plano	3/10/2000	12:30	Lightning		0	0	\$25,000	\$0
Plano	2/16/2001	0:24	Lightning		0	0	\$750,000	\$0
Mc Kinney	4/29/2002	15:00	Lightning		0	1	\$0	\$0
Mc Kinney	8/26/2003	15:30	Lightning		0	0	\$300,000	\$0
McKinney	4/24/2007	15:30	Lightning		0	0	\$20,000	\$0
Plano	5/3/2007	18:10	Lightning		0	0	\$250,000	\$0
Anna	5/30/2007	9:20	Lightning		0	0	\$50,000	\$0
McKinney	7/31/2007	14:45	Lightning		0	0	\$7,300	\$0
Lebanon	2/15/2008	1:45	Lightning		0	0	\$500,000	\$0
McKinney	5/27/2008	10:30	Lightning		0	0	\$70,000	\$0
Lucas	7/19/2009	13:15	Lightning		0	0	\$405,000	\$0
Murphy	7/19/2009	13:20	Lightning		0	0	\$200,000	\$0
Lolaville	8/21/2009	4:21	Lightning		0	0	\$750,000	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
Murphy	9/11/2009	17:00	Lightning		0	0	\$150,000	\$0
Murphy	9/11/2009	17:00	Lightning		0	0	\$5,000	\$0
Celina	9/1/2010	13:30	Lightning		0	0	\$25,000	\$0
Collin Co.	6/21/2011	23:18	Lightning		0	0	\$30,000	\$0
Foot	5/30/2012	10:15	Lightning		0	0	\$275,000	\$0
Lebanon	5/30/2012	10:22	Lightning		0	0	\$450,000	\$0
Foot	5/30/2012	10:30	Lightning		0	0	\$275,000	\$0
Foot	5/30/2012	10:59	Lightning		0	0	\$250,000	\$0
Frisco	10/2/2014	15:00	Lightning		0	0	\$100,000	\$0
Lavon	6/21/2015	7:00	Lightning		0	0	\$50,000	\$0
Lolaville	6/26/2015	19:20	Lightning		0	0	\$25,000	\$0
Foot	4/29/2016	1:11	Lightning		0	0	\$200,000	\$0
Frisco	5/23/2016	7:25	Lightning		0	0	\$300,000	\$0
Plano	5/29/2016	18:30	Lightning		0	0	\$200,000	\$0
Shepton	6/12/2016	16:51	Lightning		0	0	\$4,000	\$0
Parker	1/2/2017	5:55	Lightning		0	0	\$500,000	\$0
Lebanon	7/5/2017	20:00	Lightning		0	0	\$1,000,000	\$0
Allen	8/7/2017	00:50	Lightning		0	0	\$100,000	\$0
Foot	10/22/2017	00:00	Lightning		0	0	\$225,000	\$0
Rockhill	8/9/2018	20:08	Lightning		0	0	\$400,000	\$0
Lebanon	8/18/2018	19:00	Lightning		0	0	\$2,000	\$0
Foot	12/26/2018	16:15	Lightning		0	0	\$100,000	\$0
Lolaville	4/23/2019	21:30	Lightning		0	0	\$150,000	\$0
Foot	4/23/2019	21:45	Lightning		0	0	\$500	\$0
Frisco	4/23/2019	22:00	Lightning		0	0	\$100,000	\$0
Frisco	6/9/2019	12:40	Lightning		0	0	\$1,000	\$0
Frisco	6/16/2019	2:00	Lightning		0	0	\$5,000	\$0
Lebanon	6/16/2019	15:51	Lightning		0	0	\$1,000	\$0
Prosper	10/20/2019	23:21	Lightning		0	0	\$150,000	\$0
Foot	3/18/2020	4:15	Lightning		0	0	\$800,000	\$0
Frisco	4/28/2020	22:00	Lightning		0	0	\$83,000	\$0
Lebanon	4/28/2020	22:00	Lightning		0	0	\$8,000	\$0

Location	Date	Time	Event	Magnitude	Fatalities	Injuries	Property Damage	Crop Damage
Lebanon	4/28/2020	22:00	Lightning		0	0	\$500,000	\$0
Frisco	4/28/2020	22:00	Lightning		0	0	\$3,000	\$0
Frisco	4/28/2020	22:00	Lightning		0	0	\$30,000	\$0
Lebanon	5/23/2020	00:11	Lightning		0	0	\$200,000	\$0
Frisco	6/23/2020	6:45	Lightning		0	0	\$250,000	\$0
Totals:					0	1	\$10,560,000	\$0

Source: National Centers for Environmental Information

The annualized losses due to lightning events were calculated using the methodology described in table 3.16. The annualized loss value can be interpreted as the impact expected from lightning in terms of annualized human losses and human injuries, and annualized property losses. As observed in *Table 3.16*, Collin County can expect \$440,000 in property losses, with no fatalities, 0.04 injuries, and no losses in crop production from lightning events.

The geographical occurrence of lightning events cannot be predicted; therefore the area of potential impacts corresponds to all Collin County's territory. According to the recorded historical information, lightning impact property. Because of the regional character of this hazard event, all improved property, emergency and critical facilities, and critical structures are exposed to this hazard.

In compliance to *Requirement 201.6(c)(2)(ii)*, vulnerability to lightning and impacts to assets expected from this event can be summarized as follows:

- **Population**: Based on historical data, lightning events can be expected to cause no fatalities and 0.04 injuries in Collin County per year. All the population of Collin County is exposed to this hazard.
- **Improved Property**: Based on historical data, an average of \$440,000 per year in property losses and \$0 in crop losses is expected from lightning events in Collin County.
- **Emergency Facilities**: Because of the expected geographical widespread nature of lightning, all existing and future emergency facilities in Collin County are exposed to this hazard.
- **Critical Facilities**: Because of the expected geographical widespread nature of lightning, all existing and future critical facilities in Collin County are exposed to this hazard.
- **Critical Infrastructure**: Because of the expected geographical widespread nature of lightning, all existing and future critical infrastructures in Collin County are exposed to this hazard.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this Hazard Mitigation Plan. Compliance with this requirement will be an objective in the five-year planning cycle.

Tornado

The areas of impact from tornado events cannot be predicted, and they can affect extensive areas of a county. All existing and future buildings, critical facilities, critical infrastructure, emergency facilities, improved property, and population are considered to be vulnerable to this hazard.

Based on the available information, vulnerability to tornadoes was assessed using two techniques: 1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from the National Centers for Environmental Information, and the Texas Hazard Mitigation Action Plan was used to predict expected monetary and human losses from the event; 2) in fulfillment of *Requirement 201.6(c)(2)(ii)(A)*, geographical hazard areas identified for tornadoes and the nature of the impacts expected from this hazard event were used to identify the vulnerable assets.

Table 3.17 presents Collin County's recorded historical losses due to tornado events as provided in the hazard events database obtained from the National Centers for Environmental Information.

Table 3.17 Historical Tornado Occurrences between (1/1/1950-9/22/2020)

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin Co.	3/24/1954	21:30	Tornado	F1	0	4	\$25,000	\$0
Collin Co.	5/25/1954	18:15	Tornado	F0	0	0	\$0	\$0
Collin Co.	4/2/1957	16:20	Tornado	F3	0	2	\$250,000	\$0
Collin Co.	4/27/1958	15:30	Tornado	F2	0	0	\$250,000	\$0
Collin Co.	10/4/1959	6:00	Tornado	F3	0	5	\$250,000	\$0
Collin Co.	4/22/1963	17:30	Tornado	F2	0	0	\$250,000	\$0
Collin Co.	4/28/1963	12:30	Tornado	F1	0	0	\$2,500	\$0
Collin Co.	5/19/1963	15:00	Tornado	F0	0	0	\$0	\$0
Collin Co.	3/25/1967	21:00	Tornado	F0	0	0	\$0	\$0
Collin Co.	3/25/1967	21:00	Tornado	F0	0	0	\$0	\$0
Collin Co.	4/22/1968	7:50	Tornado	F1	0	0	\$25,000	\$0
Collin Co.	5/13/1968	3:00	Tornado	F2	0	0	\$25,000	\$0
Collin Co.	4/27/1969	5:10	Tornado	F2	0	45	\$250,000	\$0
Collin Co.	10/12/1969	7:44	Tornado	F3	0	0	\$2,500	\$0
Collin Co.	4/18/1970	21:30	Tornado	F1	0	2	\$2,500	\$0
Collin Co.	9/1/1970	16:15	Tornado	F1	0	0	\$0	\$0
Collin Co.	7/19/1971	17:15	Tornado	F1	0	0	\$25,000	\$0
Collin Co.	12/14/1971	18:15	Tornado	F0	0	0	\$25,000	\$0
Collin Co.	8/10/1972	16:00	Tornado	F0	0	0	\$2,500	\$0
Collin Co.	11/20/1973	1:10	Tornado	F1	0	3	\$25,000	\$0
Collin Co.	6/9/1975	18:40	Tornado	F0	0	0	\$0	\$0
Collin Co.	3/27/1977	4:54	Tornado	F2	0	0	\$250,000	\$0
Collin Co.	9/7/1977	15:40	Tornado	F1	0	0	\$2,500	\$0
Collin Co.	9/12/1977	16:20	Tornado	F2	0	0	\$25,000	\$0
Collin Co.	3/29/1979	14:15	Tornado	F0	0	0	\$0	\$0
Collin Co.	7/27/1982	13:00	Tornado	F0	0	0	\$2,500	\$0
Collin Co.	3/27/1984	16:30	Tornado	F1	0	0	\$2,500	\$0

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin Co.	10/18/1985	9:30	Tornado	F2	0	2	\$250,000	\$0
Collin Co.	3/17/1987	19:40	Tornado	F0	0	0	\$0	\$0
Collin Co.	9/13/1993	10:10	Tornado	F0	0	0	\$0	\$0
Farmersville	7/12/1994	21:15	Tornado	F0	0	0	\$50,000	\$0
Princeton	10/7/1994	15:00	Tornado	F1	0	2	\$500,000	\$0
Mc Kinney	3/16/1998	19:05	Tornado	F1	0	0	\$200,000	\$0
Frisco	9/5/2001	14:05	Tornado	F0	0	0	\$0	\$0
Celina	9/5/2001	14:30	Tornado	F1	0	0	\$30,000	\$0
Frisco	7/1/2003	13:50	Tornado	F0	0	0	\$0	\$0
Lavon Res	3/4/2004	15:35	Tornado	F1	0	2	\$150,000	\$0
Anna	5/9/2006	21:26	Tornado	F0	0	0	\$0	\$0
Anna	5/9/2006	21:33	Tornado	F0	0	0	\$30,000	\$0
Anna	5/9/2006	21:37	Tornado	F3	2	6	\$1,000,000	\$0
Wylie	3/30/2007	20:20	Tornado	EF0	0	0	\$500,000	\$0
Allen	4/10/2008	3:04	Tornado	EF1	0	0	\$12,000,000	\$0
Princeton	4/3/2014	18:27	Tornado	EF0	0	1	\$200,000	\$0
Copeville	12/26/2015	19:09	Tornado	EF2	2	119	\$1,400,000	\$0
Farmersville	12/26/2015	19:17	Tornado	EF1	0	0	\$1,500,000	\$0
Fayburg	12/26/2015	19:33	Tornado	EF1	1	2	\$600,000	\$0
Weston	4/29/2016	15:53	Tornado	EF0	0	0	\$30,000	\$0
Allen	10/20/2019	23:22	Tornado	EF0	0	0	\$200,000	\$0
Totals:					5	195	\$20,332,000	\$0

Source: Texas Forest Service, National Centers for Environmental Information

The annualized losses due to tornado events were calculated using the methodology described in Table 3.17. The annualized loss value can be interpreted as the impact expected from tornadoes in terms of annualized human losses and human injuries, and annualized property losses. As observed in Table 3.17, Collin County can expect an average of 0.07 fatalities and 2.79 injuries per year. All the population of Collin County is exposed to this hazard. Also, an expected average of \$290,457.14 per year in property losses is expected from tornadoes, with most of the historical events occurring in the unincorporated areas of Collin County. Finally, there are no expected crop losses as result of tornado events.

As stated previously, the geographical area of impact for tornado events cannot be predicted, the area of potential impacts corresponds to all Collin County's territory, and all improved property, emergency and critical facilities, and critical structures are exposed to this hazard. According to the recorded historical information, expected casualties and property losses from tornado events are significant.

In compliance to Requirement 201.6(c)(2)(ii), vulnerability to tornadoes and impacts to assets expected from this event can be summarized as follows:

- **Population:** Based on historical data, tornado events can be expected to cause an average of 2.79 injuries and 0.07 fatalities per year in Collin County. All the population of Collin County is exposed to this hazard.

- **Improved Property:** Based on historical data, an average loss of \$290,457.14 per year in property losses are expected to result from tornado events in Collin County. No crop losses are expected from this hazard in Collin County.
- **Emergency Facilities:** Because of the impossibility to predict the geographical area of impact for tornados, all existing and future emergency facilities in Collin County are exposed to this hazard.
- **Critical Facilities:** Because of the impossibility to predict the geographical area of impact for tornados, all existing and future critical facilities in Collin County are exposed to this hazard.
- **Critical Infrastructure:** Because of the impossibility to predict the geographical area of impact for tornados, all existing and future critical infrastructures in Collin County are exposed to this hazard.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(C)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

Winter Storms

Because winter storm events are large and can affect extensive areas of a county, all existing and future buildings, critical facilities, critical infrastructure, emergency facilities, improved property, and population are considered to be exposed to this hazard.

Based on the available information, vulnerability to winter storms was assessed using two techniques: 1) to comply with *Requirement 201.6(c)(2)(ii)(B)*, historical loss data obtained from the National Centers for Environmental Information was used to predict expected monetary and human losses from the event; 2) in fulfillment of *Requirement 201.6(c)(2)(ii)(A)*, geographical hazard areas identified for winter storms and the nature of the impacts expected from this hazard event were used to identify the vulnerable assets.

Table 3.18 presents Collin County's recorded historical losses due to winter storm events as provided in the hazard events database obtained from the National Centers for Environmental Information.

Table 3.18 Winter Storm Historical Occurrences between (1/1/1996-9/22/2020)

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin (Zone)	11/24/1996	14:00	Winter Storm		0	0	\$0	\$0
Collin (Zone)	12/17/1996	12:00	Winter Weather		0	0	\$0	\$0
Mc Kinney	1/6/1997	12:00	Winter Weather		0	0	\$0	\$0
Collin (Zone)	1/12/1997	20:00	Winter Weather		0	0	\$0	\$0
Collin (Zone)	1/14/1997	23:00	Winter Weather		0	0	\$0	\$0
Collin (Zone)	12/22/1998	0:00	Ice Storm		0	0	\$0	\$0
Collin (Zone)	1/25/2000	0:00	Winter Storm		1	0	\$0	\$0
Collin (Zone)	12/12/2000	18:00	Winter Storm		0	0	\$0	\$0
Collin (Zone)	12/25/2000	0:00	Winter Storm		0	0	\$0	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin (Zone)	12/31/2000	0:00	Winter Storm		0	0	\$0	\$0
Collin (Zone)	1/1/2001	0:00	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	11/29/2001	6:00	Ice Storm		0	0	\$0	\$0
Collin (Zone)	2/5/2002	8:00	Winter Storm		0	0	\$0	\$0
Collin (Zone)	3/2/2002	6:00	Winter Storm		0	0	\$0	\$0
Collin (Zone)	2/24/2003	11:20	Winter Storm		0	0	\$0	\$0
Collin (Zone)	2/14/2004	3:00	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	12/22/2004	0:01	Winter Weather		0	0	\$0	\$0
Collin (Zone)	12/7/2005	12:00	Winter Storm		0	0	\$0	\$0
Collin (Zone)	2/18/2006	3:30	Winter Weather		0	0	\$0	\$0
Collin (Zone)	11/30/2006	1:00	Winter Storm		0	0	\$0	\$0
Collin (Zone)	1/13/2007	11:00	Ice Storm		0	0	\$30,000	\$0
Collin (Zone)	1/17/2007	3:00	Winter Weather		0	0	\$30,000	\$0
Collin (Zone)	2/2/2007	1:00	Winter Weather		0	0	\$0	\$0
Collin (Zone)	3/3/2008	22:00	Winter Weather		0	0	\$0	\$0
Collin (Zone)	12/15/2008	18:00	Winter Weather		0	0	\$0	\$0
Collin (Zone)	12/23/2008	6:00	Winter Weather		0	0	\$0	\$0
Collin (Zone)	1/27/2009	7:00	Ice Storm		0	0	\$60,000	\$0
Collin (Zone)	12/24/2009	12:30	Winter Weather		0	0	\$100,000	\$0
Collin (Zone)	2/11/2010	5:00	Heavy Snow		0	0	\$1,000,000	\$0
Collin (Zone)	3/20/2010	19:00	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	1/9/2011	9:00	Heavy Snow		0	0	\$150,000	\$0
Collin (Zone)	2/1/2011	0:30	Ice Storm		0	0	\$150,000	\$0
Collin (Zone)	2/3/2011	23:30	Heavy Snow		0	0	\$10,000	\$0
Collin (Zone)	12/25/2012	13:30	Heavy Snow		0	0	\$550,000	\$0
Collin (Zone)	12/5/2013	14:30	Winter Storm		0	0	\$500,000	\$0

Collin County Hazard Mitigation Action Plan

Location	Date	Time	Event	Mag	Fatalities	Injuries	Property Damage	Crop Damage
Collin (Zone)	2/22/2015	18:00	Winter Storm		0	0	\$10,000	\$0
Collin (Zone)	2/27/2015	9:00	Heavy Snow		0	0	\$200,000	\$0
Collin (Zone)	3/5/2015	00:02	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	00:23	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	00:25	Winter Weather		0	0	\$0	\$0
Collin (Zone)	3/5/2015	00:50	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	1:00	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	1:02	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	1:15	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	1:34	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	1:34	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	1:46	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	2:50	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	3:59	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	8:15	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	9:11	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	9:11	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	10:20	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	3/5/2015	11:29	Heavy Snow		0	0	\$0	\$0
Collin (Zone)	12/7/2017	9:00	Winter Weather		0	0	\$0	\$0
Collin (Zone)	2/11/2018	10:00	Winter Weather		0	0	\$0	\$0
Totals:					1	0	\$2,790,000	\$0

Source: National Centers for Environmental Information

The annualized losses due to winter storm events were calculated using the methodology described previously. The annualized loss value can be interpreted as the impact expected from winter storm in terms of annualized human losses and human injuries, and annualized property losses. As observed in *Table 3.18*, Collin County can expect in average an annual \$116,250 in property losses, with no injuries, 0.04 fatalities, and no crop losses from winter storm events.

The geographical occurrence of winter storm events is widespread; therefore, the area of potential impacts corresponds to all Collin County's territory. According to the recorded historical information, winter storm events impact property. Because of the regional character of this hazard event, all improved property, emergency and critical facilities, and critical structures are exposed to this hazard.

In compliance to *Requirement 201.6(c)(2)(ii)*, vulnerability to winter storm events and impacts to assets expected from this event can be summarized as follows:

- **Population**: Based on historical data, winter storm events can be expected to cause an average of zero injuries and 0.04 fatalities per year in Collin County. All the population of Collin County is exposed to this hazard.
- **Improved Property**: Based on historical data, an average loss of \$116,250 per year in property losses are expected to result from winter storm events in Collin County. No crop losses are expected from this hazard in Collin County.
- **Emergency Facilities**: Because of the expected geographical widespread nature of winter storms, all existing and future emergency facilities in Collin County are exposed to this hazard.
- **Critical Facilities**: Because of the expected geographical widespread nature of winter storms, all existing and future critical facilities in Collin County are exposed to this hazard.
- **Critical Infrastructure**: Because of the expected geographical widespread nature of winter storms, all existing and future critical infrastructures in Collin County are exposed to this hazard.

Information needed to fulfill *Requirement 201.6(c)(2)(ii)(c)*, which addresses land uses and development trends was unattainable during the preparation of this hazard mitigation plan. Compliance with this requirement will be an objective in the five-year planning cycle.

3.6 Qualitative Analysis

In compliance to *Requirement 201.6(c)(2)(ii)* a qualitative analysis was made for three of the hazards representing low risk to Collin County: Dam Failure, Earthquake, and Expansive Soil. Because historical and geographical data regarding these events is unattainable for quantitative analysis at the present time, a qualitative analysis is in order. Quantitative analyses for these hazards will be an objective in the five-year planning cycle update, should information become available.

Dam Failure

The probability of occurrence for dam and/or levee events in Collin County is likely. There is no record of a dam failing in Collin County; therefore, there is a lack of information regarding this hazard and quantitative predictions are not available at the present time. A study is needed to gather more inundation information. All five categories, population, improved property, emergency facilities, critical facilities, and critical infrastructure are considered vulnerable to damage caused by dam and/or levee failure. According to the Priority Risk Index analysis presented in section 3.3, any estimated losses associated with this hazard are anticipated to be of moderate to no risk across Collin County. Based on data from the participating jurisdictions a total of 153 dams are located in Collin County (*Table 3.19*).

Table 3.19 Dams located in Collin County and Participating Jurisdictions

Jurisdiction	Number of Dams	Dam Classification		
		High	Significant	Low
<i>Collin County</i>	153	59	9	85
Total	153	59	9	85

Source: National Inventory of Dams

The Hazard Mitigation Planning Team provided a list of high hazard dams located in Collin County. (*Table 3.19*).

Table 3.20 High Hazard Dams

Jurisdiction	Dam Name
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 32A DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 1C DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 3A DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 8A DAM
Collin County	LAVON LAKE
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 5A DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 10 DAM
Collin County	LITTLE ELM AND LATERALS WS SCS SITE 18A DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 33 DAM
Collin County	ROWLETT CREEK WS SCS SITE 5 DAM
Collin County	PILOT GROVE CREEK WS SCS SITE 83A DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 3C DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 4 DAM

Collin County Hazard Mitigation Action Plan

Jurisdiction	Dam Name
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 11 DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 9 DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 30 DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 2B DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 1A DAM
Collin County	WILLOW BEND LAKE NO 1 DAM
Collin County	PILOT GROVE CREEK WS SCS SITE 82 DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 8G DAM
Collin County	PILOT GROVE CREEK WS SCS SITE 80 DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 16 DAM
Collin County	UPPER EAST FK LATERALS WS SCS SITE 2 DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 3B DAM
Collin County	ROWLETT CREEK WS SCS SITE 7 DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 12 DAM
Collin County	PILOT GROVE CREEK WS SCS SITE 28 DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 3E DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 31 DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 14 DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 3D DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 17 DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 15 DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 2A DAM
Collin County	EAST FORK ABOVE LAVON WS SCS SITE 32 DAM
Collin County	ROWLETT CREEK WS SCS SITE 4 DAM
Collin County	PILOT GROVE CREEK WS SCS SITE 79 DAM
Collin County	STONEBRIDGE LAKE F 3 DAM
Collin County	STONEBRIDGE LAKE F 4 DAM
Collin County	STONEBRIDGE LAKE F 2 DAM
Collin County	STONEBRIDGE LAKE 13 DAM
Collin County	STONEBRIDGE LAKE 11 D DAM
Collin County	STONEBRIDGE LAKE 12 DAM
Collin County	PRESTONWOOD WEST DAM
Collin County	STONEBRIDGE LAKE 11 A DAM
Collin County	STONEBRIDGE LAKE B DAM
Collin County	STONEBRIDGE LAKE F 1 DAM
Collin County	SISTER GROVE CREEK WS SCS SITE 38 DAM
Collin County	LAGO GRANDE DAM
Collin County	SISTER GROVE CREEK WS SCS SITE 3 DAM
Collin County	WILLOW BEND LAKE NO 2 DAM
Collin County	ROACH TRACT LOWER DAM

Jurisdiction	Dam Name
Collin County	ROACH TRACT DAM
Collin County	STONEBRIDGE LAKE A DAM
Collin County	LAKE LACIMA DAM
Collin County	GLENEAGLES DAM D6
Collin County	STONEBRIDGE LAKE C DAM
Collin County	CARTER RANCH DAM

Source: *National Inventory of Dams*

Earthquake

The probability of occurrence for an earthquake event in Collin County is extremely low. Due to unattainable information regarding this hazard, quantitative predictions are not available at the present time and further study is needed.

All five categories, population, improved property, emergency facilities, critical facilities, and critical infrastructure are considered vulnerable to damage caused by an earthquake. According to the Priority Risk Index analysis presented in section 3.3 any estimated losses associated with this hazard are anticipated to be of little to no risk across Collin County.

Expansive Soils

The probability of occurrence for expansive soil events in Collin County is at a low to moderate risk. Damage from expansive soils is difficult to document. Further studies are needed. There have been no documented previous occurrences of expansive soils in Collin County and the jurisdictions participating on this plan, with the exception of Fairview. The documentation of the occurrence can be found in Annex F.

Population is not considered vulnerable to damage caused by expansive soils; therefore, any estimated population losses associated with this hazard are anticipated to be minimal across Collin County. Improved property, emergency facilities, critical facilities, and critical Infrastructures are more vulnerable to this event. Collin County is located in an area which contains abundant clay with high swelling potential. According to the Priority Risk Index analysis, impacts from expansive soils have a low to moderate risk of creating a hazard that could cause damage to highways, streets, as well as other structures

3.7 Summary

Table 3.21 provides a summary of annualized losses for each of the nine hazard events for which the quantitative analysis (Geographic Information System and/or statistical) was conducted. *Table 3.22* summarizes the qualitative analysis conducted on the remaining three hazard events. Hurricane/Tropical Storm, Land Subsidence, and Coastal Erosion are not listed due to lack of impact.

Table 3.21 Annualized Losses Expected from Hazards Analyzed using a Quantitative Analysis

Hazard Event	Annualized Expected Fatalities	Annualized Expected Injuries	Annualized Expected Property Losses	Annualized Expected Crop Loss	Annualized Expected Crop Loss per Acre
Drought	0	0	\$21,208.33	\$58,916.67	\$0.25
Extreme Heat	0.17	0	\$0	\$0	\$0
Flood	0	0	\$15,166.67	\$0	\$0
Hail	0	0	\$25,204,914.29	\$0	\$0
High Wind	0.06	0.29	\$61,328.57	\$71.43	\$0
Lightning	0	0.06	\$440,000	\$0	\$0
Tornado	0.07	2.79	\$290,457.14	\$0	\$0
Wildfire	0.04	0	\$2,791.67	\$100	\$0.01
Winter Storm	0.04	0	\$116,250	\$0	\$0

Table 3.22 Summary of Qualitative Analysis

Hazard Event	Probability of Occurrence According to the Priority Risk Index	Vulnerable Categories				
		Population	Property Damage	Emergency Facilities	Critical Facilities	Critical Infrastructures
Dam Failure	Moderate to No Risk	√	√	√	√	√
Earthquake	Low to No Risk	√	√	√	√	√
Expansive Soils	Negligible to No Risk		√	√	√	√

Chapter Four: 2016 Plan Action Items

4.1 Unincorporated Collin County Action Items: 2016 Plan

Collin County Action Item	Adopt and promote a comprehensive public education program that provides resources to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	Homeland Security
Implementation Schedule	1-3 years
Effect on Old Buildings	Depending on mitigation actions employed, can reduce the damage from multiple hazards to existing buildings.
Effect on New Buildings	Depending on mitigation actions implements, can reduce damages from multiple hazards to new buildings.
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	This program will include discussion about mitigation projects for all identified hazards and what mitigation actions can be taken.
Status	Some work performed in this area using regional resources along with utilizing general fund dollars from Collin County.

Collin County Action Item	Develop and implement building codes to mitigate against structural damages caused by drought, high winds and tornado.
Hazard(s) Addressed	Drought, Tornado, High Winds
Goal/Objective	3-C
Priority	Low
Estimated Cost	\$5,000
Potential Funding Sources	Local Funding
Lead Department	Collin County Engineering
Implementation Schedule	1-5 years
Effect on Old Buildings	If retrofitted, could mitigate damages to old buildings.
Effect on New Buildings	This action can reduce the effects of drought, tornadoes, and high winds on new buildings.
Cost Effectiveness	The cost of this project is low compared to the potential benefits of reducing the effects of drought.
Discussion	During times of drought, earth experiences significant changes that often impact structural foundations. Building codes can mitigate these effects through mandatory use of new technologies such as resource-efficient (low-flow) plumbing for drought and water conservation. Roof bracing requirements for new construction will mitigate damages from tornado and high Winds.
Status	Collin County utilizes adopted building codes.

Collin County Action Item	Expand water conservation measures to new developments and populations
Hazard(s) Addressed	Drought
Goal/Objective	2-C
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Engineering
Implementation Schedule	1-2 years
Effect on Old Buildings	May require low-flow retrofits and soil stabilization through landscaping for existing foundations to reduce effects of drought.
Effect on New Buildings	May require low-flow plumbing installations during construction, foundation protection through alternate landscaping to reduce effects of drought.
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Work with local water suppliers and building developers to expand water conservation measures in new areas of development, to include reduced taps and drought resistant landscaping.
Status	Deferred, but rely heavily on local water districts to educate and implement needed programs. Additionally, added water systems have been brought online along with new systems being constructed as of 2021.

Collin County Action Item	Implement Community Tornado Safe Room Program
Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1-C
Priority	High
Estimated Cost	\$25,000
Potential Funding Sources	HMGP, PDM, Local Funds
Potential Matching Sources	Local Grants, Donations, In-Kind Match, Resident Match
Lead Department	Fire Marshal/Emergency Management
Implementation Schedule	1-5 years
Effect on Old Buildings	Existing building may be retrofitted for community safe room installation.
Effect on New Buildings	New buildings may include construction of safe rooms for the community.
Cost Effectiveness	Community and residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	Implement Local Community Tornado Safe Room Program in Identified Vulnerable Areas.

Status	Collin County residents were able to apply, and some received, grant funding through the North Central Texas Council of Government (NCTCOG) Saferoom Rebate Program. This program provided funding for saferooms through December 2020, when it was ended.
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Collin County Action Item	Develop and Implement a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	2-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	Texas A&M Forest Service and USDA Grants
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Marshal
Implementation Schedule	2-3 years
Effect on Old Buildings	Can prevent serious damages to or loss of existing buildings due to wildfire.
Effect on New Buildings	Can prevent serious damages to or loss of new buildings due to wildfire.
Cost Effectiveness	CWPPs identify where wildfire mitigation efforts would be most effective.
Discussion	Identify wildland urban interface areas that would benefit from mitigation actions. Based on the individual variables of each area, actions such as fuel management, or defensible space development could be implemented.
Status	Deferred – no actions

Collin County Action Item	Implement Firewise mitigation programs in unincorporated Collin County.
Hazard(s) Addressed	Wildfire
Goal/Objective	4-A, 4-B
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	USDA and Texas A&M Forest Service Grants
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Marshal
Implementation Schedule	1-4 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire.
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire.
Cost Effectiveness	Cost low compared to potential loss of life and property to wildfire.
Discussion	Firewise communities experience fewer losses to wildfire than communities without the program.
Status	Deferred – no actions

Collin County Action Item	Develop and implement an extreme temperature program that identifies locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D
Priority	Medium
Estimated Cost	\$5,000-\$15,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources.
Effect on New Buildings	May entail enhanced construction materials.
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold.
Status	Places identified during past event, however, additional resources need to be utilized to make this a viable option for residents

Collin County Action Item	Coordinate and complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS, Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones.
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones.
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – most dams are now under the jurisdictions of incorporated cities.

Collin County Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	4-B, 2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes.
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes.
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – no action. Many of the earthquake threats in the region of slowed

Collin County Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils.
Hazard(s) Addressed	Expansive Soils
Goal/Objective	4-A
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – no action

Collin County Action Item	Distribute all-hazards NOAA Weather Radios to vulnerable populations.
Hazard(s) Addressed	3-C, 4-A, 4-B, 4-C

Goal/Objective	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Priority	Medium
Estimated Cost	\$50,000 - \$75,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	n/a
Effect on New Buildings	n/a
Cost Effectiveness	Cost of lives lost and injuries sustained is very high compared to cost of proactive mitigation.
Discussion	This project would lead to greater capabilities for vulnerable populations to take mitigation actions prior to and in the event of all hazards.
Status	Deferred – no action

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4.2 City of Allen Action Items: 2016 Plan

City of Allen Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken on structures, can make existing building safer, stronger and less vulnerable to damages
Effect on New Buildings	Depending on mitigation actions taken on structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other hazards and civil emergencies.
Status	Cancelled – No longer a viable action item

City of Allen Action Item	Develop and establish extreme temperature plan including cooling and heating shelters for vulnerable residents.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Emergency Management, CERT
Implementation Schedule	1-2 years
Effect on Old Buildings	May require retrofit to accommodate new designs, resources needed
Effect on New Buildings	Will make new buildings safer for vulnerable populations
Cost Effectiveness	Cost to implement this program is low compared to the benefits of reduced injury and death related to extreme temperature.

Discussion	Developing an extreme temperature program that identifies both public and private safe locations for vulnerable residents to go during periods of extreme temperatures would reduce levels of injury and death in this segment of the population.
Status	Cancelled – No longer a viable action item

City of Allen Action Item	Adopt and promote a comprehensive public education program, including information about mitigation projects.
Hazard(s) Addressed	Extreme Heat, High Wind, Wildfire, Tornado, Drought, Winter Storms, Flooding, Hail, Expansive Soils, Dam Failure, Earthquake
Goal/Objective	4-A, 4-B
Priority	Medium
Estimated Cost	\$15,000
Potential Funding Sources	General fund, HMGP, PDM, other state/federal grants
Potential Matching Sources	Local funds, citizen cost-share, donations
Lead Department	Emergency Management, CERT
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken, can make existing building safer, stronger and less vulnerable to damages through retrofits and other actions
Effect on New Buildings	Depending on mitigation actions taken, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is an extremely effective low cost method.
Discussion	Adopt and promote a comprehensive public education program based on the hazards identified in this annex, including information on mitigation projects.
Status	Receive supplies and materials from the NCTCOG KnoWhat2do Program and provide to residents. Continue – will be included in 2021

City of Allen Action Item	Expand outdoor warning sirens to cover new populations
Hazard(s) Addressed	Hail, High Wind, Tornado, Dam Failure, Lightning
Goal/Objective	1-B
Priority	Medium
Estimated Cost	\$35,000 each
Potential Funding Sources	General fund, HMGP, PDM, other state/federal grants
Potential Matching Sources	Local funds
Lead Department	Emergency Management

Implementation Schedule	1-2 years
Effect on Old Buildings	May require siren tower construction on existing buildings
Effect on New Buildings	None
Cost Effectiveness	Cost of implementation is low compared to the benefits of reduced injury and death related to tornados.
Discussion	Replacement of old or damaged warning sirens and expanding coverage to new populations is a proactive approach to mitigating the effects of severe weather and prevent loss of life by providing advanced warning to citizens.
Status	Cancelled – No longer a viable action item

City of Allen Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Cancelled – No longer a viable action item

City of Allen Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP

Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for earthquake damage
Effect on New Buildings	Study would identify existing construction most at risk for earthquake damage
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Cancelled – No longer a viable action item

City of Allen Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Cancelled – No longer a viable action item

Allen Action Item	Improve construction standards and techniques through requiring, by ordinance, builders to utilize water saving plumbing and fixtures in new construction.
Hazard(s) Addressed	Drought
Goal/Objective	2-C

Priority	High
Estimated Cost	\$2,000-3,000
Potential Funding Sources	Local budget, Builders.
Lead Department	Building Department
Implementation Schedule	1-5 years
Effect on Old Buildings	No effect unless retrofitted
Effect on New Buildings	Reduced water consumption
Cost Effectiveness	Cost is very low compared to water shortages.
Discussion	This project would require low-flow plumbing and fixtures in all new construction, mitigating the effects of drought.
Status	Cancelled – No longer a viable action item

4.3 City of Anna Action Items: 2016 Plan

City of Anna Action Item	Develop and implement a comprehensive public education program, including hazard mitigation activities.
Hazard(s) Addressed	Dam Failure, Drought, High Winds, Tornado, Wildfire, Winter Storm, Expansive Soil, Extreme Heat, Hail, Lightning, Flooding, Earthquake
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken, can make existing building safer, stronger and less vulnerable to damages through retrofits and other actions.
Effect on New Buildings	Depending on mitigation actions taken, can make new building safer, stronger and less vulnerable to damages.
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	This public education program would be based on the hazards that the City of Anna identified as being vulnerable to. The program would use a combination of distributed literature, social media, and civic presentations to educate residents on natural hazards and promote hazard mitigation.
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021 Plan

City of Anna Action Item	Establish centers for vulnerable residents to go for relief during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	3-C
Priority	Medium
Estimated Cost	Current staffing project time/resources
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate space and resources.
Effect on New Buildings	May entail enhanced construction materials.
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling and heating shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold.

Status	Deferred – will be included in 2021 Plan
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City of Anna Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	1-3 years
Effect on Old Buildings	Enhance safety of existing residential structures.
Effect on New Buildings	Enhance safety of new residential structures.
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	This program gives rebates to residents who purchase and install safe rooms in their homes or on their properties to protect against severe weather.
Status	Will be included in 2021, however, some residents were able to obtain funds through the NCTCOG Saferoom Rebate Program

City of Anna Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Dam Failure, High Winds, Tornado, Wildfire, Hail, Lightning, Flooding
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$25,000 per siren, number of sirens TBD
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1—2 years
Effect on Old Buildings	May entail adding a siren tower to existing buildings.
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in keeping citizens that are outdoors notified of hazards.
Discussion	This project will expand the City of Anna's siren coverage to new areas of development not currently protect by sirens.
Status	Deferred – will be included in 2021 Plan

City of Anna Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
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Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones.
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones.
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

City of Anna Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	2-5 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire.
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire.
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify all structures and infrastructures that would be impacted by a potential wildfire.
Status	Deferred – will be included in 2021 Plan

City of Anna Action Item	Develop a drought contingency plan.
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind

Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results may entail retrofits for low-flow plumbing.
Effect on New Buildings	Results may require new codes for low-flow plumbing and foundations.
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on the stages of drought. Plan would include strategies for soil movement abatement depending on drought stage.
Status	Plan developed and will be continued to be modified updated to meet the City's needs

City of Anna Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results could define required retrofits or additions to reduce vulnerability to earthquakes.
Effect on New Buildings	Results could require updated codes for new construction to reduce vulnerability to earthquakes.
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Anna Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils.
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.

Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

City of Anna Action Item	Purchase and distribute NOAA Weather Radios to vulnerable residents.
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on any mitigation actions taken on structures, can make existing building safer, stronger and less vulnerable to damages.
Effect on New Buildings	Depending on any mitigation actions taken on structures, can make new building safer, stronger and less vulnerable to damages.
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information.
Status	Deferred – will be included in 2021 Plan

4.4 City of Blue Ridge Action Items: 2016 Plan

City of Blue Ridge Action Item	Develop and implement a comprehensive public education program, including resources to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, High Winds, Winter Storm, Wildfire, Drought, Hail, Flooding, Lightning, Extreme Heat, Expansive Soils, Dam Failure, Earthquake
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken on structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken on structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	Develop and distribute, via social media, information about mitigating the hazards identified and what actions can be taken in this annex
Status	Receive supplies and materials from the NCTCOG KnoWhat2do Program and provide to residents. Continue – will be included in 2021

City of Blue Ridge Action Item	Develop and implement an extreme temperature program that establishes centers for vulnerable residents.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	3-C
Priority	Medium
Estimated Cost	Current staffing project time/resources
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.

Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
Status	Deferred – will be included in 2021 Plan

City of Blue Ridge Action Item	Develop and Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Winds, Tornado, Hail
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	Enhance safety of existing residential structures through retrofits
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	
Status	Deferred – Residents did received funding through the NCTCOG Saferoom Rebate Program. The NCTCOG Program has been suspended

City of Blue Ridge Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	High Winds, Tornado, Wildfire, Hail, Lightning, Flooding
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$25,000
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	None
Effect on New Buildings	None

Collin County Hazard Mitigation Action Plan

Cost Effectiveness	Early warning is a key element in keeping citizens that are outdoors notified of hazards.
Discussion	The City of Blue Ridge will expand its current siren program into newly developed areas of the jurisdiction that are currently outside of siren coverage.
Status	Deferred – will be included in 2021 Plan

City of Blue Ridge Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

City of Blue Ridge Action Item	Develop and implement a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	2-A
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	2-5 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire

Collin County Hazard Mitigation Action Plan

Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify all structures and infrastructures that would be impacted by a potential wildfire and implement mitigation actions to reduce vulnerability.
Status	Deferred – will be included in 2021 Plan

City of Blue Ridge Action Item	Develop and implement a drought contingency plan that will implement water mandatory water conservation measures.
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	Results may require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on the stages of drought. Plan would include strategies for soil movement abatement depending on drought stage and mandatory water restrictions for water conservation.
Status	Deferred – will be included in 2021 Plan

City of Blue Ridge Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds

Collin County Hazard Mitigation Action Plan

Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results would help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results would help identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Blue Ridge Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

City of Blue Ridge Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000

Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken on structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken on structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information
Status	Deferred – will be included in 2021 Plan

4.5 City of Celina Action Items: 2016 Plan

City of Celina Action Item	Purchase and utilize mobile back-up generator
Hazard(s) Addressed	Flooding, Tornado, Earthquake, Extreme Heat, Lightning, Wildfire, Winter Storms, Dam Failure, Hail, High Winds
Goal/Objective	2-D
Priority	High
Estimated Cost	\$5,000 - \$10,000
Potential Funding Sources	Local Funding
Potential Matching Sources	Local Funding
Lead Department	Public Works, OEM
Implementation Schedule	1-2 years
Effect on Old Buildings	Some buildings will need to be retrofit with ability to connect with generator
Effect on New Buildings	Buildings will need to be planned with the ability to connect to generator
Cost Effectiveness	Backup generator will prevent loss of power and data to critical government buildings
Discussion	Introduction of a mobile back-up generator will allow the City of Celina or other critical facilities to function as close to normal as possible in the event of a massive power loss.
Status	Deferred – will be included in 2021 Plan

City of Celina Action Item	Develop and implement a drought contingency plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on the stages of drought. Plan would include strategies for soil movement abatement depending on drought stage.

Collin County Hazard Mitigation Action Plan

Status	Deferred – will be included in 2021 Plan
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City of Celina Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken on structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken on structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information
Status	Deferred – will be included in 2021 Plan

City of Celina Action Item	Implement all-hazards community education program, including information on mitigation activities.
Hazard(s) Addressed	Flooding, Tornado, Extreme Heat, Lightning, Wildfire, Winter Storms, Dam Failure, Hail, High Winds, Earthquake, Expansive Soils, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	High
Estimated Cost	\$1,000 - \$5,000
Potential Funding Sources	Local funding
Potential Matching Sources	Local grants, FEMA
Lead Department	OEM
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits

Collin County Hazard Mitigation Action Plan

Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Educating public on mitigation against loss of life and property will save government resources in the event of a disaster event
Discussion	Community education is important for reducing loss of life and property.
Status	Receive supplies and materials from the NCTCOG KnoWhat2do Program and provide to residents. Continue – will be included in 2021

City of Celina Action Item	Analyze needs, develop and implement water conservation measures for new populations
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2-C
Priority	High
Estimated Cost	\$1,000 - \$5,000
Potential Funding Sources	Local funding
Potential Matching Sources	Local grants, citizen match
Lead Department	Public Works, OEM
Implementation Schedule	2-3 years
Effect on Old Buildings	New constraints will be placed on water usage without compromising soil integrity.
Effect on New Buildings	New constraints will be placed on water usage without compromising soil integrity.
Cost Effectiveness	Expanded water and soil consistency standards will help the city of Celina plan for a boost in infrastructure and population and help maintain normal water levels
Discussion	As the City of Celina grows water conservation measures will encompass new infrastructure and residential/commercial areas. This plan implements conservation efforts that also maintain soil consistency, mitigating damage from expansive soils.
Status	Deferred – will be included in 2021 Plan

City of Celina Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind

Collin County Hazard Mitigation Action Plan

Lead Department	Planning and Zoning/ NRCS, Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

City of Celina Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results would help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results would identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Celina Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	TBD
Potential Funding Sources	Federal grants, state grants

Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

4.6 Town of Fairview Action Items: 2016 Plan

Town of Fairview Action Item	Implement all-hazards public education program, including hazard mitigation activities for each identified hazard
Hazard(s) Addressed	Tornado, Winter Storm, Drought, Extreme Heat, Flooding, Wildfire, Expansive Soils, Hail, Earthquake, High Winds, Lightning, Dam Failure
Goal/Objective	3-B, 4-A, 4-B, 4-C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	Operating Budget
Potential Matching Sources	Local Grants
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public Education is extremely effective for low cost
Discussion	The Town of Fairview will implement an all-hazards comprehensive public education program based on the hazards identified in this annex and what actions can be taken to mitigate impacts. This program will use a variety of means for distributing information, including social media, printed literature, and presentations to civic groups.
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

Town of Fairview Action Item	Implement tornado safe room education program
Hazard(s) Addressed	High Winds, Tornados
Goal/Objective	1-C
Priority	Medium
Estimated Cost	\$500
Potential Funding Sources	Operating Budget
Potential Matching Sources	Local Grants/FEMA
Lead Department	Emergency Management
Implementation Schedule	1-3 years
Effect on Old Buildings	Retrofit will be required on some structures

Collin County Hazard Mitigation Action Plan

Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Moderate to high depending on level of acceptance
Discussion	Residential safe room shelters potentially decrease the likelihood of personal injuries and death during severe weather, tornado or hail events.
Status	Will be included in 2021, however, some residents were able to obtain funds through the NCTCOG Saferoom Rebate Program

Town of Fairview Action Item	Implement and actively promote Nixle Notification alert system.
Hazard(s) Addressed	Tornado, Winter Storm, Drought, Extreme Heat, Flooding, Wildfire, Expansive Soils, Hail, Earthquake, High Winds, Lightning, Dam Failure
Goal/Objective	1-A, 1-B, 3-B, 4-A, 4-B
Priority	Medium
Estimated Cost	\$1,500
Potential Funding Sources	Operating Budget
Potential Matching Sources	Local Grants/FEMA
Lead Department	Emergency Management
Implementation Schedule	1-3 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warnings will assist in saving lives for no cost.
Discussion	Weather/all-hazards notifications are a proven means to alert and warn citizens about severe weather conditions as well as other emergency and hazard information.
Status	Deferred – will be included in 2021 Plan

Town of Fairview Action Item	Update and enforce water conservation measures and implement public education outreach
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2-C, 3-C
Priority	Medium/Low
Estimated Cost	\$1000
Potential Funding Sources	Operating Budget
Potential Matching Sources	North Texas Municipal Water District

Collin County Hazard Mitigation Action Plan

Lead Department	Public Works, Code Enforcement
Implementation Schedule	1-2 years
Effect on Old Buildings	Water conservations measures would stabilize soils, mitigating damage to existing structures.
Effect on New Buildings	Water conservations measures would stabilize soils, mitigating damage to new structures.
Cost Effectiveness	Low-cost effort for increasing awareness of water restrictions.
Discussion	Town of Fairview will review water conservation measures and update as necessary. These conservation efforts regulate water used for maintaining soil consistency. Updates will be communicated to the public.
Status	Deferred – will be included in 2021 Plan

Town of Fairview Action Item	Develop and implement regulations for the construction of town buildings deemed “critical infrastructure”.
Hazard(s) Addressed	Tornado, Winter Storm, Drought, Extreme Heat, Flooding, Wildfire, Expansive Soils, Hail, Earthquake, High Winds, Lightning, Dam Failure
Goal/Objective	1-C, 2-A, 2-B, 2-C, 2-D, 2-E
Priority	Medium/Low
Estimated Cost	\$5000
Potential Funding Sources	Operating Budget
Potential Matching Sources	NCTCOG/FEMA
Lead Department	Emergency Management
Implementation Schedule	2-3 years
Effect on Old Buildings	May involve cascading retrofits
Effect on New Buildings	Strengthening construction requirements for new critical infrastructure will result in greater resiliency to hazards
Cost Effectiveness	Moderate to High.
Discussion	Town will develop and implement construction design regulations for new Critical Infrastructure, as defined by the EMC. Regulations would include elevating structures, reinforcing doors and windows, using flame-retardant, hail and wind resistant external materials, roof bracing, installing higher grade insulation, stabilizing foundations, installing lightning rods, and using low-flow technology for all plumbing.
Status	Deferred – will be included in 2021 Plan

Town of Fairview Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood

Collin County Hazard Mitigation Action Plan

Goal/Objective	2-A, 3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Engineering/ NRCS
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

Town of Fairview Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	Earthquake
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Engineering
Implementation Schedule	1-2 years
Effect on Old Buildings	Results would help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results would identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

4.7 Town of Farmersville Action Items: 2016 Plan

City of Farmersville Action Item	Develop and Implement a Comprehensive Public Education Program to Mitigate the Impacts of Each Identified Hazard.
Hazard(s) Addressed	Tornado, Winter Storm, Drought, Extreme Heat, Flooding, Wildfire, Expansive Soils, Hail, Earthquake, High Winds, Lightning, Dam Failure
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	Farmersville will develop a program for educating the public on our hazards and effective mitigation activities for each. Program will combine distributed written literature and social media to educate residents on hazards, their dangers, and how to mitigate against them to protect life and property.
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

City of Farmersville Action Item	Develop and implement water conservation measures
Hazard(s) Addressed	Drought
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-2 years

Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Farmersville will develop stringent regulations/codes for water conservation.
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Item	Develop and Implement an Extreme Temperature Program
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Developing heating and cooling shelters as part of an extreme temperature program would allow threatened residents to reduce their vulnerability to extreme temperature hazards.
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C, 2-D
Priority	High
Estimated Cost	\$25,000
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	2-3 years

Effect on Old Buildings	Enhance safety of existing residential structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	By implementing its own program separate of that run by the North Central Texas COG, Farmersville would be able to directly target its residents for storm shelter rebates, ensuring their lives and property are protected against High Winds, Tornado, and Hail
Status	Will be included in 2021, however, some residents were able to obtain funds through the NCTCOG Saferoom Rebate Program

City of Farmersville Action Item	Purchase and install outdoor warning sirens to increase coverage for new development areas.
Hazard(s) Addressed	Dam Failure, High Winds, Tornado, Wildfire, Hail, Lightning, Flooding
Goal/Objective	1-A
Priority	High
Estimated Cost	\$25,000 per siren
Potential Funding Sources	General Fund, HMGP, PDM
Potential Matching Sources	Local funds, in-kind, user fees
Lead Department	EMC
Implementation Schedule	1-3 years
Effect on Old Buildings	Could entail tower construction on existing buildings
Effect on New Buildings	None
Cost Effectiveness	High. Early warning is a key element in outdoor safety
Discussion	Installing sirens in areas of new development, Farmersville can ensure long-term reduction of vulnerability to life and personal property.
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors

Collin County Hazard Mitigation Action Plan

Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	2-3 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	A CWPP would identify locations in Farmersville that are vulnerable to wildfire. These locations might include critical facilities, critical infrastructure, or other properties that are vital to the interests of Farmersville. By identifying these locations, targeted preparedness and response measures can be implemented.
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake

Collin County Hazard Mitigation Action Plan

Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results would help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results would identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
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Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information
Status	Deferred – will be included in 2021 Plan

4.8 City of Frisco Action Items: 2016 Plan

City of Frisco Action Item	Expanding the Early Warning Sirens and Local Warning System to notify new populations of impending severe weather or imminent hazards to reduce the loss of life and mitigate the effects of the hazards.
Hazard(s) Addressed	Tornado, hail, high winds, lightning, wildfire
Goal/Objective	1-B
Priority	High
Estimated Cost	\$40,000 - \$50,000 each siren / total to be determined
Potential Funding Sources	City of Frisco annual budget, HMGP
Lead Department	Fire Department
Implementation Schedule	2-5 years
Effect on Old Buildings	Outdoor warning sirens do not have an impact on structures; they are designed to be heard outdoors only.
Effect on New Buildings	The outdoor warning sirens do not have an impact on structures; they are designed to be heard outdoors only.
Cost Effectiveness	The costs associated with maintaining an outdoor warning system are minimal and less expensive than total replacement of an outdoor warning system.
Discussion	The outdoor warning siren system is the most effective tool for outdoor notification, especially as relative to the fact that Frisco has many outdoor parks, trails, and nature areas that are used by citizens.

City of Frisco Action Item	Implement the Texas Individual Tornado Safe Room Rebate Program Locally
Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1-C
Priority	Medium
Estimated Cost	50% of cost (up to) \$3,000 per shelter. Number of shelters to be determined
Potential Funding Sources	County Budget, HMGP, PDM, Homeowner, Work-in-kind
Lead Department	Building Inspections Department, Emergency Management, HMC
Implementation Schedule	2-5 years
Effect on Old Buildings	This action will improve the safety of existing homes with either in-ground or in-house shelters.
Effect on New Buildings	This action will improve the safety of new homes with either in-ground or in-house shelters.
Cost Effectiveness	The cost of this project is low compared to the potential benefits of reduction in personal injuries and/or deaths.
Discussion	Residential safe room sheltering can decrease potential personal injuries or deaths in the event of a tornado.

4.9 City of Josephine Action Items: 2016 Plan

City of Josephine Action Item	Develop and implement a comprehensive public education program to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Winter Storm, Drought, Extreme Heat, Flooding, Wildfire, Expansive Soils, Hail, Earthquake, High Winds, Lightning, Dam Failure
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	This public education program would be based on the hazards that the City of Josephine identified. The program would use a combination of distributed literature, social media, and civic presentations to educate residents on natural hazards and promote hazard mitigation.
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

City of Josephine Action Item	Identify and establish heating and cooling centers for vulnerable populations
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D, 3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources

Collin County Hazard Mitigation Action Plan

Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Establishing heat and cooling shelters would allow special populations to reduce their vulnerability to extreme heat and cold
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	Enhance safety of existing residential structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	This program gives rebates to residents who purchase and install safe rooms in their homes or on their properties to protect against severe weather.
Status	Deferred – Residents did received funding through the NCTCOG Saferoom Rebate Program. The NCTCOG Program has been suspended

City of Josephine Action Item	Increase outdoor warning siren coverage for new development areas
Hazard(s) Addressed	Dam Failure, High Winds, Tornado, Wildfire, Hail, Flooding, Lightning
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$25,000 per siren. Number of sirens TBD.
Potential Funding Sources	General Fund, HMGP, PDM
Potential Matching Sources	Local funds, in-kind, donations
Lead Department	EMC
Implementation Schedule	1-2 years

Collin County Hazard Mitigation Action Plan

Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in keeping citizens that are outdoors notified of hazards.
Discussion	This project will expand Josephine's siren coverage to new areas of development not currently protect by sirens.
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	2-A, 3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Item	Develop and implement a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	2-3 years

Collin County Hazard Mitigation Action Plan

Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	A CWPP will identify all structures and infrastructures that would be impacted by a potential wildfire, and identify potential targeted mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Item	Develop, adopt, and enforce water conservation measures
Hazard(s) Addressed	Drought
Goal/Objective	2-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-3 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	City of Josephine will develop, adopt, and enforce water conservation ordinances, codes, and other regulatory measures to conserve water during times of drought.
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds

Collin County Hazard Mitigation Action Plan

Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	TBD
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000

Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information
Status	Deferred – will be included in 2021 Plan

4.10 City of Lavon Action Items: 2016 Plan

Lavon Action Item	Establish an AM radio station to broadcast weather conditions, hazards and road closures. Also will allow for broadcast of watches, warnings, evacuation routes, shelter information, and mitigation information.
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	City Budget, Grant Programs
Lead Department	City Manager's Office
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	This project's cost effectiveness is in the lives it saves by alerting citizens to take shelter during extreme weather conditions.
Discussion	The AM Radio Station will reduce the threats to the citizens by alerting them to impending severe weather and warn citizens to seek appropriate shelter inside.
Status	Deferred – included in 2021 Action Items

Lavon Action Item	Reduce the impact of Severe Heat by utilizing Green Landscaping Roofing on all new city construction.
Hazard(s) Addressed	Extreme Heat
Goal/Objective	2-B, 2-D
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	Local funding, HMGP
Lead Department	Public Works
Implementation Schedule	1-5 years
Effect on Old Buildings	No effect
Effect on New Buildings	The green landscaping will reduce overall effect of extreme heat on buildings, making cooling more efficient and reducing the use of electricity as well as reducing the effects of extreme summer heat on the citizens.
Cost Effectiveness	This project is cost effective in the reduction of hazards to citizens as well as the reduced power and electricity requirements for cooling buildings in summer heat.
Discussion	By utilizing landscaping on the roofs several significant benefits will be utilized. Including, insulation in the facility reducing the need for electricity, reducing the impact of extreme heat on the residents.

Status	Deferred – included in 2021 Action Items
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Lavon Action Item	Develop and implement a Master Storm Water Drainage Plan for the City.
Hazard(s) Addressed	Flooding
Goal/Objective	2-E
Priority	High
Estimated Cost	\$50,000
Potential Funding Sources	City Budget, Grant Programs
Lead Department	Department of Public Works
Implementation Schedule	1-5 years
Effect on Old Buildings	Improved planning reduces potential flooding impacts
Effect on New Buildings	Mitigates flooding impacts
Cost Effectiveness	This project is extremely cost effective when compared to the property and agriculture/crop damage that will be avoided once the Master Storm Drainage plan enactment begins.
Discussion	There is currently no Master Storm Drainage Plan. By preparing and implementing this plan, it will reduce the occurrence of flash flooding and sudden inundation of areas. It will improve transportation during severe weather. Reduce vulnerabilities to those homeowners who are located in areas outside of flood zones but vulnerable to overflow flooding. And eliminate the rerouting of storm water to unattended areas.
Status	Deferred – included in 2021 Action Items

Lavon Action Item	Implement Building Codes requiring New Commercial Facilities to utilize Hail Resistant Roofing Materials.
Hazard(s) Addressed	Hail
Goal/Objective	2-C
Priority	Medium
Estimated Cost	\$5,000-\$10,000
Potential Funding Sources	HMGP, Local budget
Lead Department	Emergency Management
Implementation Schedule	1-5 years
Effect on Old Buildings	Hail resistant roofing and window coverings will significantly mitigate the potential hazards of property damage as well as possible personal injury due to severe storm and hail.
Effect on New Buildings	Reduce impacts of hail on new structures
Cost Effectiveness	The cost effectiveness of the project will be the reduction of damage to property as well as reducing the need for debris disposal after a storm.

Collin County Hazard Mitigation Action Plan

Discussion	The City of Lavon will enact codes for new development and city construction by requiring developers to install hail resistant roofing and window coverings, thus reducing the effect of severe weather and damage.
Status	Deferred – included in 2021 Action Items

Lavon Action Item	Retrofit an existing structure or construct a new City Hall built to withstand an EF2 Tornado.
Hazard(s) Addressed	Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	\$5,000,000
Potential Funding Sources	City Budget, Grant Programs
Lead Department	Department of Public Works
Implementation Schedule	3-5 years
Effect on Old Buildings	No effect on existing buildings unless retrofit
Effect on New Buildings	This would affect the new City Hall building, making it able to withstand an EF2 tornado, mitigating the loss of such critical infrastructure.
Cost Effectiveness	This project is cost effective because the current City Hall building is manufactured and will not withstand an EF2 tornado. City Hall houses many functions, documents, and records, and the potential loss of those greatly outweighs the cost of a new hardened structure.
Discussion	The current City Hall houses Administration, Clerical, Secretary, Devel. Services, Marshal Office, Council Court, PW and all the records are housed. The City Hall facility is currently two manufactured modular trailer buildings. The construction or retrofit of the new City Hall should include a hardened infrastructure to withstand known hazard extent levels.
Status	Deferred – included in 2021 Action Items

Lavon Action Item	Retrofit an existing structure or construct a new Public Works office and shop built to withstand a EF2 Tornado
Hazard(s) Addressed	Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	\$1,000,000
Potential Funding Sources	City Budget, Grant Programs
Lead Department	Department of Public Works
Implementation Schedule	2-4 years
Effect on Old Buildings	No effect on existing buildings unless retrofit

Effect on New Buildings	This would affect the new Public Works office and shop buildings, making them able to withstand an EF2 tornado, mitigating the loss of such critical infrastructure.
Cost Effectiveness	This project is cost effective because the current Public Works buildings are manufactured and will not withstand an EF2 tornado. These buildings house many functions, documents, and records, and the potential loss of those greatly outweighs the cost of a new hardened structure.
Discussion	The current Public Works office and shop contain all document and vital records. The offices are currently manufactured modular trailer buildings, and these would not withstand an EF2 tornado. In order to mitigate the effects of that hazard, the retrofit or construction of the new Public Works office and shop should include a hardened infrastructure to withstand known hazard extent levels.
Status	Deferred – included in 2021 Action Items

Lavon Action Item	Implement a program to inspect and clear excessive brush along high-voltage power lines and surrounding land, reducing the vulnerability to citizens located in potential wildland fire areas.
Hazard(s) Addressed	Wildland Fire
Goal/Objective	2-C
Priority	High
Estimated Cost	\$500,000/year
Potential Funding Sources	Local funding, HMGP
Lead Department	Public Works, Fire Department
Implementation Schedule	1-2 years
Effect on Old Buildings	This would mitigate the effects of wildland fire encroaching upon built up areas for existing construction.
Effect on New Buildings	This would mitigate the effects of wildland fire encroaching upon built up areas for new structures.
Cost Effectiveness	This project's cost effectiveness is seen in the management of wildland fire fuels to significantly reduce the damage or loss of buildings, structures, agriculture products, or homes to wildland fire.
Discussion	Currently the City of Lavon is susceptible to wildland due to the large amounts of family owned and un-maintained land along with the large farming industry. With the clearing of brush around high power voltage lines and surrounding land, this will create a fire break, greatly reducing the hazard and risks associated with possible ignition sources of wildland fire.
Status	Deferred – included in 2021 Action Items

Lavon Action Item	Develop and implement a community awareness program utilizing the City's existing communication outlets including the website and newsletter in order to mitigate the effects of wildland fire.
Hazard(s) Addressed	Wildland Fire

Goal/Objective	4-A, 4-B
Priority	High
Estimated Cost	\$7,000-\$10,000
Potential Funding Sources	City Budget
Lead Department	Development Services
Implementation Schedule	1-5 years
Effect on Old Buildings	This will greatly mitigate the effect of wildland fire on all buildings by increasing mitigation actions through public awareness and education campaigns, especially during periods of low rain and high heat.
Effect on New Buildings	This will greatly mitigate the effect of wildland fire on all buildings by increasing mitigation actions through public awareness and education campaigns, especially during periods of low rain and high heat.
Cost Effectiveness	This project is cost effective when compared to property damage, crop consumption, and potential loss of life that can be attributed to the hazards of wildland fire.
Discussion	The City of Lavon is highly susceptible to the dangers posed by wildland fire. By educating the public, they will be more aware of conditions, hazard assessment, and any applicable codes or burn ban enforcements applied by the city. This will mitigate the hazards associated with wildland fire.
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021 Plan

4.11 City of Lowry Crossing Action Items: 2016 Plan

Lowry Crossing Action Item	Implement Hazard Mitigation Education Series to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning, Dam Failure
Goal/Objective	2A, 2B, 2C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	FEMA
Potential Matching Sources	N/A
Lead Department	City Administration
Implementation Schedule	0 – 24 Months
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Will be instrumental in planning and correction.
Discussion	In FY2022 Lowry Crossing is partnering with NCTCOG on a flood study of 17 miles of tributary within the city.
Status	Continue - Received supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

Lowry Crossing Action Item	Implement Storm Shelter/Safe Room Rebate Program
Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1B
Priority	High
Estimated Cost	\$3000/safe room
Potential Funding Sources	Federal Grants
Potential Matching Sources	NCTCOG
Lead Department	City Administration
Implementation Schedule	1-3 years
Effect on Old Buildings	Existing construction could have safe room added
Effect on New Buildings	New building could be constructed with safe rooms
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind.
Discussion	Develop list of storm shelter and safe rooms for emergency personnel to check safety of inhabitants.

Status	Continue - Will be included in 2021, however, some residents were able to obtain funds through the NCTCOG Saferoom Rebate Program
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Lowry Crossing Action Item	Develop and adopt a drought contingency plan.
Hazard(s) Addressed	Drought
Goal/Objective	3A, 3B, 3C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	Local Funds
Potential Matching Sources	
Lead Department	City Administration
Implementation Schedule	1-2 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Very low cost to ensure benefit of saving water for future generations.
Discussion	Drought contingency plan will limit water usage based on drought conditions.
Status	Deferred – will be included in 2021 Plan

Lowry Crossing Action Item	Develop and implement an extreme temperature program that establishes heating and cooling centers for vulnerable residents
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-A, 2-D, 3-C
Priority	Medium
Estimated Cost	\$5,000-\$15,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	12 months
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold

Status	Deferred – will be included in 2021 Plan
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Lowry Crossing Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	Protect existing and new properties from the effects of all natural hazards.
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS
Implementation Schedule	12-18 Months
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

Lowry Crossing Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	4-B
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	6 months – 18 months
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low

Collin County Hazard Mitigation Action Plan

Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

Lowry Crossing Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	4-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	12-18 months
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

Lowry Crossing Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years

Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information
Status	Deferred – will be included in 2021 Plan

4.12 City of Lucas Action Item: 2016 Plan

City of Lucas Action Item	Develop a Community Wildfire Protection Plan (CWPP).
Hazard(s) Addressed	Wildfire
Goal/Objective	2-A
Priority	Medium
Estimated Cost	\$20,000
Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, donations, in-kind, and/or grants
Lead Department	Fire-Rescue and Emergency Management with assistance from Collin County and the Texas A&M Forest Service.
Implementation Schedule	18-36 Months
Effect on Old Buildings	Will reduce vulnerability of existing structures to damages or loss from wildfire.
Effect on New Buildings	Will reduce vulnerability of new structures to damages or loss from wildfire.
Cost Effectiveness	CWPPs show officials where to focus their efforts in preventing wildfire. Saving lives and protecting property is cost effective in the long-run.
Discussion	This project will become needed as the population in the Wildland Urban Interface area increases. This plan will protect life and property.
Status	Not yet started.

City of Lucas Action Item	Develop a wildfire and drought education program for residents.
Hazard(s) Addressed	Wildfire, Drought
Goal/Objective	4-A, 4-B
Priority	Medium
Estimated Cost	\$5,000.00
Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, in-kind, and/or grants
Lead Department	Fire-Rescue and Emergency Management with assistance from the Texas A&M Forest Service
Implementation Schedule	0-12 months
Effect on Old Buildings	Will reduce vulnerability of existing buildings to wildfire and drought through resident education and behavior.
Effect on New Buildings	Will reduce vulnerability of new buildings to wildfire and drought through resident education and behavior.
Cost Effectiveness	Public education is extremely effective with a low cost.
Discussion	Residents will be educated on mitigation actions to protect their lives and property from wildfire and drought. Residents will be provided

Collin County Hazard Mitigation Action Plan

	with supplies and materials from the NCTCOG KnowWhat2Do Program.
Status	Not yet started. The City will request supplies and materials from the NCTCOG when a plan for education and distribution has been determined.

City of Lucas Action Item	Develop an extreme heat education program for residents.
Hazard(s) Addressed	Extreme Heat
Goal/Objective	4-A, 4-B
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, in-kind, and/or grants
Lead Department	Fire-Rescue and Emergency Management
Implementation Schedule	2 years
Effect on Old Buildings	Will reduce vulnerability of existing buildings to extreme heat through resident education and behavior.
Effect on New Buildings	Will reduce vulnerability of new buildings to extreme heat through resident education and behavior.
Cost Effectiveness	Public education is extremely effective with a low cost.
Discussion	Residents will be educated on mitigation actions to protect their lives and property from extreme heat. Residents will be provided with supplies and materials from the NCTCOG KnowWhat2Do Program.
Status	Not yet started. The City will request supplies and materials from the NCTCOG when a plan for education and distribution has been determined.

City of Lucas Action Item	Develop a winter weather/storm education program for residents.
Hazard(s) Addressed	Winter Storms
Goal/Objective	4-A, 4-B
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HGMP, PDM, and/or General Fund
Potential Matching Sources	Local funds, in-kind, and/or grants
Lead Department	Fire-Rescue and Emergency Management
Implementation Schedule	2 years
Effect on Old Buildings	Will reduce vulnerability of existing buildings to winter weather/storms through resident education and behavior.

Collin County Hazard Mitigation Action Plan

Effect on New Buildings	Will reduce vulnerability of new buildings to winter weather/storms through resident education and behavior.
Cost Effectiveness	Public education is extremely effective with a low cost.
Discussion	Residents will be educated on mitigation actions to protect their lives and property from winter weather/storms. Residents will be provided with supplies and materials from the NCTCOG KnowWhat2Do Program
Status	Not yet started. The City will request supplies and materials from the NCTCOG when a plan for education and distribution has been determined.

City of Lucas Action Item	Develop a Large Animal Rescue Plan and educate residents on actions to mitigate impact to large animals from severe weather and natural disasters.
Hazard(s) Addressed	Flood, Tornado, Winter Storm, Wildfire
Goal/Objective	4-B
Priority	Medium
Estimated Cost	\$25,000
Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, in-kind, and/or grants
Lead Department	Fire-Rescue
Implementation Schedule	18-36 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Public education is extremely effective with a low cost.
Discussion	This project will help Lucas Fire-Rescue educate owners of large animals about how to mitigate impact to their large animals from severe weather and natural disasters. This plan will also give Lucas Fire-Rescue the plans and directions on rescuing large animals around the City during disaster.
Status	Not yet started.

City of Lucas Action Item	Implement stricter building codes and standards to mitigate the impacts of hazards to buildings around the City.
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, High Winds, Lightning, Tornado, Wildfire, Winter Storm
Goal/Objective	2-C
Priority	Medium
Estimated Cost	\$10,000 - \$15,000

Potential Funding Sources	Local
Potential Matching Sources	None
Lead Department	Planning and Zoning, Code Enforcement, Engineering
Implementation Schedule	1-2 years
Effect on Old Buildings	Old buildings would be retrofitted to meet current or updated building code standards.
Effect on New Buildings	New buildings would be constructed to meet current or updated building code standards.
Cost Effectiveness	This is cost effective because it will protect life and property from future disasters.
Discussion	Updated and current building code standards will be continuously implemented in the City through retrofits to old buildings and initial construction to new buildings.
Status	The City of Lucas has adopted current building code and will continue to adopt the most current building codes. This action item will be included in future HazMAP updates.

City of Lucas Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	Earthquake
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local funds
Lead Department	Public Works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce the vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low.
Discussion	Study results will identify information to determine mitigation projects
Status	No longer a relevant action item to the City of Lucas. This item will not be included as a 2021 Action Item.

City of Lucas Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils.
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants and/or state grants
Potential Matching Sources	Local funds
Lead Department	Emergency Management, Public Works, Planning and Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	This study would lead to targeted mitigation projects to lower vulnerability to expansive soils. This soil analysis will protect life and property.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Not yet started.

City of Lucas Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Emergency Management, Planning and Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low

Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	No longer a relevant action item to the City of Lucas. This item will not be included as a 2021 Action Item.

4.13 City of Melissa Action Item: 2016 Plan

City of Melissa Action Item	Adopt and promote public education program to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning, Dam Failure
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	9-12 months
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	Program will include information on hazard mitigation and what actions can be taken to reduce impacts on people and property.
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

City of Melissa Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Tornado, Wildfire, High Winds, Flooding, Hail, Lightning, Dam Failure
Goal/Objective	1-A
Priority	High
Estimated Cost	\$25,000
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	9-12 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in the safety of citizens who are outdoors

Discussion	Outdoor warning sirens help prevent loss of life during severe storms.
Status	Deferred – will be included in 2021 Plan

City of Melissa Action Item	Develop and implement an extreme temperature program that identifies both safe locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-A
Priority	Medium
Estimated Cost	Current staffing project time/resources
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	12 months
Effect on Old Buildings	May require retrofit
Effect on New Buildings	None
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
Status	Deferred – will be included in 2021 Plan

City of Melissa Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	12 to 24 months
Effect on Old Buildings	Retrofit will increase life safety
Effect on New Buildings	Will add additional protection to reduce injury and loss of life
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.

Discussion	Residential safe room programs help prevent loss of life during tornado or severe storm.
Status	Deferred – Residents did received funding through the NCTCOG Saferoom Rebate Program. The NCTCOG Program has been suspended

City of Melissa Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information
Status	Deferred – will be included in 2021 Plan

City of Melissa Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning
Implementation Schedule	12 - 18 months

Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

City of Melissa Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	18 – 36 months
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify all structures and infrastructures that would be impacted by a potential wildfire.

Status	Deferred – will be included in 2021 Plan
City of Melissa Action Item	Develop and implement mandatory water conservation measures
Hazard(s) Addressed	Drought
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works

Implementation Schedule	12 - 18 months
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Promote water conservation throughout the county and work with local water supplies to increase public education on drought. Develop and implement mandatory water restrictions for water conservation.
Status	Deferred – will be included in 2021 Plan

City of Melissa Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Melissa Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	TBD

Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	

4.14 City of Murphy Action Items: 2016 Plan

City of Murphy Action Item	Increase the percentage of population covered by Outdoor Warning Sirens by relocating one siren and purchasing and installing an additional siren.
Hazard(s) Addressed	Tornado, High Winds, Hail
Goal/Objective	1-B
Priority	High
Estimated Cost	\$38,000
Potential Funding Sources	HGMP, PDM, General Fund
Potential Matching Sources	Local funds, in-kind
Lead Department	Fire/OEM
Implementation Schedule	6-18 months
Effect on Old Buildings	N/A
Effect on New Buildings	N/A
Cost Effectiveness	Very cost effective. Quantifying the value of a human life is extremely difficult at best.
Discussion	The city has four tower sites currently, but has a gap in coverage in some areas. Relocating an existing site and adding one site would allow full coverage for the city and its residents.
Status	100% Complete

City of Murphy Action Item	Obtain portable generators to ensure continuity of operations at critical facilities.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Hail, Earthquake, Lightning, Dam Failure
Goal/Objective	1-E
Priority	High
Estimated Cost	\$7,500 each
Potential Funding Sources	HGMP, HMA, General Fund
Potential Matching Sources	Local, In-kind
Lead Department	Fire
Implementation Schedule	3-6 Months
Effect on Old Buildings	Would require retrofit for generator hookups
Effect on New Buildings	N/A
Cost Effectiveness	Very cost effective
Discussion	Natural hazards can create power outages for extended periods of time.

Collin County Hazard Mitigation Action Plan

Status	Not started and no longer a viable action item. Will be removed from Plan
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City of Murphy Action Item	Purchase and Install CASA-WX Weather Radar
Hazard(s) Addressed	Tornado, High Winds, Hail
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$2.5 Million
Potential Funding Sources	HGMP, PDM, General Fund
Potential Matching Sources	Local funds, in-kind
Lead Department	Fire/OEM
Implementation Schedule	3-6 months
Effect on Old Buildings	N/A
Effect on New Buildings	N/A
Cost Effectiveness	Very cost effective. Quantifying the value of a human life is extremely difficult at best.
Discussion	The Collaborative Adaptive Sensing of the Atmosphere (CASA WX) project is a multi-sector partnership dedicated to engineering revolutionary weather-sensing networks. The more accurate data will also provide a better means to analyze severe weather post event which can also help in the assessment of damage after a severe weather event.
Status	No longer a viable project for Murphy, will be removed from Plan on 2021

City of Murphy Action Item	Implement the Residential Safe Room Rebate Program locally
Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1-C
Priority	Medium
Estimated Cost	\$3,000 per safe room
Potential Funding Sources	HGMP, PDM, General Fund
Potential Matching Sources	Local funds, in-kind
Lead Department	City Council – City Manager
Implementation Schedule	1-3 years
Effect on Old Buildings	Some buildings may be modified for shelter retrofit
Effect on New Buildings	New home construction would result in safer houses

Collin County Hazard Mitigation Action Plan

Cost Effectiveness	Moderate: Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornados or high winds events.
Discussion	Support the existing active FEMA 320 safe room rebate program for North Central Texas by helping offset the cost to the resident.
Status	Will be included in 2021, however, some residents were able to obtain funds through the NCTCOG Saferoom Rebate Program

City of Murphy Action Item	Develop and implement seasonal program for identifying and removing tree limbs that threaten infrastructure.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, High Winds, Lightning
Goal/Objective	1-D
Priority	Medium
Estimated Cost	\$25,000
Potential Funding Sources	HGMP, General Fund
Potential Matching Sources	Local funds, in-kind
Lead Department	Parks
Implementation Schedule	3-6 Months
Effect on Old Buildings	Reduce potential for power line/debris/limb damage to existing buildings during extreme weather
Effect on New Buildings	Reduce potential for power line/debris/limb damage to new construction during extreme weather
Cost Effectiveness	Very cost effective in mitigating tree limbs prior to severe weather events.
Discussion	Severe storms, winter storms, and wildfires damage tree limbs and power lines that damage homes, buildings, vehicles and create power outages when they fall. Roads become impassable due to the obstructions created by the falling limbs and charged power lines as well. The ability to mitigate these overgrowth items and strategically located limbs will lessen the effects of the hazards.
Status	Completed

City of Murphy Action Item	Retrofit the existing Emergency Operations Center to harden it against multiple hazards
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning, Dam Failure
Goal/Objective	2-B
Priority	High
Estimated Cost	\$30,000-\$150,000

Collin County Hazard Mitigation Action Plan

Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local, In-kind, Bond
Lead Department	Public Works
Implementation Schedule	12 – 24 months
Effect on Old Buildings	Existing building would be retrofitted to mitigate against structure-impacting hazards.
Effect on New Buildings	N/A
Cost Effectiveness	Low cost effectiveness for construction, but very cost effective for 'command structure' to remain intact to operate through emergency events
Discussion	Dry floodproofing ground floor; reinforcing doors and windows; installing flame-retardant, hail and wind resistant external materials (window coatings, roofing); roof bracing; higher grade insulation; foundations stabilizers; lightning rods; soil stabilizing plants, and low-flow plumbing.
Status	Partially completed and will continue to perform enhancements. Will be included in 2021 Plan.

City of Murphy Action Item	Replace undersized culverts at five locations.
Hazard(s) Addressed	Flooding
Goal/Objective	2-A, 2-E
Priority	Moderate
Estimated Cost	\$620,000
Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local, in-kind, Bonds
Lead Department	Engineering
Implementation Schedule	1-2 years
Effect on Old Buildings	Reduce flooding for existing structures in area
Effect on New Buildings	Reduce flooding for planned construction in area
Cost Effectiveness	Very effective for the long term results gained
Discussion	Providing proper water flow and drainage during times of excessive rains is imperative. Improper water flow results in damage to roads, bridges and property; which may lead to injuries and deaths. These replacements will be for 5 separate projects that have been identified as insufficient.
Status	Mostly completed and will be included in 2021 Update

City of Murphy Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information
Status	Deferred – will be included in the 2021 Plan

City of Murphy Action Item	Drainage channel improvements and additions.
Hazard(s) Addressed	Flooding
Goal/Objective	2-A, 2-E
Priority	Moderate
Estimated Cost	\$3.11 Million
Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local, in-kind, Bonds
Lead Department	Engineering
Implementation Schedule	12 – 18 Months
Effect on Old Buildings	Reduce flooding for existing structures in area
Effect on New Buildings	Reduce flooding for planned construction in area
Cost Effectiveness	Very effective for the long term results gained

Discussion	Providing proper water flow and drainage during times of excessive rains is imperative. Improper water flow results in damage to roads, bridges and property; which may lead to injuries and deaths. These replacements will be for 4 separate projects that have been identified as insufficient.
Status	Mostly completed and will be included in 2021 Update

City of Murphy Action Item	Purchase and install lightning detection equipment for city parks
Hazard(s) Addressed	Lightning
Goal/Objective	1-A
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	HGMP, PDM, General Fund
Potential Matching Sources	Local, in-kind
Lead Department	Public works
Implementation Schedule	12 months
Effect on Old Buildings	N/A
Effect on New Buildings	N/A
Cost Effectiveness	Very cost effective. Quantifying the value of a human life is extremely difficult at best.
Discussion	The city has two major parks with outdoor sporting event capabilities, pavilions and an amphitheater where multiple events are held throughout the year. Providing a secondary source of severe weather information such as lightning indication could prevent injury or death to one or more of our citizens or guests
Status	No longer a viable project. Will not be included in the 2021 Plan

City of Murphy Action Item	Develop and implement a water conservation plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	12 - 18 months

Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and protection of foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Promote water conservation and work with local water supplies to increase mitigation measures for drought. Develop and implement mandatory water restrictions/codes for water conservation measures that address soil stabilization.
Status	Deferred – will be included in the 2021 Plan

4.15 Town of New Hope Action Items: 2016 Plan

Town of New Hope Action Item	Adopt and promote public education program to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning, Dam Failure
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local funds General fund
Lead Department	Town Council
Implementation Schedule	Yearly effort
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	The utilization of social media will be key in this program. Program will include educational information about hazard awareness and mitigation.
Status	Receive supplies and materials from the NCTCOG KnoWhat2do Program and provide to residents. Continue – will be included in 2021 Plan

Town of New Hope Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	Tornado/High Winds
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Residents receiving grant
Lead Department	N/A
Implementation Schedule	1-3 Years
Effect on Old Buildings	Enhance Safety of existing residential structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelter potentially decrease personal injuries and death during severe weather, tornados, or high wind events

Collin County Hazard Mitigation Action Plan

Discussion	
Status	Will be included in 2021, however, some residents were able to obtain funds through the NCTCOG Saferoom Rebate Program

Town of New Hope Action Item	Develop and Implement an extreme temperature program that identifies both locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-A, 2D
Priority	Medium
Estimated Cost	\$5,000-\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local funds, General fund
Lead Department	Town Council
Implementation Schedule	12 months
Effect on Old Buildings	Could require retrofit to accommodate required space and resources, including but not limited to emergency generators.
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	Low
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Partial payment by receiving party
Potential Matching Sources	Local funds, General Fund, citizen cost-share
Lead Department	Town Council
Implementation Schedule	2-5 years

Collin County Hazard Mitigation Action Plan

Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios could be especially useful to provide information about severe weather as well as provide other emergency and hazard information to residents without use of their cell phones or access to Internet.
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Tornado, Wildfire, High Winds, Flooding, Hail, Lightning, Dam Failure
Goal/Objective	1-A
Priority	Medium
Estimated Cost	\$25,000 per siren
Potential Funding Sources	HMGP
Potential Matching Sources	Local funds, General Fund, Developer cost
Lead Department	Town Council
Implementation Schedule	9-12 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in keeping citizens notified of hazards.
Discussion	Obtaining grants will be key to implementation of outdoor warning siren coverage due to high costs and New Hope's own fiscal capability assessment scores.
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the County.
Hazard(s) Addressed	Dam Failure, Flooding
Goal/Objective	2-A, 3-A
Priority	Low
Estimated Cost	\$50,000

Collin County Hazard Mitigation Action Plan

Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, General Fund
Lead Department	Town Council
Implementation Schedule	12 - 18 months
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Identify all structures and infrastructures that would be impacted by a potential dam failure. There are currently no dams located in or immediately surrounding New Hope.
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	1-A, 3-C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local, General Fund
Lead Department	Town Council
Implementation Schedule	18 – 36 months
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show town officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	With assistance from Collin County Fire Marshall, identify mitigation strategies for all structures and infrastructures that would be impacted by a potential wildfire.
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Develop a drought contingency plan
Hazard(s) Addressed	Drought

Collin County Hazard Mitigation Action Plan

Goal/Objective	3-C, 4-B
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local, General Fund
Lead Department	Town Council
Implementation Schedule	12 - 18 months
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and preservation of foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on North Collin Special Utility District recommendations. Use of social media will be key in implementing this plan.
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	4-B
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	6 – 18 months
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils.
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2A,
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local, General Funds
Lead Department	Town Council
Implementation Schedule	12-18 months
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction. Expansive soils are not prevalent in New Hope.
Status	Deferred – will be included in 2021 Plan

4.16 City of Parker Action Items: 2016 Plan

City of Parker Action Item	Develop and implement a comprehensive public education program to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning, Dam Failure
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	This public education program would be based on the hazards that the City of Parker identified as being vulnerable to. The program would use a combination of distributed literature, social media, and civic presentations to educate residents on natural hazards and promote hazard mitigation.
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

City of Parker Action Item	Establish centers for vulnerable residents to mitigate the effects of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D
Priority	Medium
Estimated Cost	\$5,000-\$15,000
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources

Collin County Hazard Mitigation Action Plan

Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling and heating shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
Status	Deferred – will be included in 2021 Plan

City of Parker Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	Enhance safety of existing residential structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	This program gives rebates to residents who purchase and install safe rooms in their homes or on their properties to protect against severe weather.
Status	Deferred – Residents did received funding through the NCTCOG Saferoom Rebate Program. The NCTCOG Program has been suspended

City of Parker Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Tornado, Wildfire, High Winds, Flooding, Hail, Lightning, Dam Failure
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$25,000 per siren, number of sirens TBD
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC

Implementation Schedule	9-12 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in keeping citizens that are outdoors notified of hazards.
Discussion	This project will expand Parker's siren coverage to new areas of development not currently protected by sirens.
Status	Deferred – will be included in 2021 Plan

City of Parker Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flooding
Goal/Objective	2-A, 3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

City of Parker Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	2-A
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.

Collin County Hazard Mitigation Action Plan

Implementation Schedule	2-3 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify and mitigate all structures and infrastructures that would be impacted by a potential wildfire.
Status	Deferred – will be included in 2021 Plan

City of Parker Action Item	Develop a drought contingency plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	12 - 18 months
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing, soil conditioning around foundations
Effect on New Buildings	May require new codes for low-flow plumbing and preservation of foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on the stages of drought. Plan would include strategies for soil movement abatement depending on drought stage.
Status	Deferred – will be included in 2021 Plan

City of Parker Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP

Collin County Hazard Mitigation Action Plan

Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Parker Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	

City of Parker Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A

Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information
Status	Deferred – will be included in 2021 Plan

4.17 City of Princeton Action Items: 2016 Plan

City of Princeton Action Item	Adopt and promote a public education program to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning, Dam Failure
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	Program will include information on hazard mitigation and what actions can be taken.
Status	Utilize as able regional, state, and federal public education information. Will be included in 2021 Plan

City of Princeton Action Item	Develop and implement an extreme temperature program that establishes centers for vulnerable residents
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D, 3-C
Priority	Medium
Estimated Cost	\$5,000-\$20,000
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Fire Department/EMC
Implementation Schedule	12 months
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.

Collin County Hazard Mitigation Action Plan

Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
Status	Deferred – Will be included in 2021 Plan

City of Princeton Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per safe room
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	2-5 years
Effect on Old Buildings	Enhance safety of existing residential structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	Implement Individual Tornado Safe Room Rebate Program.
Status	Will be included in 2021, however, some residents were able to obtain funds through the NCTCOG Saferoom Rebate Program

City of Princeton Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Tornado, Wildfire, High Winds, Flooding, Hail, Lightning, Dam Failure
Goal/Objective	1-B
Priority	High
Estimated Cost	\$25,000 each
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	2-5 years
Effect on Old Buildings	None
Effect on New Buildings	None

Collin County Hazard Mitigation Action Plan

Cost Effectiveness	Cost is low compared to lives saved and reduced injuries
Discussion	Early warning is a key element in keeping citizens that are outdoors notified of hazards.
Status	Deferred – will be included in 2021 Plan

City of Princeton Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	2A, 3C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	3-4 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify all structures and infrastructures that would be impacted by a potential wildfire.
Status	Deferred – will be included in 2021 Plan

City of Princeton Action Item	Develop a drought contingency plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	2-3 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing

Collin County Hazard Mitigation Action Plan

Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on the stages of drought. Plan would include strategies for soil movement abatement depending on drought stage.
Status	Deferred – Will be included in 2021 Plan

City of Princeton Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flooding
Goal/Objective	2A, 3A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

City of Princeton Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds

Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Princeton Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

City of Princeton Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High

Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information
Status	Deferred – Will be included in 2021 Plan

4.18 Town of Prosper Action Items: 2016 Plan

Town of Prosper Action Item	Adopt and promote a public education program to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Dam Failure, Flooding, High Wind, Lightning, Wildfire, Tornado, Hail, Extreme Heat, Drought, Winter Storms, Earthquakes, Expansive Soils
Goal/Objective	4A, 4B, 4C
Priority	Medium
Estimated Cost	\$15,000
Potential Funding Sources	General Fund, EMPG, PDM
Potential Matching Sources	Local funds, citizen cost-share, donations
Lead Department	Fire Department
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Extreme cost effectiveness
Discussion	Share perceptions of disaster myths, increases information gathering. Program will include information about mitigation actions for each hazard.
Status	Receive supplies and materials from the NCTCOG KnoWhat2do Program and provide to residents. Continue – will be included in 2021 Plan

Town of Prosper Action Item	Develop, implement, and enforce ordinances to restrict the use of public water resources for non-essential usage, such as washing cars, landscape, and filling swimming pools
Hazard(s) Addressed	Drought
Goal/Objective	2A, 2C, 3C
Priority	Moderate
Estimated Cost	\$45,000
Potential Funding Sources	General Fund, EMPG, other grants
Potential Matching Sources	Local donations, in-kind matching
Lead Department	Public Works, OEM
Implementation Schedule	2-5 years
Effect on Old Buildings	May require retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and lawn sprinklers

Collin County Hazard Mitigation Action Plan

Cost Effectiveness	High. With millions of dollars potentially lost due to drought, this mitigation technique would have a long term benefit on local farmers and citizens
Discussion	Additional project to include working with builders to encourage drought –tolerant landscape to reduce water usage with incentives
Status	Deferred – will be included in 2021 Plan

Town of Prosper Action Item	Implement individual/public tornado safe rooms and location awareness
Hazard(s) Addressed	Tornado, High Wind
Goal/Objective	1C, 2D, 4A, 4B,
Priority	High
Estimated Cost	Up to \$3,000 per residential safe room/\$1,000,000 public retrofit
Potential Funding Sources	FEMA, Local grants, PDM
Potential Matching Sources	Local Funding, Donations, Resident Match
Lead Department	Engineering
Implementation Schedule	2-5 years
Effect on Old Buildings	Enhance safety of existing residential/public structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	High, Residential safe room shelters decrease personal injuries and death during severe weather, tornadoes, or high winds
Discussion	Possible FEMA rebate program
Status	Will be included in 2021, however, some residents were able to obtain funds through the NCTCOG Saferoom Rebate Program

Town of Prosper Action Item	Protect citizens from extreme weather by building covered patios in public parks
Hazard(s) Addressed	Extreme Heat, Hail, High Winds, Lightning
Goal/Objective	2D
Priority	High
Estimated Cost	\$50,000
Potential Funding Sources	PDM, General Budget, State and Federal Grants
Potential Matching Sources	Citizen cost-share, Donations
Lead Department	Public Works/Parks
Implementation Schedule	2-3 years
Effect on Old Buildings	Potentially add covered patios to existing small structures

Effect on New Buildings	N/A
Cost Effectiveness	Cost is low compared to loss of life from heat illness and debris injuries
Discussion	Covered patios are an effective means of providing temporary relief from severe weather
Status	Deferred – will be included in 2021 Plan

Town of Prosper Action Item	Purchase and Distribute NOAA Radios to Vulnerable Populations
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Goal/Objective	3C
Priority	High
Estimated Cost	\$60,000
Potential Funding Sources	Grant Funds, HMGP, PDM
Potential Matching Sources	Local funds, General Budget, Donations, citizens cost-share
Lead Department	Fire Department, Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	moderate
Discussion	Early warning, hazard and mitigation information, and reliable communications have been established to reduce loss of life, injuries, and property damage
Status	Deferred – will be included in 2021 Plan

Town of Prosper Action Item	Develop, Implement, and Enforce Private Residential and Commercial Construction Requirements
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Goal/Objective	1C, 2C
Priority	Moderate
Estimated Cost	\$25,000
Potential Funding Sources	PDM, EMGP
Potential Matching Sources	General budget, In-Kind

Lead Department	Development Services, OEM
Implementation Schedule	6-9 Months
Effect on Old Buildings	New standards could be used to drive retrofitting
Effect on New Buildings	Buildings will be safer and more resilient in face of hazards
Cost Effectiveness	High
Discussion	Develop and adopt building codes to harden private construction based on the hazards identified in this annex such as hail-resistant roofing and windows; wind and impact resistant doors, windows, and roofing ; wildfire breaks and fire resistant building materials; stricter foundation standards for earthquake and expansive soils; increased elevation (BFE) standards for flooding; higher grade insulation to mitigate extreme heat and winter weather; and resource-efficient (low-flow) plumbing for drought. Also, additional codes for dry-proofing and lightning protection (rods, grounding) for public buildings to mitigate flood, dam failure and lightning
Status	Town of Prosper has adopted current building code and will continue to adopt the most current building codes – will continue to be in future plans and updates

Town of Prosper Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	2A, 3A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

Town of Prosper Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred will be included in 2021 Plan (50,000)

Town of Prosper Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	12-18 months
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

Status	Deferred – will be included in 2021 Plan
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4.19 Town of St. Paul Action Items: 2016 Plan

Town of St. Paul Action Item	Adopt and promote public education program.
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Goal/Objective	4A, 4B, 4-C
Priority	Medium
Estimated Cost	\$15,000
Potential Funding Sources	General fund, HMGP, PDM, other state/federal grants
Potential Matching Sources	Local funds, citizen cost-share, donations
Lead Department	Town Administration
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	Also the utilization of social media will be key in this program. Program will include information about mitigation actions and education.
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

Town of St. Paul Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	Tornadoes
Goal/Objective	1-C
Priority	High
Estimated Cost	\$3,000 per safe room
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	Town Administration
Implementation Schedule	2-3 years
Effect on Old Buildings	Some buildings modified for safe room retrofit
Effect on New Buildings	Buildings constructed with safe rooms
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	Implement Individual Tornado Safe Room Rebate Program

Status	Deferred – Residents did received funding through the NCTCOG Saferoom Rebate Program. The NCTCOG Program has been suspended
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Town of St. Paul Action Item	Purchase of a CASA (WX) Weather Radar system
Hazard(s) Addressed	Hail, Tornadoes, Wildfire, Flooding, Lightning, Dam Failure
Goal/Objective	1-A, 3-C
Priority	High
Estimated Cost	\$550,000
Potential Funding Sources	Local Funding, Federal Funding, HMPG
Potential Matching Sources	Local Grants
Lead Department	Town Administration
Implementation Schedule	12-36 Months
Effect on Old Buildings	n/a
Effect on New Buildings	Increase response decisions by 100%
Cost Effectiveness	Cost effectiveness is low compared to the benefits.
Discussion	The Collaborative Adaptive Sensing of the Atmosphere (CASA WX) project is a multi-sector partnership dedicated to engineering revolutionary weather-sensing networks. The main purpose of the CASA WX project is to save lives and minimize injuries due to severe weather. This is accomplished through the enhancement of data by providing lower atmospheric coverage at faster rates. The CASA WX radars provide jurisdictions more accurate weather data and geographically specific weather data culled from the most active levels of the atmosphere. This data could save lives by providing the public more time to react and prepare appropriately as severe weather affects their location. The more accurate data will also provide a better means to analyze severe weather post event which can also help in the assessment of damage after a severe weather event.
Status	No longer viable project for St. Paul

Town of St. Paul Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Populations, Businesses, and Critical Infrastructure.
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Expansive Soils, Earthquake, Dam Failure, Flooding
Goal/Objective	3-C
Priority	High
Estimated Cost	\$60,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share

Collin County Hazard Mitigation Action Plan

Lead Department	Town Administration
Implementation Schedule	12-18 months
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning saves lives, which outweighs the cost of the radios.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens about severe weather, civil emergencies and hazard information. It is impossible to quantify the value of a human life or value of an injury.
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	1-A, 3-C
Priority	Medium
Estimated Cost	\$65,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local funds, donations, in-kind, grants
Lead Department	Town Administration
Implementation Schedule	18-36 Months
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show county officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around lake development properties.
Discussion	This project will become increasingly needed as development around Richland Chambers (Tarrant County Water Supply) increases.
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	2-A, 3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors

Collin County Hazard Mitigation Action Plan

Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Town Administration
Implementation Schedule	12-18 Months
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Develop and implement an extreme temperature program that identifies locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$5,000-\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Town Administration
Implementation Schedule	12 months
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Develop, implement, and enforce building codes that would prevent building deterioration from structure-impacting hazards.
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Goal/Objective	2-C, 3-C
Priority	Low

Estimated Cost	\$5,000- \$7,500
Potential Funding Sources	General Fund
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Town Administration
Implementation Schedule	12 Months
Effect on Old Buildings	New building codes would allow for existing buildings to be retrofitted to mitigate against structure-impacting hazards.
Effect on New Buildings	New building codes would allow for new buildings to be constructed to mitigate against structure-impacting
Cost Effectiveness	Low - Benefits outweigh costs
Discussion	Building codes would help to promote better building standards such as including hail-resistant roofing and windows; wind and impact resistant doors, windows, and roofing ; wildfire breaks and fire resistant building materials; stricter foundation standards for earthquake and expansive soils; increased elevation (BFE) standards for flooding; higher grade insulation to mitigate extreme heat and winter weather; and resource-efficient (low-flow) plumbing for drought. Also, additional codes for dry-proofing and lightning protection (rods, grounding) for public buildings to mitigate flood, dam failure and lightning.
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Develop and implement mandatory water conservation measures
Hazard(s) Addressed	Drought
Goal/Objective	4-C
Priority	Medium
Estimated Cost	\$1,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Town Administration
Implementation Schedule	1-2 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Promote water conservation throughout the county and work with local water supplies to implement mandatory water restrictions
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Develop and implement storm water management on creek waterways
Hazard(s) Addressed	Flooding
Goal/Objective	2-D, 2-E, 3-C
Priority	Medium
Estimated Cost	\$75,000
Potential Funding Sources	HMGP, General Funds
Potential Matching Sources	Local funds, In-kind match
Lead Department	Town Administration
Implementation Schedule	6 months
Effect on Old Buildings	My prevent flooding of existing structures
Effect on New Buildings	May prevent flooding of planned development areas
Cost Effectiveness	Low compared to life safety benefits
Discussion	Project would prevent erosion, stopping expansion of the floodplain
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Develop and implement debris management program targeting stream banks at bridges
Hazard(s) Addressed	Flooding
Goal/Objective	2-E, 3-C
Priority	Medium
Estimated Cost	\$534,000
Potential Funding Sources	HMGP, General Funds
Potential Matching Sources	Local funds, In-kind match
Lead Department	Town Administration
Implementation Schedule	6 months
Effect on Old Buildings	Could prevent flooding and disruption to transportation
Effect on New Buildings	None
Cost Effectiveness	Low compared to life safety benefits
Discussion	Town of St. Paul needs to ensure clear waterways in order to prevent buildup of debris and materials that could cause flooding and contribute to damage to bridges.
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	6 months – 18 months
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	. Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	12-18 months
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

Status	Deferred – will be included in 2021 Plan
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Town of St. Paul Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS, Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

4.20 City of Wylie Action Items: 2016 Plan

City of Wylie Action Item	Add outdoor warning sirens to meet the needs of the growing population in newly developed areas and/or subdivisions.
Hazard(s) Addressed	Tornado, Hail, High Winds, Dam Failure, Lightning, Flooding, Wildfire
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$30,000 per siren
Potential Funding Sources	General Fund
Potential Matching Sources	None
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Outdoor warning systems will help alert the public to reduce personal and property damage before a disaster strikes.
Status	Deferred – will be included in 2021 Plan

City of Wylie Action Item	Adopt and implement water conservation regulations
Hazard(s) Addressed	Drought
Goal/Objective	2-C, 3-C
Priority	High
Estimated Cost	\$7,500 to \$15,000
Potential Funding Sources	General Fund
Potential Matching Sources	None
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Minimal compared to benefit to community
Discussion	This will mitigate against drought conditions.
Status	Deferred – will be included in 2021 Plan

City of Wylie Action Item	Develop and implement a comprehensive public education program to educate on the actions to help mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Dam Failure, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	High
Estimated Cost	\$7,500-\$15,000
Potential Funding Sources	General Fund
Potential Matching Sources	None
Lead Department	Emergency Management
Implementation Schedule	2-3 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

City of Wylie Action Item	Develop and implement an extreme temperature program that provides resources and identifies locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D
Priority	Medium
Estimated Cost	\$10,000-\$15,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local funds, NPO donations, In-kind
Lead Department	Emergency Management, Planning
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials

Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold.
Status	Deferred – will be included in 2021 Plan

City of Wylie Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS, Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

City of Wylie Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works, Planning Zoning
Implementation Schedule	1-2 years

Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Wylie Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

City of Wylie Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party

Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information
Status	Deferred – will be included in 2021 Plan

National Flood Insurance Program (NFIP) Compliance



The National Flood Insurance Program (NFIP)

The National Flood Insurance Program is a federally run program which enables property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages.

Community Participation

A community applies for participation in the National Flood Insurance Program (NFIP) either as a result of interest in eligibility for flood insurance or as a result of receiving notification from FEMA that it contains one or more Special Flood Hazard Areas (SFHAs). In order for a community to apply for and receive participation in the NFIP, that community must adopt resolutions or ordinances to minimally regulate new construction in identified SFHAs. FEMA works closely with state and local officials to identify flood hazard areas and flood risks. The floodplain management requirements within the SFHA are designed to prevent new development from increasing the flood threat and to protect new and existing buildings from anticipated flood events.

When a community chooses to join the NFIP, it must require permits for all development in the SFHA and ensure that construction materials and methods used will minimize future flood damage. Permit files must contain documentation to substantiate how buildings were actually constructed. In return, the Federal Government makes flood insurance available for almost every building and its contents within the community.

Communities must ensure that their adopted floodplain management ordinance and enforcement procedures meet program requirements. Local regulations must be updated when additional data are provided by FEMA or when Federal or State standards are revised.

A more in-depth description of each jurisdiction's NFIP program is addressed in the jurisdictional annexes.

Chapter Five: Plan Maintenance

5.1 Monitoring, Evaluating and Updating the Plan

In compliance with requirement § 201.6(c)(4)(i), Collin County has developed a plan maintenance process which is described in the following paragraphs. Collin County, along with participating jurisdictions, is responsible for monitoring the implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the Collin County Commissioners Court and the city council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) will be implemented by the County and participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator will be responsible for ensuring the mitigation action items and implementation are monitored, evaluated, and reviewed biannually by emailing all the participating jurisdictions for updates on their individual action items. The progress of the action items will be tracked electronically as “in progress”, “deferred” or “completed”. Project implementation will be included in the Mitigation Strategies for the 5 year update of the plan.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the Hazard Mitigation Planning Team (HMPT), whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, Collin County will provide information on the implementation status of each action included in the plan. As part of the annual monitoring, review and evaluation process, Collin County will provide reports regarding implementation of actions and project completion dates for the plan. Also, as part of the evaluation, the HMPT will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed.

At least once every five years the HazMAP will undergo a major update. During this process, all sections of the plan will be updated with current information and analyses, and new and/or modified mitigation plans will be developed. The revised collaborative plan will be submitted for state and federal review and approval. It will then be presented for approval to the Collin County Commissioner’s Court and to the city councils of the respective incorporated cities included on the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans, with submission to the local governing body for approval. The plan will be updated every five years in accordance with federal requirements.

** Each individual city's maintenance schedule is included in their annex.

5.2 Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when developing the mitigation actions for this plan. The Hazard Mitigation team will use an established process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Past and present Collin County Hazard Mitigation Action Plans discuss incorporating mitigation activities through various vehicles. Local planning mechanisms identified include: building codes, planning and zoning ordinances, fire codes, NFIP, and capital improvement plans. Information was also incorporated into the Collin County Emergency Operations Plan and the State of Texas Hazard Mitigation Action Plan. This integration and incorporation strategy will continue with all members of the Collin County HazMAP, provided there is sufficient political, fiscal, and administrative capital to do so.

The process described here is the same as was used since the last planning update.

****Each jurisdiction's individual integration plan can be found in their respective annex.**

Once the plan is adopted, the HMPT will coordinate implementation with the engineering, planning, and emergency management departments for the county, participating jurisdictions, river authorities, and drainage districts.

5.3 Continued Public Involvement *(In compliance with 201.6(c)(4)(iii))*

As stated in requirement § 201.6(c)(4)(iii) the plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning committee will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Chapter Six: Individual Jurisdictional Annexes

Chapter Six contains the individual jurisdictional annexes. The annexes were developed by each individual jurisdiction in order to provide a greater level of detail specific to the jurisdiction. Each annex contains seven sections.

Section One provides a brief introduction to jurisdiction and contents of the annex

Section Two covers the planning process and those involved. Elements included in this section are: plan development and adoption process, planning organization, existing data and plans incorporation, the planning committee, hazard mitigation team members, external stakeholders, the dates of planning meetings, and public involvement. The planning process documentation is contained in Appendix A, located at the back of the plan. (Requirements: §201.6(c)(1)), §201.6(b)(2)), §201.6(b)(1)), §201.6(b)(3)), §201.6(c)(4)(iii)), and §201.6(c)(4)(i)).

Section Three is the hazard identification and risk assessment. This section contains the Priority Risk Index, which allows each individual jurisdiction to rank the hazards in their area; vulnerability narratives, which identifies points of vulnerability in each jurisdiction for each hazard; and the asset identification and vulnerability assessment. (Requirements §201.6(c)(2)(i)) and §201.6(c)(2)(ii))

Section Four provides a summary of jurisdictional capabilities. Elements in this section include: legal and regulatory capabilities, administrative and technical capabilities, fiscal capabilities, and implementation capabilities. (Requirement §201.6(c)(3)).

Sections Five and Six provide the jurisdictional mitigation strategies and action items. The elements included are: mitigation goals and the action items associated with those goals. Additionally, Section Six includes National Flood Insurance Program (NFIP) compliance information. (Requirements §201.6(c)(3)(ii)), §201.6(c)(3)(i)), §201.6(c)(3)(iv)), and §201.6(c)(3)(iii)).

Section Seven is the maintenance portion of the annex. Included are: plan monitoring, evaluating, and updating; and plan incorporation mechanisms. (Requirements §201.6(c)(4)(i)) and §201.6(c)(4)(ii)).

Jurisdictional Annexes:

- A. Unincorporated Collin County
- B. Allen
- C. Anna
- D. Blue Ridge
- E. Celina
- F. Fairview
- G. Farmersville
- H. Frisco
- I. Josephine
- J. Lavon
- K. Lowry Crossing
- L. Lucas
- M. Melissa
- N. Murphy
- O. New Hope
- P. Parker
- Q. Princeton
- R. Prosper
- S. St. Paul
- T. Wylie

Annex A: Unincorporated Collin County



1. Introduction

This annex was prepared in 2020 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan. Collin County participated in the Collin County HazMAP Planning Team (HMPT) by representing the unincorporated areas of the County. In addition to the countywide hazards and strategies discussed in the previous section, this annex serves as a complete hazard mitigation planning tool for the unincorporated areas of Collin County. It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While Collin County has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Collin County officials recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and the local newspaper.

In accordance with Part 201.6(c) (5) of the Disaster Mitigation Act of 2000 (DMA 2000), Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data were gathered through numerous sources. Table 2.1 outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Centers for Environmental Information (NCEI)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Wildland/Urban Interface

Source	Data
National Inventory of Dams	Dam Information

Planning Team

This Hazard Mitigation Action Plan was developed by the Collin County Hazard Mitigation Planning Team and team members dedicated to the unincorporated areas of the county. The efforts of the planning team members for unincorporated Collin County were led by the Collin County Assistant Emergency Manager.

The Planning Team was assembled in September, 2020 with representatives from county departments, local hazard mitigation committees, and the general public. The Collin County Fire Marshal/Emergency Management Office acted as the lead plan facilitator, providing hazard mitigation planning services. Table 2.2 provides a list of the primary representative for each department on the planning team for unincorporated Collin County.

Table 2.2 Hazard Mitigation Team – Primary Representatives

Representing	Position	Role
Fire Marshal/Emergency Management	Emergency Manager	Plan Supervision
Fire Marshal/Emergency Management	Assistant Emergency Manager	Plan Supervision/Plan Development
GIS	GIS Analyst	Data Analysis
Fire Marshal/Emergency Management	Emergency Management Intern	Plan Development

Collin County served as the coordinator and lead agency for all jurisdictions, including the unincorporated areas of Collin County, by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Manager to provide technical assistance and necessary data to the planning team and local committees.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the planning team and local committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and local committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the cities and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified

risks.

- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

Stakeholders involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
American Red Cross	Field Representative	Review of plan
City of Plano	Emergency Management Specialist	Review of plan

Subsequent to the State of Texas and FEMA approval of the plan, Collin County organizations above are committed to accomplishing the following activities:

- Appoint members to a coordinating team to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Collin County:

- Collin County Kickoff Meeting – August 12, 2020
- Collin County HazMAP Planning Meeting – Week of 11/05/2020
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 1/12/2022 at 9AM

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.

- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The HMPT members for unincorporated Collin County identified several natural hazards and man-made hazards that could affect the unincorporated areas of the county. The HMPT decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for Collin County and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
		Level	Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2

		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for Unincorporated Collin County

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	1	1	1	0.7
Drought	2	0	2	3	1.4
Earthquake	0	2	3	3	1.75
Expansive Soils	3	0	0	3	1.2
Extreme Heat	3	2	0	3	1.9
Flooding	2	0	1	1	0.95
Hail	2	1	3	3	2
High Winds	3	0	1	1	1.25
Lightning	3	0	0	0	0.9
Tornado	1	2	3	1	1.85
Wildfire	3	0	3	0	1.65
Winter Storms	2	0	0	3	0.9

The conclusions drawn from the hazard profiling process for Collin County jurisdictions resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in

relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in Collin County.

Table 3.3 Hazard Rankings for Unincorporated Collin County

High Risk (PRI 2 - 3)	Hail
Moderate Risk (PRI 1.01 -1.9)	Drought Earthquake Extreme Heat High Winds Tornado Wildfire
Low Risk (PRI 0.50 – 1)	Dam Failure Expansive Soil Flooding Lightning Winter Storm
Negligible to No Risk (PRI 0 – 0.49)	None

Changes in Development and Priorities (Requirement §201.6(d) (3))

Collin County was a participating jurisdiction in the 2011 and 2016 Collin County Hazard Mitigation Action Plan. Since then, Collin County has completed one of their original action items in an effort to lower vulnerability on populations and property from natural hazards.

The development and implementation of this project directly led to lower vulnerability for residents and property located in unincorporated Collin County.

New priorities are noted and ranked in each new action item, Section 6. Except for actions completed or cancelled, other priorities remain the same as in the previous version of this plan.

Due to recent changes in annexation laws, Collin County can expect our population to continue to grow in the unincorporated areas. This is due to the fact, that cities no longer and force annex property into their jurisdiction. It was always assumed that the cities would continue to annex and the unincorporated areas would get smaller; however, it must be assumed that the population in the unincorporated area will remain flat, if not increase moving forward.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability unincorporated Collin County faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation.

Dam and Levee Failure Development of the downstream areas necessitates the original low hazard classifications to be changed to higher hazard classifications because the dams are no longer adequate for the increased downstream risks. NRCS data shows that there are 6 dams in Collin County that are no longer adequate for increased downstream risks. This percentage could actually be higher because detailed current evaluations of NRCS dams have not been conducted due to resource limitations. In addition, many of these inadequate dams have not been updated because many of the legally responsible entities of these dams do not have sufficient mechanisms funding for updates, or even adequate maintenance, in some cases. Soil and Water Conservation Districts do not have any statutory funding capability of their own, and counties, especially those with small populations and multiple dams, are not able to generate the resources needed to sustain a consistent and comprehensive effort upgrade these structures. While no record could be found of any previous dam failures in Collin County, three things are clear:

- Many of the dams in Collin County are nearing the end of their designed project lives.
- Many of these dams are in desperate need of detailed evaluations and consistent maintenance
- Increased development downstream of the dams has put more people, property, and infrastructure at risk.

Collin County is responsible for 38 high hazard dams identified by the NRCS in both the unincorporated County area and in several cities due to the use of easements and the Emergency Operations Plans for those dam sites. While a dam failure event would affect jurisdictions not participating in the Collin County Local Mitigation Strategy, the HMT has chosen to include all High Hazard dams the county is responsible for in emergency planning for plan incorporation purposes.

High Risk FRS in Unincorporated Collin County

Dam Name	Site Acres	Year Completed	Sed. Pool Elevation	Acres	Flood Pool Elevation	Acres	Easement Elevation	Acres	Top of Dam Elevation
Little Elm & Laterals WS NRCS Site 18A	5.3	1970	728.0	13.0	743.0	51.0	745.0	60.0	747.4
East Fork Above Lavon WS NRCS Site 1C	6.1	1964	688.3	26.5	701.5	80.5	703.5	93.5	705.7
East Fork Above Lavon WS NRCS Site 2A	4.3	1958	648.6	31.0	668.4	155.0	670.4	165.0	673.4
East Fork Above Lavon WS NRCS Site 2B	4.7	1959	630.5	16.0	642.0	36.0	644.0	41.2	647.0
East Fork Above Lavon WS NRCS Site 3A	3.2	1958	693.2	13.9	702.4	25.4	704.4	32.0	708.0
East Fork Above Lavon WS NRCS Site 3B	5.9	1958	645.0	22.0	661.4	40.7	663.4	42.7	673.7
East Fork Above Lavon WS NRCS Site 3C	6.1	1958	621.1	19.2	633.8	48.0	635.8	54.2	638.3
East Fork Above Lavon WS NRCS Site 3D	5.0	1958	597.3	17.3	608.1	36.9	610.1	40.8	613.0

Dam Name	Site Acres	Year Completed	Sed. Pool Elevation	Acres	Flood Pool Elevation	Acres	Easement Elevation	Acres	Top of Dam Elevation
East Fork Above Lavon WS NRCS Site 3E	3.3	1967	582.3	4.5	594.5	24.6	596.5	29.0	597.4
East Fork Above Lavon WS NRCS Site 4	13.1	1959	610.5	33.0	626.5	108.0	628.5	120.0	632.6
East Fork Above Lavon WS NRCS Site 5A	5.3	1958	575.2	23.5	590.0	48.0	592.0	55.0	594.9
East Fork Above Lavon WS NRCS Site 8A	10.7	1968	664.5	35.0	679.0	116.0	681.0	129.3	683.0
East Fork Above Lavon WS NRCS Site 8G	11.1	1955	717.5	39.8	732.0	125.3	734.0	144.3	737.4
East Fork Above Lavon WS NRCS Site 9	6.6	1951	636.5	17.1	650.0	46.3	652.0	50.9	655.0
East Fork Above Lavon WS NRCS Site 10	8.5	1952	648.0	14.9	662.0	43.8	664.0	49.0	667.0
East Fork Above Lavon WS NRCS Site 11	8.5	1952	644.0	36.3	656.0	72.2	658.0	80.0	661.0
East Fork Above Lavon WS NRCS Site 12	7.4	1952	638.0	18.8	650.0	49.6	652.0	56.6	655.0
East Fork Above Lavon WS NRCS Site 14	4.0	1951	630.0	13.6	642.0	35.8	644.0	40.9	647.0
East Fork Above Lavon WS NRCS Site 15	4.5	1951	614.0	22.7	626.0	49.3	628.0	54.5	631.0
East Fork Above Lavon WS NRCS Site 16	4.2	1951	613.0	28.6	624.0	55.8	626.0	59.6	629.0
East Fork Above Lavon WS NRCS Site 30	8.5	1965	655.7	18.0	664.3	40.0	666.3	45.2	667.0
East Fork Above Lavon WS NRCS Site 31	7.6	1965	646.5	12.5	659.3	32.3	661.3	35.5	663.2
East Fork Above Lavon WS NRCS Site 32	6.0	1966	637.8	17.0	651.0	42.0	653.0	45.9	655.1
East Fork Above Lavon WS NRCS Site 32A	3.6	1966	628.3	10.0	639.0	22.0	641.0	26.0	642.4
East Fork Above Lavon WS NRCS Site 33	6.5	1966	642.3	23.0	653.0	53.0	655.0	62.0	656.9
Sister Grove Creek WS NRCS Site 3	9.9	1963	630.5	19.0	638.5	40.8	640.5	48.5	643.0
Sister Grove Creek WS NRCS Site 4	3.7	1960	621.7	15.0	630.0	35.0	632.0	42.0	633.5
Sister Grove Creek WS NRCS Site 5	10.0	1952	649.0	11.0	666.0	55.0	668.0	61.4	671.0
Pilot Grove Creek WS NRCS Site 28	13.5	1964	572.5	46.0	585.0	144.0	587.0	168.0	590.0
Pilot Grove Creek WS NRCS Site 79	11.1	1965	561.7	20.8	573.4	66.5	575.4	74.0	577.3
Pilot Grove Creek WS NRCS Site 80	12.7	1965	564.8	16.9	578.4	53.4	580.4	58.0	582.5
Pilot Grove Creek WS NRCS Site 82	4.7	1967	584.4	80.0	589.0	111.0	591.0	130.0	592.5
Pilot Grove Creek WS NRCS Site 83A	6.3	1967	590.5	21.5	599.5	54.5	601.5	62.5	603.0
Rowlett Creek WS NRCS Site 4	16.1	1956	506.4	53.0	525.8	347.0	527.8	386.0	533.1
Rowlett Creek WS NRCS Site 5	7.1	1956	517.1	26.6	526.0	88.5	528.0	104.3	532.8
Rowlett Creek WS NRCS Site 7	13.4	1957	487.2	59.0	504.0	225.0	506.0	257.5	509.9
U. East Fork Laterals WS NRCS Site 2	8.3	1959	498.7	51.0	512.0	174.0	514.0	204.0	516.5

Drought has the potential to impact the entire planning area equally; all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of Unincorporated Collin County are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma, Lake Tawakoni and the Trinity Aquifer are water sources for Unincorporated Collin County and are vulnerable to drought. In turn, the unincorporated area of Collin County's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake While there are no known reports of seismic activity in the county, there is the possibility that seismic events could happen anywhere in the planning area. Buildings constructed under older building codes, dams, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity. Building codes in the Collin County do not typically meet any type of seismic standards. Even a small earthquake could result in significant damage and impacts.

Expansive Soils The entire planning area is vulnerable to expansive soils. All property has the potential to be vulnerable to expansive soils.

Extreme Heat Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air conditioning are most vulnerable.

Flooding Collin County has identified several low water crossings that are subject to periodic flash flooding. Affected areas differ with each storm as there are several different branches and tributaries of rivers and creeks subject to overflow, and also are dependent upon which area receives the rain. These areas are low water crossings mainly on unimproved county roads that consist of dirt, rock, and caliche (sedimentary rock which cements together other materials, including gravel, sand, clay, and silt). Since the county roads are not paved, when flash flooding occurs these areas need to be barricaded, and the location of the storm determines which areas require barricading. Typical road closures due to flooding occur on the following county roads: 429, 504, 427, 338, 581, 331, 579, 1216, 677, 668, 622, 618, 590, 696, 317, 850, 600, 597, 210, 466, 470, 825, 574, 578, 590, 638, 677, 483, and 484.

Hail can occur anywhere within the planning area; exposed populations, structures, and vehicles are most vulnerable. There are no building codes in place to mitigate the impact of hail on private property; however, there are new materials such as hail resistant shingles are available in the marketplace today.

High Winds The entire planning area and populations therein are vulnerable to high winds. Manufactured homes and exposed populations are most vulnerable to high winds. High winds can just as destructive, if not more destructive, than some tornados. They can also be harder to forecast and detect.

Lightning events can happen anywhere in the unincorporated areas of the county, but most strikes have occurred in areas with little vulnerability. Structures without dedicated lightning protection and exposed populations are most vulnerable.

Tornado Tornados can occur anywhere in the geographic planning area; residents in manufactured homes are most vulnerable.

Wildfire in Collin County is a moderate risk due to the well managed and readily available resources for response. While the entire unincorporated county may experience wildfire, they primarily occur roughly north of highway 380, in the unimproved areas of the county. Collin County contracts with city fire departments to respond to fires within the unincorporated county area, and during times of drought, burn bans, and high fire threat, automatic mutual aid between the cities is enacted. Structures, crops, and populations in the WUI are most vulnerable.

Winter Storms Winter storms have the potential to affect the entire planning area. Winter storms have the potential to make roads impassable for days. Residents may be confined to their homes due to storms and may be without basic services, such as water, data/communications and electricity, for an extended period of time. The homeless, elderly, and populations without heat being most vulnerable.

Identification of Assets and Vulnerability Assessment

An inventory of unincorporated Collin County geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population:** Includes the number of people residing in unincorporated Collin County as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property:** Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities:** Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, and the Collin County Emergency Management Coordinator.
- **Critical facilities:** Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure:** Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, and the Collin County Emergency Management Coordinator.

The following tables provide a breakdown of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the Texas Association of Counties Population Estimates, the total population of Unincorporated Collin County in 2020 is 53,082 people, with 13,837 households as shown in *Table 3.4*.

Table 3.4 Unincorporated Collin County Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total	Population Density (Sq. Mile)	Household	% of County Total	Household Density (Sq. Mile)
<i>Unincorporated Collin County</i>	53,082	4.86%	116.28	18,690	4.86%	40.94

Source: Texas Association of Counties Population Estimate & Collin County Appraisal District

Table 3.5 summarizes population counts and population change (absolute and percent predictions for unincorporated Collin County).

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
Unincorporated Collin County	35,644	51,144	53,082	1,938	3.79%

Source: Texas Association of Counties Population Estimate

Property

There are an estimated 39,145 parcels in unincorporated Collin County, with an estimated \$9,238,947,093 in total assessed value of improvements. Table 3.6 lists the total number and percentage of parcels.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
Unincorporated Collin County	39,145	7.54%	\$9,238,947,093

Source: Collin County Appraisal District

¹Includes public buildings (residential, commercial, industrial, agricultural, religion, government, education)

Emergency Facilities

There are 2 identified emergency facilities in Unincorporated Collin County, including 2 fire stations, 0 police stations, 0 and hospitals. Table 3.7 presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
Unincorporated Collin County	2	0	0

Source: County Data and Regional Hazard Assessment Tool

Critical Facilities

There are 80 critical facilities, which are considered non-emergency in unincorporated Collin County. The critical facilities include 3 schools and 77 historical property sites (Table 3.8). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
<i>Unincorporated Collin County</i>	3	77

Source: Local jurisdictions

Critical Infrastructure

There are 147 identified critical infrastructure facilities in Collin County, including 1 airport, 6 natural gas facilities, 4 water treatment facilities, 16 wastewater treatment facilities, 88 dams, and 32 railway/highway bridges (*Table 3.9*).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
<i>Unincorporated Collin County</i>	1	6	5	17	88	32

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, Collin County's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for Collin County, four were analyzed using a Geographic Information System-based analysis, 5 using a statistical risk assessment methodology, and the remaining 3 hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.10* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X

Extreme Heat		X	
Flooding	X		
Hail	X		
High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) no recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to National Centers for Environmental Information (NCEI), property loss due to damage from drought is expected but unknown due to lack of accurate reporting. Available historical data indicates that the expected losses from drought correspond to unknown crop due to lack of accurate reporting, mostly experienced in water shortages and crop losses on agricultural lands.
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), fatalities and injuries due to extreme heat are unknown due to lack of

Extreme Heat	
	accurate reporting. Unincorporated Collin County and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas and the improved property in unincorporated Collin County is not vulnerable to this hazard.
Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and emergency facilities in unincorporated Collin County are not vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the critical facilities in unincorporated Collin County are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in unincorporated Collin County

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero fatalities and injuries per year through the values may be inaccurate due to lack of reporting. Approximately 989 residential parcels in unincorporated Collin County are located within the 100-year floodplain.
Improved Property	Property loss due to flooding in unincorporated Collin County is expected but unknown due to lack of accurate reporting. Approximately \$205,695,851 of the total assessed value is at risk from the 100-year storm event.
Emergency Facilities	Emergency facilities have the potential to be as risk in the 100-year storm event.
Critical Facilities	Critical facilities have the potential to be as risk in the 100-year storm event.
Critical Infrastructure	Critical Infrastructure have the potential to be as risk in the 100-year storm event.

Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events through the values may be inaccurate due to lack of accurate reporting. There are no personal losses expected from hailstorm events.

Hail	
Improved Property	According to National Centers for Environmental Information (NCEI), property loss in unincorporated Collin County due to hailstorm damage is expected but unknown due to lack of accurate reporting and all improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data for unincorporated Collin County indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in unincorporated Collin County are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in unincorporated Collin County are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in unincorporated Collin County are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), fatalities and injuries from high wind events are unknown due to lack of accurate reporting. All the population of unincorporated Collin County are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), property losses from high wind events in unincorporated Collin County is expected but unknown due to lack of accurate reporting. Unknown crop losses resulted from this hazard in unincorporated Collin County due to lack of accurate reporting.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in unincorporated Collin County are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in unincorporated Collin County are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in unincorporated Collin County are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), fatalities and injuries from lightning events in unincorporated Collin County are expected but unknown due to lack of accurate reporting. All the population of unincorporated Collin County are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), property or crop losses resulting from lightning in unincorporated Collin County is unknown due to lack of accurate reporting.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in unincorporated Collin County are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in unincorporated Collin County are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in unincorporated Collin County are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there is an unknown number of fatalities and injuries in unincorporated Collin County due to tornadoes however the values may be inaccurate due to lack of accurate reporting. All the population of unincorporated Collin County are exposed and vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), property losses from tornadoes is expected but unknown due to lack of accurate reporting. Unknown crop losses resulted from this hazard in unincorporated Collin County, but values may be underestimated due to lack of accurate reporting.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in unincorporated Collin County are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in unincorporated Collin County are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in unincorporated Collin County are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	According to National Centers for Environmental Information (NCEI), there is an unknown number of fatalities and injuries in unincorporated Collin County due to wildfires however the values may be inaccurate due to lack of accurate reporting. Based on geographical data, approximately 55.92% of unincorporated Collin County is vulnerable to wildfires.
Improved Property	Based on geographical data, property loss due to wildfires is expected but unknown due to lack of accurate reporting, which is an unknown percent of the overall property improvement values in unincorporated Collin County.
Emergency Facilities	Based on geographic information there are no fire stations at risk from wildfire events.
Critical Facilities	Based on geographic information there are no schools at risk from wildfire events.
Critical Infrastructure	Based on geographic information there are no bridges, no dams, no wastewater treatment facility, and no water treatment facility at risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), fatalities and injuries from winter storms are expected but unknown due to lack of accurate reporting. All the population of unincorporated Collin County are exposed and vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), property losses from winter storm events is expected but unknown due to lack of accurate reporting. Unknown crop losses are expected from this hazard in unincorporated Collin County due to lack of accurate reporting.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in unincorporated Collin County are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in unincorporated Collin County are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in unincorporated Collin County are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serve as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, Collin County considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities														
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other
Unincorporated Collin County	Y	N	Y	Y	N	Y	Y	Y	N	Y	Y	N	N	N
Average % Yes Capabilities – 57.1%														
Y- Yes N- No ?- Don't Know														
														57.1%

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency Manager	Grant writers	% Yes
Unincorporated Collin County	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	90%
Average % Yes Capabilities – 61.5%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes
Unincorporated Collin County	N	Y	N	N	N	Y	N	N	N	N	20%
Average % Yes Capabilities – 20%											
Y- Yes N- No ?- Don't Know											

To quantify Collin County's legal and regulatory, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, unincorporated Collin County has 61.5% of identified legal and regulatory capabilities, 90% of identified administrative and technical capabilities, and 22.2% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
Collin County	County Judge	The Commissioners Court, including the County Judge and County Commissioners, approve the county budget, approve Commissioners Court Orders and county policies, hire staff, approve plans, and determine the direction of the county overall. As the governing body, the ability to approve and regulate mitigation activities, expand and improve existing capabilities to better serve mitigation activities, and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2011 and 2016 HazMAPs, the Collin County Hazard Mitigation Planning Team developed mitigation strategies for the Plan update. The goals are similar to the goals identified in Section 6.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones within Unincorporated Collin County.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of the new and deferred action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis economic considerations were weighed for each action. Priority rankings are classified as indicated in the table below. The STAPLEE was used for the 2016 Plan along with the 2021 Update.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

Unincorporated Collin County Action Items: Deferred from 2016 Plan

Collin County Action Item	Adopt and promote a comprehensive public education program that provides resources to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	Homeland Security
Implementation Schedule	1-3 years
Effect on Old Buildings	Depending on mitigation actions employed, can reduce the damage from multiple hazards to existing buildings.
Effect on New Buildings	Depending on mitigation actions implements, can reduce damages from multiple hazards to new buildings.
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	This program will include discussion about mitigation projects for all identified hazards and what mitigation actions can be taken.
Status	Some work performed in this area using regional resources along with utilizing general fund dollars from Collin County.

Collin County Action Item	Develop and implement building codes to mitigate against structural damages caused by drought, high winds and tornado.
Hazard(s) Addressed	Drought, Tornado, High Winds
Goal/Objective	3-C

Priority	Low
Estimated Cost	\$5,000
Potential Funding Sources	Local Funding
Lead Department	Collin County Engineering
Implementation Schedule	1-5 years
Effect on Old Buildings	If retrofitted, could mitigate damages to old buildings.
Effect on New Buildings	This action can reduce the effects of drought, tornadoes, and high winds on new buildings.
Cost Effectiveness	The cost of this project is low compared to the potential benefits of reducing the effects of drought.
Discussion	During times of drought, earth experiences significant changes that often impact structural foundations. Building codes can mitigate these effects through mandatory use of new technologies such as resource-efficient (low-flow) plumbing for drought and water conservation. Roof bracing requirements for new construction will mitigate damages from tornado and high Winds.
Status	Collin County utilizes adopted building codes.

Collin County Action Item	Expand water conservation measures to new developments and populations
Hazard(s) Addressed	Drought
Goal/Objective	2-C
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Engineering
Implementation Schedule	1-2 years
Effect on Old Buildings	May require low-flow retrofits and soil stabilization through landscaping for existing foundations to reduce effects of drought.
Effect on New Buildings	May require low-flow plumbing installations during construction, foundation protection through alternate landscaping to reduce effects of drought.
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Work with local water suppliers and building developers to expand water conservation measures in new areas of development, to include reduced taps and drought resistant landscaping.
Status	Deferred, but rely heavily on local water districts to educate and implement needed programs. Additionally, added water systems have been brought online along with new systems being constructed as of 2021.

Collin County Action Item	Implement Community Tornado Safe Room Program
Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1-C

Priority	High
Estimated Cost	\$25,000
Potential Funding Sources	HMGP, PDM, Local Funds
Potential Matching Sources	Local Grants, Donations, In-Kind Match, Resident Match
Lead Department	Fire Marshal/Emergency Management
Implementation Schedule	1-5 years
Effect on Old Buildings	Existing building may be retrofitted for community safe room installation.
Effect on New Buildings	New buildings may include construction of safe rooms for the community.
Cost Effectiveness	Community and residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	Implement Local Community Tornado Safe Room Program in Identified Vulnerable Areas.
Status	Collin County residents were able to apply, and some received, grant funding through the North Central Texas Council of Government (NCTCOG) Saferoom Rebate Program. This program provided funding for saferooms through December 2020, when it was ended.

Collin County Action Item	Develop and Implement a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	2-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	Texas A&M Forest Service and USDA Grants
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Marshal
Implementation Schedule	2-3 years
Effect on Old Buildings	Can prevent serious damages to or loss of existing buildings due to wildfire.
Effect on New Buildings	Can prevent serious damages to or loss of new buildings due to wildfire.
Cost Effectiveness	CWPPs identify where wildfire mitigation efforts would be most effective.
Discussion	Identify wildland urban interface areas that would benefit from mitigation actions. Based on the individual variables of each area, actions such as fuel management, or defensible space development could be implemented.
Status	Deferred – no actions

Collin County Action Item	Implement Firewise mitigation programs in unincorporated Collin County.
Hazard(s) Addressed	Wildfire

Goal/Objective	4-A, 4-B
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	USDA and Texas A&M Forest Service Grants
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Marshal
Implementation Schedule	1-4 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire.
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire.
Cost Effectiveness	Cost low compared to potential loss of life and property to wildfire.
Discussion	Firewise communities experience fewer losses to wildfire than communities without the program.
Status	Deferred – no actions

Collin County Action Item	Develop and implement an extreme temperature program that identifies locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D
Priority	Medium
Estimated Cost	\$5,000-\$15,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources.
Effect on New Buildings	May entail enhanced construction materials.
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold.
Status	Places identified during past event, however, additional resources need to be utilized to make this a viable option for residents

Collin County Action Item	Coordinate and complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS, Emergency Management

Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones.
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones.
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – most dams are now under the jurisdictions of incorporated cities.

Collin County Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	4-B, 2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes.
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes.
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – no action. Many of the earthquake threats in the region of slowed

Collin County Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils.
Hazard(s) Addressed	Expansive Soils
Goal/Objective	4-A
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.

Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – no action

Collin County Action Item	Distribute all-hazards NOAA Weather Radios to vulnerable populations.
Hazard(s) Addressed	3-C, 4-A, 4-B, 4-C
Goal/Objective	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Priority	Medium
Estimated Cost	\$50,000 - \$75,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	n/a
Effect on New Buildings	n/a
Cost Effectiveness	Cost of lives lost and injuries sustained is very high compared to cost of proactive mitigation.
Discussion	This project would lead to greater capabilities for vulnerable populations to take mitigation actions prior to and in the event of all hazards.
Status	Deferred – no action

Unincorporated Collin County Action Items: New

Collin County Action Item	Generators on or available for all critical infrastructure
Hazard(s) Addressed	Winter Weather, Tornado, Extreme Heat, Earthquake, Dam Failure, Flooding, Lightning, Hail, High Winds, Wildland Fire
Goal/Objective	2-B
Priority	High
Estimated Cost	\$250,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	n/a
Effect on New Buildings	n/a
Cost Effectiveness	Cost of lives lost and injuries sustained is very high compared to cost of proactive mitigation.

Discussion	This project would help ensure all critical facilities do not lose power during events such as winter weather, tornados, or others in which we lose connection to the electrical grid
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Collin County Action Item	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Dam Failure, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	Emergency Management
Implementation Schedule	1-3 years
Effect on Old Buildings	Depending on mitigation actions employed, can reduce the damage from multiple hazards to existing buildings.
Effect on New Buildings	Depending on mitigation actions implements, can reduce damages from multiple hazards to new buildings.
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.

Collin County Action Item	Develop and implement building codes to mitigate against structural damages caused by drought, high winds, expansive soils and tornado.
Hazard(s) Addressed	Drought, Tornado, High Winds, Expansive Soils
Goal/Objective	3-C
Priority	Low
Estimated Cost	\$5,000
Potential Funding Sources	Local Funding
Lead Department	Collin County Engineering
Implementation Schedule	1-5 years
Effect on Old Buildings	If retrofitted, could mitigate damages to old buildings.
Effect on New Buildings	This action can reduce the effects of drought, tornadoes, and high winds on new buildings.
Cost Effectiveness	The cost of this project is low compared to the potential benefits of reducing the effects of drought.
Discussion	During times of drought, earth experiences significant changes that often impact structural foundations. Building codes can mitigate these effects through mandatory use of new technologies such as resource-efficient (low-flow) plumbing for drought and water conservation. Roof

	bracing requirements for new construction will mitigate damages from tornado and high Winds.
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Collin County Action Item	Expand water conservation measures to new developments and populations
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2-C
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Engineering
Implementation Schedule	1-2 years
Effect on Old Buildings	May require low-flow retrofits and soil stabilization through landscaping for existing foundations to reduce effects of drought.
Effect on New Buildings	May require low-flow plumbing installations during construction, foundation protection through alternate landscaping to reduce effects of drought.
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Work with local water suppliers and building developers to expand water conservation measures in new areas of development, to include reduced taps and drought resistant landscaping. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

Collin County Action Item	Implement Community Tornado Safe Room Program
Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1-C
Priority	High
Estimated Cost	\$25,000
Potential Funding Sources	HMGP, PDM, Local Funds
Potential Matching Sources	Local Grants, Donations, In-Kind Match, Resident Match
Lead Department	Fire Marshal/Emergency Management
Implementation Schedule	1-5 years
Effect on Old Buildings	Existing building may be retrofitted for community safe room installation.
Effect on New Buildings	New buildings may include construction of safe rooms for the community.
Cost Effectiveness	Community and residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	Implement Local Community Tornado Safe Room Program in Identified Vulnerable Areas.

Collin County Action Item	Develop and Implement a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	2-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	Texas A&M Forest Service and USDA Grants
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Marshal
Implementation Schedule	2-3 years
Effect on Old Buildings	Can prevent serious damages to or loss of existing buildings due to wildfire.
Effect on New Buildings	Can prevent serious damages to or loss of new buildings due to wildfire.
Cost Effectiveness	CWPPs identify where wildfire mitigation efforts would be most effective.
Discussion	Identify wildland urban interface areas that would benefit from mitigation actions. Based on the individual variables of each area, actions such as fuel management, or defensible space development could be implemented.

Collin County Action Item	Implement Firewise mitigation programs in unincorporated Collin County.
Hazard(s) Addressed	Wildfire
Goal/Objective	4-A, 4-B
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	USDA and Texas A&M Forest Service Grants
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Marshal
Implementation Schedule	1-4 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire.
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire.
Cost Effectiveness	Cost low compared to potential loss of life and property to wildfire.
Discussion	Firewise communities experience fewer losses to wildfire than communities without the program.

Collin County Action Item	Develop and implement an extreme temperature program that identifies locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms

Goal/Objective	2-D
Priority	Medium
Estimated Cost	\$5,000-\$15,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources.
Effect on New Buildings	May entail enhanced construction materials.
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold.

Collin County Action Item	Coordinate and complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS, Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones.
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones.
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.

Collin County Action Item	Coordinate and complete flood impact maps that include possible depth and speed information
Hazard(s) Addressed	Flood
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, TWDB
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS, Emergency Management

Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in and out of flood zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in and out of flood zones
Cost Effectiveness	Low
Discussion	Flood data and maps are available for Collin County; however, data on potential flood water depths or water flow rates depending on rain fall amounts and/or intensity are not available. This data would help better identify potential areas that would benefit from mitigation action items.

Collin County Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	4-B, 2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes.
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes.
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.

Collin County Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils.
Hazard(s) Addressed	Expansive Soils
Goal/Objective	4-A
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.

Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

Collin County Action Item	Distribute all-hazards NOAA Weather Radios to vulnerable populations.
Hazard(s) Addressed	3-C, 4-A, 4-B, 4-C
Goal/Objective	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Priority	Medium
Estimated Cost	\$50,000 - \$75,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	n/a
Effect on New Buildings	n/a
Cost Effectiveness	Cost of lives lost and injuries sustained is very high compared to cost of proactive mitigation.
Discussion	This project would lead to greater capabilities for vulnerable populations to take mitigation actions prior to and in the event of all hazards.

National Flood Insurance Program (NFIP) Compliance

Collin County participates in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
480130#	COLLIN COUNTY*	COLLIN COUNTY	12/6/1977	3/16/1981	6/2/2009	6/16/1981	No

*: Unincorporated Collin County

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Compliance

Once the community applies for the NFIP, FEMA arranges for a study of the community to determine base flood elevations and flood risk zones. Consultation with the community occurs at the start of and during the study, and those communities with minimal flood risk are converted to the Regular Program without a study.

FEMA provides the studied community with a Flood Insurance Rate Map delineating base flood elevations and flood risk zones. The community is then given 6 months to adopt base flood elevations in its local zoning and building code ordinances. Once the community adopts more stringent ordinances, FEMA converts the community to the NFIP's Regular Program. FEMA then authorizes the sale of additional flood insurance in the community up to the Regular Program limits. The community must implement and enforce the adopted floodplain management measures. FEMA provides periodic community assistance visits with local officials to provide technical assistance regarding complying with NFIP floodplain management requirements.

The purchase of flood insurance is mandatory as a condition of receipt of federal or federally-related financial assistance for acquisition and/or construction of buildings in SFHAs of any participating community. Those communities notified as flood-prone which do not apply for participation in the NFIP within 1 year of notification are ineligible for federal or federally-related financial assistance for acquisition, construction, or reconstruction of insurable buildings in the SFHA.

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
Unincorporated Collin County	Director of Engineering	Taking action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning	Collin County approved a Commissioners Court Order to deal with flooding issues in the county. The court order imposes stands for developing in flood-prone areas, including but not limited to, requiring construction materials be resistant to flooding, requiring "new construction or substantial improvements" to be designed to prevent water from entering or accumulating within electrical components, and requiring all new subdivision proposals have adequate storm water drainage plans.	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with County's flood damage prevention order shall result in fines not more than \$2000.00 for each violation, and in addition shall pay all costs and expenses involved in the case.

The Community Rating System (CRS)

The Community Rating System (CRS) is a voluntary program for NFIP-participating communities. The goals of the CRS are to reduce flood damages to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management. All CRS communities must maintain completed FEMA elevation and flood proofing certificates for all new and substantially improved construction in the Special Flood Hazard Area after the date of application for CRS classification.

Collin County will apply for and participate in the CRS program to provide discounted insurance premium incentives for communities to go beyond the minimum floodplain management requirements and to analyze and manage future development.

The following link provides information on jurisdictions that currently have CRS:

<http://www.fema.gov/library/viewRecord.do?id=3629>

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c) (4) (i), Collin County has developed a plan maintenance process which is described in the following paragraphs. Collin County, along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by Collin County Commissioners Court, and formal adoption of the plan by city council by each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Plan will be implemented by the county and participating jurisdictions as described throughout this document.

The Collin County Assistant Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning team, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, Collin County will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning team will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	Activity	Schedule
Assistant Emergency Managers	Monitoring Plan: Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting them for approval. The plans will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c) (4) (ii))*

2016 Plan Incorporation: The State of Texas Mitigation Plan, vulnerability assessments, and capabilities assessments were carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT will establish a process in which the mitigation strategy, goals, objectives and actions

outlined in this plan will be incorporated into existing local planning strategies. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
Unincorporated Collin County	County Commissioners	Budget	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Emergency Management Coordinator	Emergency Management Plan	Reviewed Annually, updated as needed	EMP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain Ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	County Commissioners	Capital Improvement Plan	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, County Commissioners, Water Districts	Drought Contingency Plan	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Collin County Hazard Mitigation Planning Team considers this HazMAP, including development and maintenance, to be the primary vehicle to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c) (4) (iii))

As stated in requirement § 201.6(c) (4) (iii) the plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County.

The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex B: City of Allen



This annex was prepared in 2020 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan (HazMAP). This plan updates the Allen hazard mitigation plan submitted to FEMA as part of the 2016 Collin County plan. The City of Allen participated on the Collin County HazMAP Hazard Mitigation Planning Team (HMPT) for this update. In addition to the countywide hazards and strategies discussed in the main plan, this annex serves

as a complete hazard mitigation planning tool for the City of Allen. It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

1. Introduction

The City of Allen is located at latitude 33°6'11"N and longitude 96°40'13"W. It sits in the southern region of Collin County with McKinney to its North and Plano to the South. Two (2) feeder creeks exist in Allen, Mustang Creek and West Rowlett Creek. There are four (4) main creek systems, Rowlett Creek, Cottonwood Creek, Watters Creek, and Russell Creek.

The City of Allen was named after Ebenezer Allen, a state politician and railroad promoter in 1872. Incorporated in 1953, Allen is home to the Allen Independent School District's new open-air sports facility Eagle Stadium as well as the city-owned and operated indoor arena, the Allen Event Center. Allen also hosts a satellite campus of Collin College, located inside Allen High School.

According to the North Central Texas Council of Governments (NCTCOG), the population of Allen is estimated to be about 105,623. The city has a total area of approximately 27.11 square miles of land area.

The City of Allen operates under a system of local government called Council/Manager, wherein all powers of the city are vested in the City Council.



Allen has a wide variety of local businesses and business development sites including Andrew's Distribution, Cabela's, Top Golf, Experian Information Solutions, Frontier Communications, and Cisco. Prominent in the local retail economy are The Village at Allen, Allen Premium Outlets, and Watters Creek at Montgomery Farm.

The city offers much in the way of recreational facilities and entertainment events which include the Allen Event Center which is home to the Allen Americans hockey team and the Dallas Sidekicks indoor soccer team; Celebration Park, which

hosts the annual pre-Fourth of July gala called the Allen USA Celebration; the Joe Farmer Recreation Center; the Don Rodenbaugh Natatorium; and Chase Oaks Golf Club.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While Allen has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Allen officials to recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and online.

In accordance with Part 201.6(c) (5) of the Disaster Mitigation Act of 2000 (DMA 2000), Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. Table 2.1 outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Centers for Environmental Information (NCEI)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Urban Interface
National Inventory of Dams	Dam information
City Ordinances	Structural and Safety designs

Planning Committee

This Hazard Mitigation Action Plan was developed by the City of Allen Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and the Collin County

HMPT. Allen planning committee representatives participated on the HMPT, with local efforts led by the City of Allen Emergency Management Coordinator.

The planning committee was assembled with representatives from the city, including the mayor, city manager, emergency management representatives, department heads, and the general public. Collin County acted as the plan development consultant providing hazard mitigation planning services. Table 2.2 provides a list of the primary representatives on the Allen planning committee.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
City of Allen	Mayor	General Policy Guidance
City of Allen	City Manager	Policy Implementation
City of Allen	Emergency Management Coordinator	Supervise
Collin County	Asst. Emergency Management Coordinator	General Assistance

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan

External stakeholders emailed and involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Texas Health Presbyterian Hospital - Allen	Chief of Security/Risk Management	Review of plan
Texas Independent Insurance Group - Allen	Owner/Agent	Review of plan
Allen Board of Adjustment, Building and Standards Commission, and Sign Control Board	Citizen Board Member	Review of plan
Allen Independent School District (AISD)	Risk Manager	Review of plan

Subsequent to the State of Texas and FEMA approval of the plan, each organization above is committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Collin County and included participation by all jurisdictions:

- Plan provided to the City of Allen on August 18, 2020
- Collin County Planning Meeting – November 5, 2020
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022 at 9AMTBD

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and Allen planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign-in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.
- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The planning committee for the City of Allen identified several natural hazards and man-made hazards that could affect the city. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for Collin County and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
		Level	Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3

35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for the City of Allen

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	0	0	0	0
Drought	2	0	0	3	0.9
Earthquake	0	0	0	0	0
Expansive Soils	1	0	0	1	0.4
Extreme Heat	2	1	0	3	1.25
Flooding	1	1	1	1	1
Hail	3	0	1	2	1.35
High Winds	2	1	1	2	1.4
Lightning	3	0	1	2	1.35
Tornado	1	2	2	2	1.7

Wildfire	0	0	0	0	0
Winter Storms	2	1	0	2	1.15

The conclusions drawn from the hazard profiling process for the City of Allen resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in the City of Allen.

Table 3.3 Hazard Rankings City of Allen

High Risk (PRI 2 - 3)	
Moderate Risk (PRI 1.01 -1.9)	Tornado High Winds Hail Lightning Extreme Heat Winter Storms
Low Risk (PRI 0.50 – 1)	Flooding Drought
Negligible to No Risk (PRI 0 – 0.49)	Expansive Soils Dam Failure Earthquake Wildfire

Changes in Development and Priorities (Requirement §201.6(d) (3))

The City of Allen was a participating jurisdiction in the 2016 Collin County Hazard Mitigation Action Plan. Since then, the city has seen an increase in growth and commuter traffic and forecasts additions to single-family lots. Based on 2020 Census projections, the population of Allen increased from 98,344 to 105,623 during the time period 2015-2019. Housing units increased from 28,877 to 30,436, and related transportation routes and business structures also increased to accommodate the growing population. Travel lanes were added to US HWY-75 and widths of major roadways including Stacy Road, Bethany Road, Exchange Parkway, and Watters Road were increased. Overall growth is rated at 9%.

To minimize the damage caused by manmade and natural disasters, the City of Allen developed, implemented and enforces up-to-date building and fire codes and adopted a policy to prohibit development in FEMA identified flood plains. In addition, Allen has completed one of their original action items.

- Education and Awareness Projects
 - o Develop and institute water conservation education program to mitigate and reduce the effects of extreme heat.

In 2011, the Fire Department added an additional fire station (Station 5) located on McDermott Road near the Custer Road intersection. The construction of Station 5 facilitated the addition of an early warning siren at the same location. The development and implementation of these mitigation projects have directly led to lower vulnerability for residents and property located in the City of Allen.

New priorities are noted and ranked in each new action item, Section 6. Except for actions completed or cancelled, other priorities remain the same as in the previous version of this plan.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the City of Allen faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation.

Dam and Levee Failure The City of Allen is not perceived to be vulnerable to dam or levee failure on a large scale. One (1) dam was constructed within a small, residential neighborhood called The Preserve, located at the intersection of McDermott Drive and Shallowater Drive. The dam was constructed to preserve the original stock-pond impoundment, which dated back to the original farmstead use, as an amenity to the residents. Even though the impoundment is small, the dam has been registered with the Texas Commission on Environmental Quality, incurs routine inspection, and has an emergency action plan in-place for the structure.

Drought When defining drought as an occurrence in Texas it is best to consider two types of drought - *agricultural and hydrologic*. Agricultural drought is a dry period of sufficient length and intensity that markedly reduces crop yields. Hydrologic drought is a long term condition of abnormally dry weather that ultimately leads to the depletion of surface and ground water supplies, the drying up of rivers and streams and the cessation of spring flows. These two types of drought may, but do not necessarily, occur together. It should be noted that the severity of a drought cannot be completely measured in terms of precipitation alone, but precipitation statistics do provide an easily obtainable index of drought severity. Declining reservoir and stock tank levels due to a prolonged lack of precipitation are stark evidence of a severe drought. Texas experiences a cycle of extended wet and drought conditions that can extend over a period of months even years. Extended periods of drought can have an enormous impact on an area by affecting the abundance of water supply, the agriculture economy, and foundations of structures. All geographic areas of Allen have the potential to be vulnerable to drought.

An adequate supply of high quality water has become a critical issue for the future prosperity of Texas, where water is a limited resource. Due to increasing population, water demand is projected to exceed supply by 2030, based on current use rates. Protecting, managing and planning for the wise use of our water resources is an efficient and effective strategy to meet future water supply needs.

The City of Allen is a member city of the North Texas Municipal Water District (NTMWD). All of Allen's Water and Waste Water Treatment Services are provided by NTMWD, who is the regional wholesale supplier of potable water. More than 1.8 million people rely on this treated water. The raw water sources include Bonham Lake, Lavon Lake, Lake Texoma, Jim Chapman Lake (Cooper Lake), Lake Tawakoni, and the East Fork of the Trinity River southeast of Dallas.

The construction of a \$306 million water transmission line from Lake Texoma to the water treatment plant at Wylie was completed and has begun delivery of water to the treatment plant in June 2014. It is estimated to be online in June 2014. Even with the return of the Lake Texoma water, it must be blended with Lake Lavon. Due to Lake Lavon's current level, Allen must continue water conservation efforts.

Stage 3 of the Water Conservation and Drought Contingency and Emergency Water Response Plan for the City of Allen, Texas and Ordinance Numbers 2760-8-08 and 3234-6-14 are currently in effect. A 10% reduction goal is required by NTMWD.

Restrictions caused by a drought affect local revenues significantly and can have major impacts on local industry, fire protection, and local agriculture. Allen's summer water consumption is 3.75 times our winter consumption due to increased landscape irrigation. This fact should make it apparent why the City of Allen restricts landscape irrigation as the primary way to achieve water use reductions as we continue Stage 3 conservation into the foreseeable future.

Drought has the potential to impact the entire planning area equally, all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of the city are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake An earthquake is a sudden motion or trembling caused by an abrupt release of accumulated strain on the tectonic plates that comprise the Earth's crust. The theory of plate tectonics holds that the Earth's crust is broken into several major plates. These rigid, 50- to 60- mile thick plates move slowly and continuously over the interior of the earth, meeting in some areas and separating in others. As the tectonic plates move together they bump, slide, catch, and hold. Eventually, faults along or near plate boundaries slip abruptly when the stress exceeds the elastic limit of the rock, and an earthquake occurs. The ensuing seismic activity and ground motion provoke secondary hazards: surface faulting, ground failure, and tsunamis. The vibration or shaking of the ground during an earthquake is referred to as ground motion. In general, the severity of ground motion increases with the amount of energy released and decreases with distance from the causative fault or epicenter. When a fault ruptures, seismic waves are propagated in all directions, causing the ground to vibrate at frequencies ranging from 0.1 to 30 Hz. Seismic waves are referred to as P waves, S waves, and surface waves. Earthquakes have the potential to occur anywhere in the geographic planning area, therefore all geographic areas are potentially vulnerable. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity. However, this hazard was identified as having negligible or no risk to the City of Allen.

Expansive Soils Soil conditions can have a significant effect on urban development as different soils can create various problems for structures and uses. Most soils have moderate to severe limitations for urban development as a result of shallow bedrock, high shrink-swell potential, and low strength. These problems must be recognized in construction to avoid foundation problems.

During months of prolonged high temperatures and drought, expansive soils may become more prevalent. Surface layers of soil can form sizable cracks as it expands and contracts over time, leading to structural foundation problems. Expansive soils are not a prevalent hazard within the City of Allen and were found to pose only a minor threat. Geographically, areas of Allen have the potential to be vulnerable to expansive soils. This hazard was identified as having negligible or no risk to the City of Allen.

Extreme Heat Extreme heat contributes to and may exacerbate drought conditions due to increased water use. Elevated heat indexes also affect asthma patients and the elderly when exposed. Working conditions outside are more difficult and heat stroke becomes a greater danger. Instances of heat stroke and death occur in vulnerable populations such as the homeless, elderly, and the very young if exposed to the high temperatures for an extended period of time. Electrical usage also spikes during the summer which can result in periods of grid blackout. Extreme heat has the potential to affect the entire planning area.

Allen's climate can be characterized as very humid and sub-tropical in the summer. It is usually very hot and dry with average maximum highs in the heart of summer reaching 96°F. However, the temperature frequently rises above 100°F. On average, Allen experiences 16 days per year where temperatures meet or exceed 100°F. Overnight lows usually stay in the lower to mid-70s, but sometimes they fail to fall below 80°F during extreme hot spells. Coupling these warm temperatures with high humidity creates what is called the heat index. The hottest temperature ever recorded, 113°F, occurred for two consecutive days on June 26th and 27th, 1980. Incidentally, that summer is the hottest summer on record with nearly forty (40) consecutive days of triple digit heat.

The City of Allen has the potential during heat emergencies to exceed the capabilities of the local hospital and Emergency Medical System. Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air conditioning are most vulnerable.

Flooding is the most prevalent and costly disaster in the United States. Floods have the ability to roll boulders the size of cars, uproot trees, and transport building. At the point the water concentration hyper extends the capacity of the flood way, the water enters the floodplain. Floods are most common in seasons of rain and thunderstorms. Floods can be associated with other natural phenomenon such as rainstorms, thunderstorms, hurricanes, earthquakes, and rapidly melting snow.

The City of Allen has a comprehensive flood program to go along with organized growth. The Allen Land Development Code (Ordinance # 2112-11-02) has dedicated one complete article to the aspect of flood control and several related sections on drainage.

The highlights of the city ordinance, with regards to flood control, are topics related to: what constitutes flood hazards, methods of reducing flood losses, flood plain administration, and risk reduction. The City of Allen has had an ordinance (since 1991) to evaluate development in terms of the "Ultimate 100-Year Flood". The term "Ultimate" indicates a model for fully developed conditions on the upstream portion of the watershed condition. The provision for flood related structures (bridges, culverts, drainage ditches, storm pipes etc.) designed for fully developed conditions and the requirement for the lowest floor of buildings to be a minimum of 18" above the base flood elevation in the case of commercial structures and 24" for residential structures have worked effectively to serve the city in heavy storms and floods.

The city has improved several structures that were inherited prior to the above referenced ordinance. Mustang Creek channel improvements in 2001, upstream of Main Street, has removed several houses from the flood plain. The rebuilding of McDermott Drive and the subsequent improvement of several drainage structures has prevented the road from flooding. Also, the project to replace the existing Exchange Parkway (Old Rowlett Road) Bridge with a new bridge made Exchange Parkway a safe conduit for traffic to cross Rowlett Creek. Overall, Allen has handled flood related issues with enough foresight to avoid major failures and significantly reduce hazards.

The City of Allen can be affected by two types of floods, though in limited areas. These include:

- Riverine Flood – Occurs in the floodplain of a river or stream when the amount of water and the rate at which the moving increases. This type generally can be forecast in advance, and proper precautions taken to save lives.
- Flash Flood – A type of Riverine flood that occurs after a heavy storm, when the ground cannot absorb the high amount of precipitation. This can occur when heavy precipitation falls on already-saturated soils. Flash Floods occur rapidly with little warning.

The city lies in the Blackland Prairies where the maximum elevation is 1000 feet and the minimum elevation is 450 feet. Allen is located in the Trinity River Basin where rainfall is between 30 to 40 inches per year, on average. Two (2) feeder creeks exist in Allen, Mustang Creek and West Rowlett Creek. There are four (4) main creek systems, Rowlett Creek, Cottonwood Creek, Watters Creek, and Russell Creek.

The City of Allen enjoys a relatively low susceptibility of flooding due to above average drainage and sewer systems as well as a robust infrastructure. Allen's most important measure to ensure that flooding does not become a life threatening hazard is to limit the use of flood prone areas. Other methods include the use of automatic roadblocks over roadways which are prone to seasonal flooding.

Hail Two conditions must be fulfilled for a thunderstorm to become a hail storm: (1) updraft velocities must be sufficiently strong enough to support hail storms during their growth; and, (2) liquid moisture must accumulate in a super-cooled state in the upper parts of the storm. Hail ranges in size from vanishing small particles to grapefruit dimensions. They may be spherical, conical or very irregular in shape.

The hail hazard is primarily in terms of damage of crops and property. Injury and loss of human life are rarely associated with hailstorms. Hail tends to fall in swaths that may be from 20 to 115 miles long and 5 to 30 miles wide. A hail swath is not a continuous path of hail but generally consists of a series of hail strikes, which are produced by individual thunderstorm cells traversing the same general area. Hail strikes are typically about 1/2 mile wide and 5 miles long. They may partially overlap, but often they leave completely undamaged areas between them. The amount of damage and destructive effects of a hailstorm is governed by size, number of hailstones, mass of ice, momentum, impact energy, and the dimensions of the hail swaths. Strong winds and heavy rains, which often accompany hail, will also add to the damage to crops and property.

Hail storms are most prevalent in the State of Texas in the north (where Allen is located) and western areas of the state. This can be contributed to the effects from large-scale weather systems that are evident in a broad band of maximum occurrence from New Mexico to Ohio. This is directly related to the area of greatest tornado activity known as "tornado alley". It is significant that hailstorm frequency is greatest during early spring and summer months. Hail during the three hottest months of the summer, however, is rare. All geographic areas of Allen are potentially susceptible to damaging hail. Damage in the City of Allen due to hail could result in a significant loss.

Insurance is the most widely used mitigation measure for property damage due to hail. It is not unusual for people in hail prone area to replace the roof covering of structures every three to five years due primarily to the use of cheaper, less hail resistant roof covering products. Windstorms and hail damage is the one single most costly loss suffered by Texans. Severe roof damage can be reduced by installing roofing products that are manufactures using heavy duty, quality materials that has the Underwriters

Laboratory (UL) 2218, hail resistant product listing. Exposed populations, manufactured homes, and older properties are most vulnerable to hail.

High Winds Straight-line winds are often responsible for the wind damage associated with a thunderstorm. These winds are often confused with tornadoes because of similar damage and wind speeds. However, the strong and gusty winds associated with straight-line winds blow roughly in a straight line unlike the rotating winds of a tornado. Downbursts or micro-bursts are examples of damaging straight-line winds. A downburst is a small area of rapidly descending rain and rain-cooled air beneath a thunderstorm that produces a violent, localized downdraft covering 2.5 miles or less. Wind speeds in some of the stronger downbursts can reach 100 to 150 miles per hour, which is similar to that of a strong tornado. The winds produced from a downburst often occur in one direction, and the worst damage is usually on the forward side of the downburst. High winds have the potential to affect the entire planning area.

High winds are a frequent occurrence with severe thunderstorms and they can affect all areas of Allen. These winds can occur suddenly and without warning during severe weather and may pose access challenges due to fallen trees on roadways. There have been several instances of damage occurring to business and commercial structures as a result of high winds. Outside of primary residential structures, there are few locations for the public to seek shelter during high winds.

The City of Allen has typically experienced power outages, fires, and damage to roofs, cars, out buildings, and electrical utilities due to high winds. These events create significant planning and recovery issues.

Lightning damage results from four (4) effects of lightning strike: electrocution of humans and animals; vaporization of materials along the path of strike; fire caused by the high temperature produced by the strike; and a sudden power surge that can damage electrical and electronic utility substations and distribution lines. It is estimated that throughout the United States, a power outage caused by lightning occurs on 50 percent of the days throughout the year. Lightning has the potential to affect all populations and property in the City of Allen.

Although property damage is the major cost of the lightning hazard, it should be emphasized that lightning kills more people in the US each year than either tornadoes or hurricanes. On the average, six (6) people die from lightning strike every year in Texas. Allen has lost at least one (1) citizen due to electrocution from a lightning strike. Additionally, lightning is responsible for at least five (5) residential structure fires over the past two (2) years resulting in a total loss for each residence. Property without lightning protection and exposed populations are most vulnerable.

Tornado Tornadoes are directly associated with dark, heavy cumulonimbus (thunderstorm, squall line) clouds with intense lightning. The average tornado path is four (4) miles long but tornado tracks of more than 150 miles have been reported. The average width is 300 to 400 yards; however, some tornadoes cut swaths more than a mile wide. Precipitation usually occurs first as rain preceding the storm, frequently with hail and as a heavy down pour immediately to the left of the tornado's path.

While tornadoes in Texas can occur in any month and at all hours of the day or night, they occur with greatest frequency during the late spring and early summer months and during late afternoon and early evening hours.

Allen is in an area where the annual average tornado occurs 15 to 20 times per year. Special issues concerning a tornado incident within the City of Allen involve the large population of special needs residents within nursing homes and the many daycares and schools. An additional concern is the number of large trees in residential areas that could impact power lines and the restriction into areas needing assistance due to limbs blocking roadways.

The single most important factor influencing human response to tornado hazards is the adequate emergency warning system. Because a tornado is a very sudden event, a “short fused” type of disaster, there rarely is sufficient warning time. Police, Fire and Rescue, and volunteer storm spotters trained by the National Weather Service (NWS) SKYWARN tornado preparedness programs provide the initial step in adequate warning system.

The City of Allen incorporates the mentioned measures of early detection and utilizes the Emergency Operation Plan at the moment the NWS issues a tornado watch or warning. Additionally, sufficient insurance is the first order of mitigation to cover major losses of the home and belongings. Exposed populations, manufactured homes, and older properties are most vulnerable.

Wildland Fire Wildland fire is any fire occurring on grassland, forest, or prairie, regardless of ignition source. Wildland fires are fueled almost exclusively by natural vegetation. Typically, wildland fires occur in national forests and state parks where federal or state agencies are responsible for fire management and suppression. Interface or intermix fires are urban/wildland fires in which vegetation and the built-environment provide fuel. Firestorms are events of such extreme intensity that effective suppression is virtually impossible. Firestorms occur during extreme weather and generally burn until conditions change or the available fuel is exhausted. For the purposes of this hazard analysis, wildland fires are assessed under what is known as the Wildland Urban Interface (WUI). The WUI is an area of development that is susceptible to wildland fires due to the amount of structures located in an area with vegetation that can act a fuel for a wildland fire.

Due to the lack of fuel, there is negligible to no risk in Allen for a wildland fire. There have been no major wildland fires in the city for the past 10 years.

Winter Storms Winter storms in Allen can and have occurred with enough severity to be a threat to people and property. The types of winter storms that Allen is most familiar with are ice storms and cold waves. A snowfall with an accumulation of four (4) or more inches in a 12-hour period is considered a heavy snowfall. Although it has never been witnessed in Allen, blizzards are also possible, and can create a threat to the community.

An ice storm occurs when rain falls out of the warm and moist upper levels of the atmosphere into a cold and dry layer near the ground. The rain freezes on contact with the cold ground and accumulates on exposed surfaces. If a half-inch of rain freezes on trees and utility wires, damage can occur, especially if accompanied by high winds. Ice storm usually occurs from late December to mid-February. Winter storms have the potential to occur anywhere in the geographic planning area, with greatest vulnerabilities in highly populated or commercial areas.

Allen has experienced multiple severe ice storms over the past six (6) years. Loss of utilities, such as natural gas and electrical services has resulted from some of these storms. There have also been instances of structural damage to various roofs and car ports in Allen due to ice accumulation.

The passage of a winter cold front with a drastic drop in temperature heralds the arrival of a cold wave.

Blizzards are the most perilous of all winter storms, characterized by low temperatures and strong winds in excess of 35 MPH, bearing large amounts of blowing or drifting snow. True blizzards are rare in the Allen area; however, blizzard like conditions do exist during heavy snowstorms when gusty winds cause blowing and drifting snow.

The city has two (2) major highways (US 75 and SH 121) that may be impacted during winter storms. Areas impacted include local commerce, medical services, and local sheltering capabilities for potential stranded motorists.

Identification of Assets and Vulnerability Assessment

An inventory of Allen's geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population**: Includes the number of people residing in Collin County jurisdictions as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property**: Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities**: Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities**: Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure**: Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the US Census Bureau, the total population of Allen in 2020 was 105,823 people, with 30,436 households. The population breakdown is provided in *Table 3.4*.

Table 3.4 City of Allen Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total**	Population Density (Sq. Mile)	Household	% of County Total**	Household Density (Sq. Mile)
Allen	105,823	9.50%	3927.91	36,526	9.50%	1386.07

Source: US Census Bureau & Collin County Appraisal District

**Includes totals from incorporated jurisdictions not participating in the plan

Table 3.5 summarizes population counts and population change absolute and percent predications for Allen).

Table 3.5 City of Allen Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
Allen	84,246	87,980	90,030	2050	2.28%

Source: 2020 NCTCOG Population Estimates

Property

There are an estimated 37,282 thousand parcels in Allen, with an estimated \$11,650,015,117 in total assessed value of, Table 3.6 lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
Allen	37,282	7.48%	\$11,650,015,117

Source: Collin County Appraisal District

¹Includes public buildings (residential, commercial, industrial, agricultural, religion, government, education)

Emergency Facilities

There are seven (7) identified emergency facilities in the City of Allen, including five (5) fire stations, one (1) police station, and two (2) hospitals. Table 3.7 presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 City of Allen Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
Allen	5	1	2

Source: FEMA Resilience and Planning Tool

Critical Facilities

There are thirty two (32) critical facilities, which are considered non-emergency in Allen. The critical facilities include thirty one (31) schools and one (1) historical property site (Table 3.8). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 City of Allen Critical Facilities

Jurisdiction	Schools	Historical Property
Allen	31	1

Source: FEMA Resilience and Planning Tool

Critical Infrastructure

There are eighty seven (87) identified critical infrastructure facilities in the City of Allen, including two (2) natural gas facilities, one (1) dam, three (3) railway bridges, forty four (44) highway bridges, and 37 city-owned vehicular bridges (*Table 3.9*). The rail system in Allen is owned by Dallas Area Rapid Transit (DART) and is not currently in use.

Table 3.9 City of Allen Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
Allen	0	2	0	0	1	84

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, a City of Allen vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for the City of Allen, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.10* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		

Hail	X		
High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) no recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Allen are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the City of Allen are expected mostly during water shortages, financially unknown due to lack of accurate reporting.
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the City of Allen. The City of Allen and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas and the improved property in the City of Allen is not vulnerable to this hazard.

Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings and the emergency facilities in the City of Allen are not vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the critical facilities in the City of Allen are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI) there is no impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in Allen.

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year.
Improved Property	There have been two (2) recorded flood events in the City of Allen. Property losses are expected at \$5,000 per year however these values are underestimated due to lack of accurate reporting. No crop losses are expected or recorded. Approximately \$5,046,310,777 of the total assessed value is at risk from the 100-year storm event.
Emergency Facilities	Emergency facilities have the potential to be at risk in the 100-year storm event.
Critical Facilities	Critical facilities have the potential to be at risk in the 100-year storm event.
Critical Infrastructure	Critical Infrastructure has the potential to be at risk in the 100-year storm event.

Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Allen are expected at \$91,428.57 per year however these values are underestimated due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data indicates that there are no expected crop losses from this event.

Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in Allen are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in Allen are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in Allen are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events. All the population of Allen is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Allen are expected at \$1,900 per year however these values are underestimated due to lack of accurate reporting. No crop losses resulted from this hazard in Allen.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in Allen are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in Allen are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in Allen are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), lightning events can be expected to cause no deaths and no injuries in Allen. All the population of Allen is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Allen are expected at \$4,375 per year however these values are underestimated due to lack of accurate reporting. No crop losses resulted from this hazard in Allen.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in Allen are vulnerable to this hazard.

Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in Allen are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in Allen are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in Allen. All the population of Allen is exposed and vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), an average loss of \$174,285.71 per year in property losses is expected to result from tornado events however these values are underestimated due to lack of accurate reporting. No crop losses are expected from this hazard in Allen.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in Allen are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in Allen are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in Allen are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	There have been no recorded injuries or fatalities due to wildfires.
Improved Property	Based on historical data, annual financial losses expected from property loss due to wildfires are unknown but unknown due to lack of accurate reporting;
Emergency Facilities	Based on geographic information there are no fire stations in Allen at risk from wildfire events.
Critical Facilities	Based on geographic information there are no schools at risk from wildfire events in Allen.

Critical Infrastructure	Based on geographic information there are no bridges, no dams, no wastewater treatment facilities, and no water treatment facilities at risk from wildfire events in Allen.
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Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the City of Allen. All the population of Allen is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Allen are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the City of Allen.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in Allen are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in Allen are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in Allen are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serve as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the City of Allen considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities														
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other
<i>Allen</i>	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	N
Average % Yes Capabilities – 71%														
Y- Yes N- No ?- Don't Know														

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes per Jurisdiction
<i>Allen</i>	Y	Y	Y	Y	N	Y	Y	N	Y	Y	80%
Average % Yes Capabilities – 80%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes per Jurisdiction
Allen	Y	Y	N	Y	Y	Y	N	N	N	N	50%
Average % Yes Capabilities – 50%											
Y- Yes N- No ?- Don't Know											

To quantify City of Allen's legal and regulatory, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, the City of Allen has 71% of identified legal and regulatory capabilities, 80% of identified administrative and technical capabilities, and 50% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
City of Allen	City Manager	The city council, including the mayor, mayor pro-tem, and council members, along with the city manager, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. As the governing body, the ability to implement, expand, and approve mitigation actions and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2021 HazMAP, the City of Allen Hazard Mitigation Planning Committee developed mitigation strategies for the plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in [use](#).

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Goal 3 Reduce losses and repetitive damages for chronic hazard events.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones within Allen.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

6. Action Items

Below is a list of the new and deferred action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Allen Action Items: Deferred from 2016 Plan

City of Allen Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken on structures, can make existing building safer, stronger and less vulnerable to damages
Effect on New Buildings	Depending on mitigation actions taken on structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other hazards and civil emergencies.
Status	Cancelled – No longer a viable action item

City of Allen Action Item	Develop and establish extreme temperature plan including cooling and heating shelters for vulnerable residents.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Emergency Management, CERT
Implementation Schedule	1-2 years
Effect on Old Buildings	May require retrofit to accommodate new designs, resources needed
Effect on New Buildings	Will make new buildings safer for vulnerable populations
Cost Effectiveness	Cost to implement this program is low compared to the benefits of reduced injury and death related to extreme temperature.
Discussion	Developing an extreme temperature program that identifies both public and private safe locations for vulnerable residents to go during periods of extreme temperatures would reduce levels of injury and death in this segment of the population.
Status	Cancelled – No longer a viable action item

City of Allen Action Item	Adopt and promote a comprehensive public education program, including information about mitigation projects.
Hazard(s) Addressed	Extreme Heat, High Wind, Wildfire, Tornado, Drought, Winter Storms, Flooding, Hail, Expansive Soils, Dam Failure, Earthquake
Goal/Objective	4-A, 4-B
Priority	Medium
Estimated Cost	\$15,000
Potential Funding Sources	General fund, HMGP, PDM, other state/federal grants
Potential Matching Sources	Local funds, citizen cost-share, donations
Lead Department	Emergency Management, CERT
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken, can make existing building safer, stronger and less vulnerable to damages through retrofits and other actions
Effect on New Buildings	Depending on mitigation actions taken, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is an extremely effective low cost method.

Discussion	Adopt and promote a comprehensive public education program based on the hazards identified in this annex, including information on mitigation projects.
Status	Receive supplies and materials from the NCTCOG KnoWhat2do Program and provide to residents. Continue – will be included in 2021

City of Allen Action Item	Expand outdoor warning sirens to cover new populations
Hazard(s) Addressed	Hail, High Wind, Tornado , Dam Failure, Lightning
Goal/Objective	1-B
Priority	Medium
Estimated Cost	\$35,000 each
Potential Funding Sources	General fund, HMGP, PDM, other state/federal grants
Potential Matching Sources	Local funds
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	May require siren tower construction on existing buildings
Effect on New Buildings	None
Cost Effectiveness	Cost of implementation is low compared to the benefits of reduced injury and death related to tornados.
Discussion	Replacement of old or damaged warning sirens and expanding coverage to new populations is a proactive approach to mitigating the effects of severe weather and prevent loss of life by providing advanced warning to citizens.
Status	Added 9 additional sirens since last report, all are operational Cancelled – No longer a viable action item

City of Allen Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS
Implementation Schedule	1-2 years

Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Cancelled – No longer a viable action item

City of Allen Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for earthquake damage
Effect on New Buildings	Study would identify existing construction most at risk for earthquake damage
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Cancelled – No longer a viable action item

City of Allen Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants

Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Cancelled – No longer a viable action item

Allen Action Item	Improve construction standards and techniques through requiring, by ordinance, builders to utilize water saving plumbing and fixtures in new construction.
Hazard(s) Addressed	Drought
Goal/Objective	2-C
Priority	High
Estimated Cost	\$2,000-3,000
Potential Funding Sources	Local budget, Builders.
Lead Department	Building Department
Implementation Schedule	1-5 years
Effect on Old Buildings	No effect unless retrofitted
Effect on New Buildings	Reduced water consumption
Cost Effectiveness	Cost is very low compared to water shortages.
Discussion	This project would require low-flow plumbing and fixtures in all new construction, mitigating the effects of drought.
Status	Cancelled – No longer a viable action item

City of Allen Action Items: New

City of Allen Action Item	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B
Priority	Medium

Estimated Cost	\$15,000
Potential Funding Sources	General fund, HMGP, PDM, other state/federal grants
Potential Matching Sources	Local funds, citizen cost-share, donations
Lead Department	Emergency Management, CERT
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken, can make existing building safer, stronger and less vulnerable to damages through retrofits and other actions
Effect on New Buildings	Depending on mitigation actions taken, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.

City of Allen Action Item	Purchase and utilize mobile back-up generator
Hazard(s) Addressed	Flooding, Tornado, Earthquake, Extreme Heat, Lightning, Wildfire, Winter Storms, Hail, High Winds
Goal/Objective	2-D
Priority	High
Estimated Cost	\$5,000 - \$10,000
Potential Funding Sources	Local Funding
Potential Matching Sources	Local Funding
Lead Department	Public Works, OEM
Implementation Schedule	1-2 years
Effect on Old Buildings	Some buildings will need to be retrofit with ability to connect with generator
Effect on New Buildings	Buildings will need to be planned with the ability to connect to generator
Cost Effectiveness	Backup generator will prevent loss of power and data to critical government buildings
Discussion	Introduction of a mobile back-up generator will allow the City of Celina or other critical facilities to function as close to normal as possible in the event of a massive power loss.

City of Allen Action Item	Develop and implement a drought contingency plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000

Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on the stages of drought. Plan would include strategies for soil movement abatement depending on drought stage. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

City of Allen Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken on structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken on structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information

City of Allen Action Item	Analyze needs, develop and implement water conservation measures for new populations
Hazard(s) Addressed	Drought, Expansive Soils

Goal/Objective	2-C
Priority	High
Estimated Cost	\$1,000 - \$5,000
Potential Funding Sources	Local funding
Potential Matching Sources	Local grants, citizen match
Lead Department	Public Works, OEM
Implementation Schedule	2-3 years
Effect on Old Buildings	New constraints will be placed on water usage without compromising soil integrity.
Effect on New Buildings	New constraints will be placed on water usage without compromising soil integrity.
Cost Effectiveness	Expanded water and soil consistency standards will help the city of Celina plan for a boost in infrastructure and population and help maintain normal water levels
Discussion	As the City of Allen grows water conservation measures will encompass new infrastructure and residential/commercial areas. This plan implements conservation efforts that also maintain soil consistency, mitigating damage from expansive soils.

City of Allen Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results would help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results would identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.

City of Allen Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	TBD
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

National Flood Insurance Program (NFIP) Compliance

Allen is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
480131#	ALLEN, CITY OF	COLLIN COUNTY	12/20/1974	6/1/1978	6/2/2009	6/1/1978	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Compliance

Once the community applies for the NFIP, FEMA arranges for a study of the community to determine base flood elevations and flood risk zones. Consultation with the community occurs at the start of and during the study, and those communities with minimal flood risk are converted to the Regular Program without a study.

FEMA provides the studied community with a Flood Insurance Rate Map delineating base flood elevations and flood risk zones. The community is then given 6 months to adopt base flood elevations in its local zoning and building code ordinances. Once the community adopts more stringent ordinances, FEMA converts the community to the NFIP's Regular Program. FEMA then authorizes the sale of additional flood insurance in the community up to the Regular Program limits. The community must implement and enforce the adopted floodplain management measures. FEMA provides periodic community assistance visits with local officials to provide technical assistance regarding complying with NFIP floodplain management requirements.

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
Allen	Program Manager	Adopt comprehensive regulations pertaining to the development and maintenance of the floodplain within city limits.	City Council adoption and amendment of Article V of the Allen Land Development Code (ALDC).	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood damage prevention order shall result in fines up to \$500 per violation plus court costs.

The City of Allen is a participant in the National Flood Insurance Program (NFIP) and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities. The City has an article in the Allen Land Development Code (ALDC), adopted by ordinance, dedicated exclusively to floodplain management and development regulations. The community philosophy has been to identify and preserve floodplain areas when development occurs in close proximity to watercourses and creeks. The regulations require the floodplain areas to remain in a natural state and avoid encroachment without offsetting mitigation. Allen is a freeboard community, requiring 2-feet of elevation difference between residential structures (1.5-feet for commercial uses) and the fully-developed 100-year water surface elevation. As a result of these conservative standards, the City of Allen has been able to keep flood insurance policies within our community to a very low number.

Article V – “Special Zones” of the ALDC was most recently updated in September of 2014.

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c) (4) (i), Collin County has developed a plan maintenance process which is described in the following paragraphs. Collin County, along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the City of Allen, the county, and the city council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) will be implemented by participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning team, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, Allen will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning team and committees will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented in table 7.1:

Table 7.1 Plan Maintenance Timeline

Personnel	What	Time
Emergency Management Coordinator	Monitoring Plan: Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting them for approval. The plans will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c) (4) (ii))*

2020 Plan Incorporation: The Allen City Council adopts a rolling five-year capital improvement plan each and every year, subsequent to a recommendation from the Planning & Zoning Commission. Bank stabilization at two locations has occurred to mitigate the effects of erosion along publicly maintained creeks and waterways. This past calendar year, the Engineering Department administered bank stabilization projects for: The Old Stone Dam (along Cottonwood Creek, upstream of Exchange Parkway) and The Cottonwood Trail (Cottonwood Creek, upstream of Bethany). The Old Stone Dam Project (\$500,000 approx.) was to preserve and stabilize banks on either side of a historic dam constructed in 1874. The Cottonwood Trail Project (\$800,000 approx.) was implemented to preserve an existing hike and bike trail, and avoid further risk to a neighboring residential structure. The residential structure was not in the regulatory floodplain, but the edge of the bank had come within 10 feet of the backyard fence. NFIP language in Article V was also updated (2014), stricter water conservation plans have been instituted, and building codes were update to the 2009 International Building Code.

2021 Plan Incorporation: The State of Texas Hazard Mitigation Plan, vulnerability assessments, and capabilities assessments for each jurisdiction were carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and planning committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into existing local planning strategies and mechanisms, as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
Allen	City Council	Budget	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Emergency Management Coordinator	Emergency Action Plan	Every five years	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain Ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council	Capital Improvement Plan	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, City Council	Drought Contingency Plan	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
	Planning Director, City Council	Natural Resource Conservation Plan	Annually	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the City of Allen Hazard Mitigation Planning Committee considers this HazMAP, including development and maintenance, to be the primary vehicle to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c) (4) (iii))

As stated in requirement § 201.6(c) (4) (iii) the plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committees will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex C: The City of Anna

1. Introduction



This annex was prepared in 2021 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan. The City of Anna participated on the Collin County HazMAP Hazard Mitigation Planning Team (HMPT). This is a new hazard mitigation plan and the first to be submitted to FEMA for the City of Anna. In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete hazard mitigation planning tool for the City of Anna. It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While the City of Anna has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped City officials to recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and online.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. Table 2.1 outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and Demographics
Regional Hazard Assessment Tool	Hazard Occurrences
National Climatic Data Center (NCDC)	Hazard Occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Wildland/Urban Interface

National Inventory of Dams	Dam Information
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Planning Committee

This Hazard Mitigation Action Plan was developed by the City of Anna Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and the Collin County HMPT. An Anna planning committee representative participated on the county HMPT, with local committee efforts led by the fire chief.

The planning committee was assembled with several representatives including the Anna city manager; police chief; fire chief; finance, public works and planning directors; and the general public. Collin County acted as the plan development consultant providing hazard mitigation planning services. Table 2.2 provides a list of the primary representatives on the Anna planning committee.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
Fire Department	Fire Chief/EMC	Plan Development
Planning Department	Planning Director	Plan Development
Finance Department	Finance Director	Plan Development
Public Works Department	Public Works Director/Floodplain Manager	Plan Development
Police Department	Police Chief	Plan Development
City Management	City Manager	Plan Development

Collin County served as the coordinator and lead agency for all jurisdictions, including the unincorporated areas of Collin County, by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the cities and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.

- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders emailed and involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Anna Independent School District	Executive Director	Review of plan
American Medical Response	Collin County Supervisor	Review of plan
Atmos Energy	District Representative	Review of plan
TXU Energy	District Representative	Review of plan
Grayson-Collin Electric Cooperative	Area Representative	Review of plan

Subsequent to the State of Texas and FEMA approval of the plan, each jurisdiction above is committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Collin County and included all jurisdiction's participation:

- Collin County HazMAP Kickoff Meeting – August 12, 2020
- Collin County HazMAP Planning Meeting – Week of 11/05/2020
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022 at 9AM

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.
- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The planning committee for the City of Anna identified several natural hazards and man-made hazards that could affect the city. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for Collin County and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
		Level	Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for the City of Anna

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	1	1	2	1	1.25
Drought	3	0	1	3	1.45
Earthquake	0	1	0	1	0.45
Expansive Soils	2	0	0	1	0.7
Extreme Heat	1	1	0	2	0.85
Flooding	1	1	0	0	0.65
Hail	2	0	0	1	0.7
High Winds	2	1	1	1	1.3
Lightning	1	0	1	0	0.55
Tornado	2	1	2	1	1.55
Wildfire	1	1	1	1	1
Winter Storms	2	0	2	3	1.4

The conclusions drawn from the hazard profiling process for the City of Anna resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in the City of Anna.

Table 3.3 Hazard Rankings for the City of Anna

High Risk (PRI 2 - 3)	
Moderate Risk (PRI 1.01 -1.9)	Tornado Drought High Winds Winter Storms Dam Failure
Low Risk (PRI 0.50 – 1)	Extreme Heat Expansive Soils Hail Flooding Lightning Wildfire
Negligible to No Risk (PRI 0 – 0.49)	Earthquake

Changes in Development and Priorities (Requirement §201.6(d) (3))

Our jurisdiction is in one of the fastest growing areas of the nation, hence development has increased and will continue to increase our vulnerability to hazards that may impact us.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability The City of Anna faces with each hazard. The hazards identified in the main plan are all addressed in this annex; therefore, the natural hazards rated negligible to no risk are included, described, and considered for mitigation in this plan.

Dam and Levee Failure While there are no dams or levees in the City of Anna, there are dams near the city in unincorporated Collin County. Population and infrastructure would be negatively affected by dam failure. As a participant in the county plan inundation studies will be considered.

Drought Although droughts happen often in the City of Anna their impact has been negligible, the risk is considered to be moderate. Drought has the potential to impact the entire planning area equally, all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of the city are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma, Lake Tawakoni, Lake Fork, Woodbine Aquifer and the Trinity Aquifer are water sources for the City of Anna and are vulnerable to drought. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake Even though earthquakes were identified as having negligible to no risk to the City of Anna they still have the potential to occur anywhere in the geographic planning area. Therefore, all geographic areas are potentially vulnerable. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

Expansive Soils The City of Anna is vulnerable to this hazard; however, its impact on infrastructure is projected to be minor. All property has the potential to be affected by expansive soils, especially those constructed under older building codes.

Extreme Heat The City of Anna has experienced rolling blackouts due to extreme heat through the years. Extreme heat generally affects the entire population, but it is especially dangerous to the homeless, elderly, the very young, those without air conditioning, and those who require refrigerated medications.

Flooding When flash flooding occurs, roads in low lying areas need to be closed. The location of the storm determines which areas require closure however, typical road closures due to flooding occur on Rosamond and Victoria Falls.

Hail All geographic areas, property, and populations of the City of Anna have the potential to be vulnerable to hail. Exposed populations, manufactured homes, and older properties are most vulnerable.

High Winds All geographic areas, property, and populations of the City of Anna have the potential to be vulnerable to high winds, manufactured homes and exposed populations are most vulnerable.

Lightning The City of Anna has experienced lightning strikes in the past, including one that damaged electrical equipment in the fire station. All property and populations have are potentially vulnerable to lightning. Exposed populations and property without lightning protection are most vulnerable.

Tornado All geographic areas and populations of the City of Anna have the potential to be vulnerable to tornados. Exposed populations, manufactured homes, and older properties are most vulnerable.

Wildland Fire 39.81% of the City of Anna's population lives in the Wildland Urban Interface, but wildfire in the City of Anna is a moderate vulnerability due to the well managed and readily available resources for response. According to the Texas A&M Forest Service the majority of the WUI is in the low threat area location in the middle of the city and the east and west sides of the city are in the moderate threat area.

Winter Storms All geographic areas of the City of Anna have the potential to be vulnerable to winter storms. These winter storms have the potential to make roads impassable for days. Residents may be confined to their homes due to the storm and may be without basic services, such as water and electricity, for an extended period of time.

Identification of Assets and Vulnerability Assessment

An inventory of the City of Anna's geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population:** Includes the number of people residing in Collin County as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property:** Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities:** Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities:** Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure:** Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the 2020 NCTCOG Population Predictions, the total population of City of Anna in 2020 was 16,945 people, with 5,770 households. The count breakdown by municipal jurisdiction is provided in Table 3.4.

Table 3.4. Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total	Population Density (Sq. Mile)	Household	% of County Total	Household Density (Sq. Mile)
City of Anna	16,945	1.44%	983.05	5,555	1.44%	346.15

Source: US Census Bureau & Collin County Appraisal District

**Includes totals from incorporated jurisdictions not participating in the plan

Table 3.5 summarizes population counts and population change (absolute and percent predictions for the City of Anna).

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
City of Anna	8,249	13,690	15,010	1,320	9.6%

Source: 2020 NCTCOG Population Predictions

Property

There are an estimated 8,030 parcels in the City of Anna, with an estimated \$1,147,264,604 in total assessed value of, *Table 3.6* lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
City of Anna	8,030	0.94%	\$1,147,264,604

Source: Collin County Appraisal District

Emergency Facilities

There are two identified emergency facilities in the City of Anna, including one fire station, one police station, and one free standing ER facility, but no hospitals]. *Table 3.7* presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
City of Anna	1	1	0

Source: City Data

Critical Facilities

There are six critical facilities, which are considered non-emergency in the City of Anna. The critical facilities include five schools and one historical property site (*Table 3.8*).

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
City of Anna	5	1

Source: City and County Data

Critical Infrastructure

There are 10 identified critical infrastructure facilities in the City of Anna, including one natural gas facility, one water treatment facility, one wastewater treatment facilities, and three railway/highway bridges (*Table 3.9*).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
City of Anna	0	1	1	5	0	3

Source: City/County Data

Methodology

Based on the type of information available for analysis, Collin County's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for Collin County, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.10* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail	X		
High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		

Winter Storms		X	
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Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) no recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Anna are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the City of Anna are expected mostly during water shortages, financially unknown due to lack of accurate reporting.
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the City of Anna. The City of Anna and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas and the improved property in the City of Anna is not vulnerable to this hazard.
Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the emergency facilities in the City of Anna are not vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the critical facilities in the City of Anna are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI) there is no impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in the City of Anna.

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. Approximately 147, based on parcels within or that intersect the floodplain.
Improved Property	Though there have been two (2) recorded flood events in the City of Anna, property losses are expected but financially unknown due to lack of accurate reporting. No crop losses are expected or recorded county-wide. Approximately 34 parcels with an estimated 2020 value of \$6,549,778 are located in the 100-year flood plain. In addition, 271 parcels, with a value of \$63,346,653 are within or in some way intersect the 100 year floodplain.
Emergency Facilities	Emergency facilities do not have the potential to be as risk in the 100-year storm event.
Critical Facilities	One critical facility has the potential to be at risk in the 100-year storm event.
Critical Infrastructure	Critical Infrastructure have the potential to be as risk in the 100-year storm event.

Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to National Centers for Environmental Information (NCEI), a loss of \$285.71 per year however these values are underestimated due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data for City of Anna indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in City of Anna are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in City of Anna are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in City of Anna are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Climatic Data Center (NCDC), there are two (2) recorded fatalities and no recorded injuries from high wind events. All the population of City of Anna are vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Anna are expected at \$1,421.43 per year however these values are underestimated due to lack of

	accurate reporting. No crop losses resulted from this hazard in City of Anna.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in City of Anna are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in City of Anna are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in City of Anna are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), lightning events can be expected to cause no deaths and no injuries in Collin County. All the population of City of Anna is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Anna are expected at \$2,083.33 per year however these values are underestimated due to lack of accurate reporting. No crop losses resulted from this hazard in City of Anna.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in City of Anna are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in City of Anna are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in City of Anna are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been 6 recorded injuries and 2 fatalities from tornado events in the City of Anna. All the population of City of Anna is exposed and vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), an average loss of \$14,714.29 per year in property losses is expected to result from tornado events however these values are underestimated due to lack of accurate reporting. No crop losses are expected from this hazard in the City of Anna.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in the City of Anna are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the City of Anna are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the City of Anna are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 39.81% of the City of Anna is vulnerable to wildfires
Improved Property	Based on historical data, annual financial losses expected from property loss due to wildfires are unknown but unknown due to lack of accurate reporting; therefore, percentage of the overall property improvement values across the City of Anna are also unknown.
Emergency Facilities	Based on geographic information there are zero (0) fire stations at risk from wildfire events.

Critical Facilities	Based on geographic information there are no schools at risk from wildfire events.
Critical Infrastructure	Based on geographic information there are zero (0) bridges, zero (0) dams, zero (0) wastewater treatment facility, and zero (0) water treatment facility at risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the City of Anna. All the population of the City of Anna are exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Anna are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the City of Anna.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in City of Anna are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in City of Anna are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in City of Anna are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serve as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the City of Anna considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
City of Anna	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	?	100%
Average % Yes Capabilities – 100%															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency Manager	Grant writers	% Yes per Jurisdiction
City of Anna	Y	Y	Y	Y	N	Y	Y	N	Y	N	70%
Average % Yes Capabilities – 70%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes per Jurisdiction
City of Anna	Y	Y	Y	Y	Y	Y	Y	N	N	?	70%
Average % Yes Capabilities – 70%											
Y- Yes N- No ?- Don't Know											

To quantify the City of Anna's legal and regulatory, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, the city of Anna has 100% of identified legal and regulatory capabilities, 70% of identified administrative and technical capabilities, and 70% of identified fiscal capabilities.

Table 4.2 Administrative and Technical Capability Summary

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
The City of Anna	City Manager	The city council, including the mayor, mayor pro-tem, and council members, along with the city manager, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. As the governing body, the Ability to implement, approve, and expand mitigation actions and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2016 HazMAP, the City of Anna Hazard Mitigation Planning Committee developed mitigation strategies for the plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis, economic considerations were weighed for each action. Priority rankings are classified as indicated in the table below. The STAPLEE was used for the 2016 Plan along with the 2021 Update.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Anna Action Items: Deferred from 2016 Plan

City of Anna Action Item	Develop and implement a comprehensive public education program, including hazard mitigation activities.
Hazard(s) Addressed	Dam Failure, Drought, High Winds, Tornado, Wildfire, Winter Storm, Expansive Soil, Extreme Heat, Hail, Lightning, Flooding, Earthquake
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken, can make existing building safer, stronger and less vulnerable to damages through retrofits and other actions.
Effect on New Buildings	Depending on mitigation actions taken, can make new building safer, stronger and less vulnerable to damages.
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	This public education program would be based on the hazards that the City of Anna identified as being vulnerable to. The program would use a combination of distributed literature, social media, and civic presentations to educate residents on natural hazards and promote hazard mitigation.

Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021 Plan
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City of Anna Action Item	Establish centers for vulnerable residents to go for relief during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	3-C
Priority	Medium
Estimated Cost	Current staffing project time/resources
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate space and resources.
Effect on New Buildings	May entail enhanced construction materials.
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling and heating shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold.
Status	Deferred – will be included in 2021 Plan

City of Anna Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	1-3 years
Effect on Old Buildings	Enhance safety of existing residential structures.
Effect on New Buildings	Enhance safety of new residential structures.
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	This program gives rebates to residents who purchase and install safe rooms in their homes or on their properties to protect against severe weather.
Status	Will be included in 2021, however, some residents were able to obtain funds through the NCTCOG Saferoom Rebate Program

City of Anna Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Dam Failure, High Winds, Tornado, Wildfire, Hail, Lightning, Flooding
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$25,000 per siren, number of sirens TBD
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1—2 years
Effect on Old Buildings	May entail adding a siren tower to existing buildings.
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in keeping citizens that are outdoors notified of hazards.
Discussion	This project will expand the City of Anna's siren coverage to new areas of development not currently protect by sirens.
Status	Cost prohibitive at this time and requires significant maintenance. Not as an effective tool to notify the public as in the past. There are many other tools that are more effective today.

City of Anna Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones.
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones.
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	The City no longer has plans to undertake this action item.

City of Anna Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$5,000

Potential Funding Sources	TFS Grants
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	2-5 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire.
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire.
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify all structures and infrastructures that would be impacted by a potential wildfire.
Status	Deferred – will be included in 2021 Plan. This will be included in the upcoming Community Risk Assessment study.

City of Anna Action Item	Develop a drought contingency plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results may entail retrofits for low-flow plumbing.
Effect on New Buildings	Results may require new codes for low-flow plumbing and foundations.
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on the stages of drought. Plan would include strategies for soil movement abatement depending on drought stage.
Status	Plan developed and will be continued to be modified updated to meet the City's needs

City of Anna Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years

Effect on Old Buildings	Results could define required retrofits or additions to reduce vulnerability to earthquakes.
Effect on New Buildings	Results could require updated codes for new construction to reduce vulnerability to earthquakes.
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	No longer a needed action item.

City of Anna Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils.
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

City of Anna Action Item	Purchase and distribute NOAA Weather Radios to vulnerable residents.
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on any mitigation actions taken on structures, can make existing building safer, stronger and less vulnerable to damages.
Effect on New Buildings	Depending on any mitigation actions taken on structures, can make new building safer, stronger and less vulnerable to damages.

Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information.
Status	No longer a viable option, use Hyper-Reach to notify the community

City of Anna Action Items: New

City of Anna Action Item	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation of
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Dam Failure, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken, can make existing building safer, stronger and less vulnerable to damages through retrofits and other actions.
Effect on New Buildings	Depending on mitigation actions taken, can make new building safer, stronger and less vulnerable to damages.
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.

City of Anna Action Item	Establish centers for vulnerable residents to go for relief during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	3-C
Priority	Medium
Estimated Cost	Current staffing project time/resources
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate space and resources.
Effect on New Buildings	May entail enhanced construction materials.

Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling and heating shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold.

City of Anna Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	1-3 years
Effect on Old Buildings	Enhance safety of existing residential structures.
Effect on New Buildings	Enhance safety of new residential structures.
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	This program gives rebates to residents who purchase and install safe rooms in their homes or on their properties to protect against severe weather.

City of Anna Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	2-5 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire.
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire.
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify all structures and infrastructures that would be impacted by a potential wildfire.

City of Anna Action Item	Maintain and enhance the City's drought contingency plan.
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Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results may entail retrofits for low-flow plumbing.
Effect on New Buildings	Results may require new codes for low-flow plumbing and foundations.
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Utilize existing plan for conserving water based on the stages of drought. Plan includes strategies for soil movement abatement depending on drought stage. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

City of Anna Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils.
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

City of Anna Action Item	Purchase and utilize mobile back-up generator
Hazard(s) Addressed	Flooding, Tornado, Earthquake, Extreme Heat, Lightning, Wildfire, Winter Storms, Dam Failure, Hail, High Winds
Goal/Objective	2-D
Priority	High

Estimated Cost	\$8,000 - \$15,000
Potential Funding Sources	Local Funding
Potential Matching Sources	Local Funding
Lead Department	Public Works, OEM
Implementation Schedule	1-2 years
Effect on Old Buildings	Some buildings will need to be retrofit with ability to connect with generator
Effect on New Buildings	Buildings will need to be planned with the ability to connect to generator
Cost Effectiveness	Backup generator will prevent loss of power and data to critical government buildings
Discussion	Introduction of a mobile back-up generator will allow the City of Anna or other critical facilities to function as close to normal as possible in the event of a massive power loss.

City of Anna Action Item	Analyze needs, develop and implement water conservation measures for new populations
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2-C
Priority	High
Estimated Cost	\$2,000 - \$5,000
Potential Funding Sources	Local funding
Potential Matching Sources	Local grants, citizen match
Lead Department	Public Works, OEM
Implementation Schedule	2-3 years
Effect on Old Buildings	New constraints will be placed on water usage without compromising soil integrity.
Effect on New Buildings	New constraints will be placed on water usage without compromising soil integrity.
Cost Effectiveness	Expanded water and soil consistency standards will help the City of Anna plan for a boost in infrastructure and population and help maintain normal water levels
Discussion	As the City of Anna grows, water conservation measures will encompass new infrastructure and residential/commercial areas. This plan implements conservation efforts that also maintain soil consistency, mitigating damage from expansive soils.

National Flood Insurance Program (NFIP) Compliance

The City of Anna participates in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 Anna NFIP Compliance

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
480132#	ANNA, CITY OF	COLLIN COUNTY	8/9/1974	4/2/1991	06/02/09(M)	11/19/1996	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Compliance

Once the community applies for the NFIP, FEMA arranges for a study of the community to determine base flood elevations and flood risk zones. Consultation with the community occurs at the start of and during the study, and those communities with minimal flood risk are converted to the Regular Program without a study.

FEMA provides the studied community with a Flood Insurance Rate Map delineating base flood elevations and flood risk zones. The community is then given 6 months to adopt base flood elevations in its local zoning and building code ordinances. Once the community adopts more stringent ordinances, FEMA converts the community to the NFIP's Regular Program. FEMA then authorizes the sale of additional flood insurance in the community up to the Regular Program limits. The community must implement and enforce the adopted floodplain management measures. FEMA provides periodic community assistance visits with local officials to provide technical assistance regarding complying with NFIP floodplain management requirements.

The purchase of flood insurance is mandatory as a condition of receipt of federal or federally-related financial assistance for acquisition and/or construction of buildings in SFHAs of any participating community. Those communities notified as flood-prone which do not apply for participation in the NFIP within 1 year of notification are ineligible for federal or federally-related financial assistance for acquisition, construction, or reconstruction of insurable buildings in the SFHA.

Jurisdiction Actions

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 Anna NIFP Activity

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
The City of Anna	City Engineer	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits shall be presented to the Floodplain Administrator. The City of Anna requires 2 feet of freeboard above the base flood elevation for the top of bottom floor on residential structures and non-residential structures that will be built on properties created or platted after the effective date of the Flood Damage Prevention Order	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval.
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Participate with FEMA in identifying Special Flood Hazard Areas for future FIRM maps	City of Anna participates in Risk Assessment, Mapping and Planning Partners (RAMPP) meetings held by FEMA and/or their contractors to better identify areas that are flood prone that are not shown on current Flood Insurance Rate Maps.	
		Future Mitigation Projects	City of Anna will continue to monitor for new areas of flooding that have not been previously identified for mitigation. The City is also considering the adoption of a stormwater utility to fund future mitigation projects.	

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), the City of Anna has developed a plan maintenance process which is described in the following paragraphs. Collin County and the participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the City of Anna, the county, and the city council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan will be implemented by participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, the City of Anna will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented in table 7.1:

Table 7.1 Plan Maintenance Timeline

Personnel	Action	Time
Fire Chief/EMC	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting them for approval. The plans will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when

developing the mitigation actions for this plan. The HMPT and planning committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives and actions outlined in this plan will be integrated into these existing mechanisms as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
City of Anna	City Council	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Emergency Management Coordinator	Emergency Action Plan updates	Every five years	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	Planning Director, City Manager	Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, City Council	Drought Contingency plans	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education
	Planning Director, City Council	Natural Resource Conservation Plan	Annually	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the City of Anna Hazard Mitigation Planning Committee considers this HazMAP, including development and maintenance, to be the primary vehicles to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committees will continue meeting on a regular basis to ensure the successful

implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex D: City of Blue Ridge



1. Introduction

This annex was prepared in 2020 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan (HazMAP). The City of Blue Ridge participated on the Collin County HazMAP Planning Team (HMPT). In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete hazard mitigation planning tool for the City of Blue Ridge. It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While the City of Blue Ridge has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Blue Ridge officials recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and online.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), the City of Blue Ridge developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data were gathered through numerous sources. Table 2.1 outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Centers for Environmental Information (NCEI)	Hazard occurrences

Source	Data
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Wildland/Urban Interface
National Inventory of Dams	Dam Information

Planning Committee

This Hazard Mitigation Action Plan was developed by the City of Blue Ridge Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the Collin County HMPT. The efforts of the planning committee were led by the Mayor.

The Collin County HMPT was assembled in November 2020 with representatives from participating county jurisdiction planning committees, including mayors, police chiefs, fire chiefs, and the general public. Collin County acted as the plan development consultant providing hazard mitigation planning services. Table 2.2 provides a list of the primary representative on the Blue Ridge planning committee.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
City Council	Mayor	Plan Development
City Council	Council Members	Plan Development
Volunteer Department	Fire Chief	Plan Development
Public Works Department	Director	Plan Development

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.

- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders emailed and involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Blue Ridge Independent School District	School Board	Review of plan
Atmos Energy	Manager of Public Affairs	Review of plan

Subsequent to the State of Texas and FEMA approval of the plan, each organization above is committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were hosted by Collin County:

- Collin County Hazard Mitigation Committee Meeting – November 11, 2020
- Collin County and Blue Ridge Meeting – November 12, 2020
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022 at 9AM

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and local planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.
- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee for the City of Blue Ridge identified several natural hazards and man-made hazards that could affect the unincorporated areas of the County. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 Collin County HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for the City of Blue Ridge and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
		Level	Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3

35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for the City of Blue Ridge

The conclusions drawn from the hazard profiling process for the City of Blue Ridge resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in the City of Blue Ridge.

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	0	0	0	0
Drought	3	1	1	2	1.7
Earthquake	0	1	0	1	0.45
Expansive Soils	2	0	0	1	0.7
Extreme Heat	3	1	0	0	1.25

Flooding	2	1	1	1	1.3
Hail	2	0	0	1	0.7
High Winds	3	1	2	2	1.95
Lightning	2	0	1	0	0.85
Tornado	2	3	3	2	2.6
Wildfire	3	1	2	1	1.85
Winter Storms	1	2	3	2	1.95

Table 3.3 Hazard Rankings for the City of Blue Ridge

High Risk (PRI 2 - 3)	Tornado
Moderate Risk (PRI 1.01 -1.95)	High Winds Winter Storm Wildfire Drought Flooding Extreme Heat
Low Risk (PRI 0.50 – 1)	Lightning Hail Expansive Soil
Negligible to No Risk (PRI 0 – 0.49)	Dam Failure Earthquake

Changes in Development and Priorities (Requirement §201.6(d) (3))

Our jurisdiction is in one of the fastest growing areas of the nation, hence development has increased and will continue to increase our vulnerability to hazards that may impact us.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the City of Blue Ridge faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation.

Dam and Levee Failure The City of Blue Ridge is not subject to dam failure because no Dams are located inside the city limits. The city is not knowingly vulnerable to a Dam failure that occurs outside the city limits, but as a participant in the county plan inundation studies will be considered.

Drought Drought has the potential to impact the entire planning area equally, all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of the City of Blue Ridge are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. The Woodbine Aquifer is the water sources for the city and is vulnerable to drought. In turn, the city's

population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake All geographic areas of Blue Ridge have the potential to be vulnerable to earthquake. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

Expansive Soils The City of Blue Ridge is vulnerable to of expansive soil. All property has the potential to be vulnerable to expansive soils, especially those constructed under older building codes. Road failures are also a common occurrence from this hazard.

Extreme Heat We have experienced rolling blackouts due to extreme heat through the years. Extreme heat generally affects the entire population, but it is especially dangerous to the homeless, elderly, the very young, those without air conditioning, and those who require refrigerated medications

Flooding The intersection of North Church Street and School Street frequently floods during periods of heavy rainfall and must be closed.

Hail All geographic areas of Blue Ridge have the potential to be vulnerable to hail. Exposed populations, manufactured homes, and older properties are most vulnerable.

High Winds Because Blue Ridge is located in a rural area with many trees, high winds have the potential to block roads, disrupt power, and damage homes.

Lightning All geographic areas, property, and populations in Josephine have the potential to be vulnerable to lightning. Lightning is responsible for at least one (1) residential structure fire over the past ten (10) years resulting in a total loss for the residence. Property without lightning protection and exposed populations are most vulnerable.

Tornado All geographic areas of Blue Ridge have the potential to be vulnerable to tornado. Exposed populations, manufactured homes, and older properties are most vulnerable.

Wildland Fire According to the Texas Forest Service, 89.22% of the population of the City of Blue Ridge is located in the Wildland/Urban Interface. The City of Blue Ridge is predominately rural with a significant amount of wildland-urban area interface. Due to large fuel loads, there is significant risk in Blue Ridge for a wildland fire. There have been two wildland fires in the city in the last year; therefore, this hazard has the potential to harm the City of Blue Ridge.

Winter Storms Winter storms pose a threat to the City of Blue Ridge. These winter storms have the potential to make roads impassable for days. Residents may be confined to their homes due to the storm and may be without basic services, such as water and electricity, for an extended period of time. The entire city is vulnerable to this hazard mainly due to its isolation from a major city.

Identification of Assets and Vulnerability Assessment

An inventory of Collin County geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population:** Includes the number of people residing in Collin County jurisdictions as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property:** Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities:** Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities:** Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure:** Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the Texas Association of Counties Population Estimates, the total estimated population of Blue Ridge in 2020 was 1023 people, with 360 households. The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4. Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total**	Population Density (Sq. Mile)	Household	% of County Total**	Household Density (Sq. Mile)
<i>Blue Ridge</i>	1023	0.09%	612.57	360	0.09%	215.70

Source: Texas Association of Counties Population Estimates & Collin County Appraisal District

***Includes totals from incorporated jurisdictions not participating in the plan*

Table 3.5 summarizes population counts and population change (absolute and percent predications for the City of Blue Ridge).

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
Blue Ridge	799	916	926	10	1.1%

Source: Texas Association of Counties Population Estimates

:- Data Currently Unavailable

Property

There are an estimated 598 parcels in the City of Blue Ridge, with an estimated \$51,331,247 in total assessed value of, Table 3.6 lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
Blue Ridge	598	0.19%	\$51,331,247

Source: Collin County Appraisal District

¹ Includes public buildings (residential, commercial, industrial, agricultural, religion, government, education)

Emergency Facilities

There is one identified emergency facility in the City of Blue Ridge, including one fire station. Table 3.7 presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
Blue Ridge	1	0	0

Source: County Data and Regional Hazard Assessment Tool

Critical Facilities

There are 5 critical facilities, which are considered non-emergency in the City of Blue Ridge. The critical facilities include three schools and zero historical property sites (Table 3.8). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
Blue Ridge	3	0

Source: Local jurisdictions

Critical Infrastructure

There are 2 identified critical infrastructure facilities in the City of Blue Ridge, including one wastewater treatment facility and one potable water treatment facility (*Table 3.9*).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
Blue Ridge	0	0	1	1	0	0

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, The City of Blue Ridge's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for Collin County, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.10* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail	X		
High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) no recorded injuries or fatalities have been recorded for drought events in the City of Blue Ridge. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Blue Ridge are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the City of Blue Ridge are expected mostly during water shortages, financially unknown due to lack of accurate reporting.
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the City of Blue Ridge. The City of Blue Ridge and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas and the improved property in the City of Blue Ridge is not vulnerable to this hazard.
Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings and the emergency facilities in the City of Blue Ridge are not vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the critical facilities in the City of Blue Ridge are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI) there is no impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in the City of Blue Ridge

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. Approximately 18 residential parcels in the City of Blue Ridge are located within the 100-year floodplain.
Improved Property	Though there have been zero (0) recorded flood events in the City of Blue Ridge, property losses are unknown due to lack of accurate reporting. No crop losses are expected or recorded county-wide. Approximately \$539,608 of the total assessed value is at risk from the 100-year storm event.
Emergency Facilities	Emergency facilities have the potential to be at risk in the 100-year storm event.
Critical Facilities	Critical facilities have the potential to be at risk in the 100-year storm event.
Critical Infrastructure	0% of railways/highways and bridges, 0% of dams, 100% of water treatment works, and 100% waste water treatment facilities are at risk from the 100-year storm event.

Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events in the City of Blue Ridge. There are no personal losses expected from hailstorm events.
Improved Property	According to National Centers for Environmental Information (NCEI), a loss of \$228.57 per year however these values are underestimated due to lack of accurate reporting. All improved property is vulnerable to this hazard in the City of Blue Ridge. Although some crops are susceptible to hail hazards, available historical data for the City of Blue Ridge indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in the City of Blue Ridge are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the City of Blue Ridge are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in the City of Blue Ridge are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events the City of Blue Ridge. All the population of the City of Blue Ridge is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Blue Ridge are expected at \$42.86 per year however these values are underestimated due to lack of accurate reporting. No crop losses resulted from this hazard in the City of Blue Ridge.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in the City of Blue Ridge are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the City of Blue Ridge are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in the City of Blue Ridge are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), lightning events can be expected to cause no deaths or injuries in the City of Blue Ridge. All the population of the City of Blue Ridge is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Blue Ridge are expected at \$833.33 per year however these values are underestimated due to lack of accurate reporting.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in the City of Blue Ridge are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the City of Blue Ridge are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in the City of Blue Ridge are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in the City of Blue Ridge. All the population of the City of Blue Ridge is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Blue Ridge are expected but unknown due to lack of accurate reporting. No crop losses are expected from this hazard in the City of Blue Ridge.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in the City of Blue Ridge are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the City of Blue Ridge are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the City of Blue Ridge are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 89.22% of the City of Blue Ridge is vulnerable to wildfires. There have been no recorded injuries or fatalities due to wildfires.
Improved Property	Based on historical data, annual financial losses expected from property loss due to wildfires are unknown but unknown due to lack of accurate reporting; therefore, percentage of the overall property improvement values across the City of Blue Ridge are also unknown.
Emergency Facilities	Based on geographic information 1 fire stations at moderate risk from wildfire events.
Critical Facilities	Based on geographic information 5 schools at moderate risk from wildfire events.
Critical Infrastructure	Based on geographic information there are 0 bridges, 0 dams, 1 wastewater treatment facility, and 0 water treatment facility at moderate risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the City of Blue Ridge. All the population of The City of Blue Ridge are exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Blue Ridge are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the City of Blue Ridge.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in the City of Blue Ridge are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in the City of Blue Ridge are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in the City of Blue Ridge are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serves as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the City of Blue Ridge considered not only its level of hazard risk but also the existing capability to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
<i>City of Blue Ridge</i>	Y	Y	Y	N	N	Y	Y	Y	N	Y	Y	N	N	N	57%
Average % Yes Capabilities – 57%															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers (used as needed – not on staff)	% Yes
City of Blue Ridge	Y	Y	Y	N	N	Y	Y	N	N	Y	60%
Average % Yes Capabilities – 60%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes
City of Blue Ridge	Y	N	Y	Y	Y	Y	N	N	N	N	50%
Average % Yes Capabilities – 50%											
Y- Yes N- No ?- Don't Know											

To quantify City of Blue Ridge legal and regulatory, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and

strong (70-100%). Questionnaire responses indicated that on average, the city of Blue Ridge has 50% of identified legal and regulatory capabilities, 50% of identified administrative and technical capabilities, and 10% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
City of Blue Ridge	City Secretary	The city council, including the mayor, mayor pro-tem, and council members, along with the city manager, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. As the governing body, the ability to implement and approve mitigation actions and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2016 HazMAP, the City of Blue Ridge Hazard Mitigation Planning Committee developed mitigation strategies for the Plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones within City of Blue Ridge.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis, economic considerations were weighed for each action. Priority rankings are classified as indicated in the table below. The STAPLEE was used for the 2016 Plan along with the 2021 Update.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Blue Ridge Action Items: Deferred from 2016 Plan

City of Blue Ridge Action Item	Develop and implement a comprehensive public education program, including resources to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, High Winds, Winter Storm, Wildfire, Drought, Hail, Flooding, Lightning, Extreme Heat, Expansive Soils, Dam Failure, Earthquake
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken on structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken on structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	Develop and distribute, via social media, information about mitigating the hazards identified and what actions can be taken in this annex
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

City of Blue Ridge Action Item	Develop and implement an extreme temperature program that establishes centers for vulnerable residents.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	3-C
Priority	Medium
Estimated Cost	Current staffing project time/resources
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
Status	Deferred – will be included in 2021 Plan

City of Blue Ridge Action Item	Develop and Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Winds, Tornado, Hail
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	Enhance safety of existing residential structures through retrofits
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	
Status	Deferred – Residents did received funding through the NCTCOG Saferoom Rebate Program. The NCTCOG Program has been suspended

City of Blue Ridge Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	High Winds, Tornado, Wildfire, Hail, Lightning, Flooding
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$25,000
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in keeping citizens that are outdoors notified of hazards.
Discussion	The City of Blue Ridge will expand its current siren program into newly developed areas of the jurisdiction that are currently outside of siren coverage.
Status	Deferred – will be included in 2021 Plan

City of Blue Ridge Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

City of Blue Ridge Action Item	Develop and implement a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	2-A
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	2-5 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify all structures and infrastructures that would be impacted by a potential wildfire and implement mitigation actions to reduce vulnerability.
Status	Deferred – will be included in 2021 Plan

City of Blue Ridge Action Item	Develop and implement a drought contingency plan that will implement water mandatory water conservation measures.
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	Results may require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on the stages of drought. Plan would include strategies for soil movement abatement depending on drought stage and mandatory water restrictions for water conservation.

Status	Completed and adopted on 4/02/2019
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City of Blue Ridge Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results would help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results would help identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Blue Ridge Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.

Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

City of Blue Ridge Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken on structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken on structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information
Status	Deferred – will be included in 2021 Plan

City of Blue Ridge Action Items: New

City of Blue Ridge Action Item	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation of each identified hazard..
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC

Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken on structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken on structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation

City of Blue Ridge Action Item	Develop and implement an extreme temperature program that establishes centers for vulnerable residents.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	3-C
Priority	Medium
Estimated Cost	Current staffing project time/resources
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold

City of Blue Ridge Action Item	Develop and Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Winds, Tornado, Hail
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC

Implementation Schedule	2-3 years
Effect on Old Buildings	Enhance safety of existing residential structures through retrofits
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	

City of Blue Ridge Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	High Winds, Tornado, Wildfire, Hail, Lightning, Flooding
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$25,000
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in keeping citizens that are outdoors notified of hazards.
Discussion	The City of Blue Ridge will expand its current siren program into newly developed areas of the jurisdiction that are currently outside of siren coverage. This action item would be specific to installation/placement of new OWS sirens in the jurisdiction.

City of Blue Ridge Action Item	Develop and implement a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	2-A
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	2-5 years

Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify all structures and infrastructures that would be impacted by a potential wildfire and implement mitigation actions to reduce vulnerability.

City of Blue Ridge Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results would help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results would help identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.

City of Blue Ridge Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years

Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

City of Blue Ridge Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken on structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken on structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information

City of Anna Action Item	Develop City's drought contingency plan.
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results may entail retrofits for low-flow plumbing.
Effect on New Buildings	Results may require new codes for low-flow plumbing and foundations.
Cost Effectiveness	Low cost for effective means of preserving water.

Discussion	Utilize existing plan for conserving water based on the stages of drought. Plan includes strategies for soil movement abatement depending on drought stage. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.
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National Flood Insurance Program (NFIP) Compliance

The City of Blue Ridge is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 Blue Ridge NFIP Compliance

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
481628#	BLUE RIDGE, TOWN OF	COLLIN COUNTY	-	04/02/1991	06/02/2009(M)	04/02/91	No

(M): No Elevation Determined - All Zone A, C and X

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 Blue Ridge NIFP Activity

Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
City Manager	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the Department of Environmental Health. City of Blue Ridge requires 2 feet of freeboard above the base flood elevation for the top of bottom floor on residential structures and non-residential structures that will be built on properties created or platted after the effective date of the Flood Damage Prevention Order	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood damage prevention order shall result in fines up to \$500 per violation plus court costs.
	Floodplain development permits	Permits are required for any new construction in a floodplain.	
	Participate with FEMA in identifying Special Flood Hazard Areas for future FIRM maps	City of Blue Ridge participates in Risk Assessment, Mapping and Planning Partners (RAMPP) meetings held by FEMA and/or their contractors to better identify areas that are flood prone that are not shown on current Flood Insurance Rate Maps.	
	Take action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning	City of Blue Ridge public works installs signs at low water crossings that indicate "When flooded turn around don't drown".	
	Future Mitigation Projects	City of Blue Ridge will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), the City of Blue Ridge has developed a plan maintenance process which is described in the following paragraphs. Collin County, along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the City of Blue Ridge, the county, and the city council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) will be implemented by participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, the City of Blue Ridge will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented table 7.1:

Table 7.1 Plan Maintenance Timeline

Personnel	Activity	Schedule
Fire Chief	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Likewise, each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submit same for approval by the state, FEMA and each local jurisdiction's governing body. The plan will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives and actions outlined in this plan will be integrated into these existing mechanisms as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
City of Blue Ridge	City manager, City Council	Budget Meetings.	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	City manager, Fire Chief	Emergency Action Plan updates	Once every five years	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	City manager, Director of Public Works	Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City manager, Planning director	Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	City manager, Director of Public Works	Drought Contingency plans	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education
	City manager, Planning Director	Natural Resource Conservation Plan	Annually	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the City of Blue Ridge Hazard Mitigation Planning Committee considers this

HazMAP, including development and maintenance, to be the primary vehicles to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committees will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex E: City of Celina



1. Introduction

This annex was prepared in 2020 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan. The City of Celina participated in the Collin County Hazard Mitigation Planning Team (HMPT). This is a new hazard mitigation plan and the first to be submitted to FEMA for the City of Celina. In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete hazard mitigation planning tool for the City of Celina. It contains capability

assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While Celina has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Celina officials to recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and online.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. Table 2.1 outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Climatic Data Center (NCDC)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Wildland/Urban Interface analysis
National Inventory of Dams	Dam Information

Planning Committee

This Hazard Mitigation Action Plan was developed by the City of Celina Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the Collin County HMPT.

The Collin County HMPT was assembled in November, 2020 with representatives from participating county jurisdiction planning committees, including mayors, police chiefs, fire chiefs, and the general public. Collin County acted as the plan development consultant providing hazard mitigation planning services. The efforts of the planning committees and the HMPT were led by the Collin County Assistant Emergency Management Coordinator.

Table 2.2 below provides a list of the primary representatives on the Celina planning committee.

Table 2.2 Hazard Mitigation Committee– Primary Representatives

Representing	Position	Role
City of Celina	Fire Chief	Plan development
City of Celina	Deputy Fire Chief	Plan development

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and

worked with Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders emailed and involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Fire Department	Fire chief/ Deputy Fire chief	Emergency Response Capabilities
Police Department	Police chief/Sergeant	Emergency Response Capabilities
City Engineering	City Engineer	Infrastructure Preparedness
Public Works	Public Works Director	Utilities Preparedness
City Planning	City Planner	Development Planning

Subsequent to the State of Texas and FEMA approval of the plan, each organization above is committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Collin County and included all jurisdiction's participation:

- Collin County HazMAP Kickoff Meeting – 11/05/2020
- City of Celina Hazard Mitigation Team Meeting – 12/3/2020
- City of Celina HazMAP Discussion/Update – 1/5/2021
- City of Celina Hazard Team Meeting – 12/4/2020
- Collin County Public Meeting – 11/2/2021 at 2PM
- Collin County Public Meeting 01/12/2022

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring

communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.

- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee for the City of Celina identified several natural hazards and man-made hazards that could affect the city. The committee decided to focus on the natural hazards identified in Chapter 3 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for Collin County and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
		Level	Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for City of Celina

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	2	0	1	0.8
Drought	3	0	0	3	1.2
Earthquake	0	0	0	0	0
Expansive Soils	3	0	0	1	1
Extreme Heat	3	1	0	3	1.55
Flooding	3	2	1	2	2.05
Hail	2	0	0	2	0.8
High Winds	2	0	0	3	0.9
Lightning	3	1	0	2	1.45
Tornado	2	2	3	2	2.25
Wildfire	1	1	1	3	1.2
Winter Storms	1	1	2	3	1.45

The conclusions drawn from the hazard profiling process for the City of Celina resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in the City of Celina.

Table 3.3 Hazard Rankings for City of Celina

High Risk (PRI 2 - 3)	Tornado Flooding
Moderate Risk (PRI 1.01 -1.9)	Extreme Heat Wildfire Winter Storms Lightning Drought
Low Risk (PRI 0.50 – 1)	Expansive Soils High Winds Dam Failure Hail
Negligible to No Risk (PRI 0 – 0.49)	Earthquake

Changes in Development and Priorities (Requirement §201.6(d) (3))

Our jurisdiction is in one of the fastest growing areas of the nation, hence development has increased and will continue to increase our vulnerability to hazards that may impact us.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the City of Celina faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation.

Dam and Levee Failure The City of Celina has identified one dam that poses a threat to the northern part of Preston Road. The dam is located and Kirk Ranch and could cause damage to Preston Road if it were to fail. The dam has a less than 1% probability to fail.

Drought The City of Celina is at moderate risk for a drought occurring. The city needs to enforce water conservation laws and continue to conserve and maintain the water supply. Drought has the potential to impact the entire planning area equally; all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of Celina are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. The Lake Ray Roberts-Lewisville-Grapevine reservoir system, Trinity Aquifer, and Woodbine Aquifer are water sources for the City of Celina and are vulnerable to drought. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake This hazard was identified as having negligible to no risk. All property and populations have the potential to be affected by earthquake. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

Expansive Soils Expansive soils are categorized as a high probability occurrence annually, but overall as low risk. However, it is unlikely that this hazard will cause any loss of life or severe property damage.

Extreme Heat Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air conditioning are most vulnerable.

Flooding The City of Celina is surrounded by large agricultural land mass with very few concrete structures. This lack of development keeps water from impacting a large percentage of property within the city. Historically, the City of Celina has responded to streets impacted by floodwater. Overall, the City of Celina has not had to deal with large amounts of property damage or life impacts because of flooding.

Hail All geographic areas and populations in the City of Celina have the potential to be vulnerable to hail. Exposed populations, manufactured homes, and older properties are most vulnerable.

High Winds All geographic areas in the city of Celina have the potential to be vulnerable to high winds. High wind events can cause debris on roadways which can endanger people's lives and property. Manufactured homes and exposed populations are most vulnerable.

Lightning All geographic areas and populations in the City of Celina have the potential to be vulnerable to lightning. Property without lightning protection and exposed populations are most vulnerable.

Tornado All geographic areas and populations in the City of Celina have the potential to be vulnerable to tornados. Exposed populations, manufactured homes, and older properties are most vulnerable.

Wildland Fire The City of Celina is less than 41.77% built-out with the remainder as maintained agricultural land. The projected buildout for the City of Celina is roughly 380,000 people. Due to a high concentration of fuel within the city limits of the City of Celina, wildfires have been considered a possible risk for the city. Wildfire poses a low life impact risk and property impact risk with a high spatial extent impact. In order to mitigate against this wildfire risk, agricultural land needs to remain well maintained in order to prevent the spread of fire. Structures and populations in the WUI are most vulnerable to wildfire. According to the Texas A&M Forest Service, 54%-of the City of Celina lives in the Wildland/Urban Interface.

Winter Storms The City of Celina has identified winter storms as the hazard that could cause the most interruption in daily life and business. A winter storm would have a large property impact as well as a spatial impact. In 2013, response by first responders was an issue because the departments did not have vehicles that could drive on ice safely. Loss of power and heat to critical buildings and infrastructure was also an issue.

Identification of Assets and Vulnerability Assessment

An inventory of Celina geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were

evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population:** Includes the number of people residing in Collin County jurisdictions as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property:** Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities:** Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities:** Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure:** Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the City of Celina the current in City population is 22,105 people as of December 1st 2020. The Service Area population (Light Farms included) is 27,607 people as of December 1st 2020.

According to the 2020 NCTCOG Population Estimates and the US Census Bureau, the total estimated population of the City of Celina in 2019 is 16,299 people, with 5,253 households. The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4. Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total**	Population Density (Sq. Mile)	Household	% of County Total**	Household Density (Sq. Mile)
City of Celina	27,607	1.31%	514.06	6,101	1.59%	181.00

Source: US Census Bureau &

**Includes totals from incorporated jurisdictions not participating in the plan

Table 3.5 summarizes population counts and population change (absolute and percent predications for the City of Celina).

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
City of Celina	6,028	13,090	17,680	4,590	35.06%

Source: 2020 NCTCOG Population Estimates

Property

There are an estimated 10,132 thousand parcels in the City of Celina, with an estimated \$1,588,281,438 in total assessed value of, *Table 3.6* lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
City of Celina	10,132	1.19%	\$1,588,281,438

Source: County Data and Regional Hazard Assessment Tool

¹ Includes public buildings (residential, commercial, industrial, agricultural, religion, government, education)

This also includes properties from Denton County. The % of County only reflects the Collin County portion of Celina and in relation to only Collin County.

Emergency Facilities

There are three identified emergency facilities in the City of Celina, including two fire stations and one police station. *Table 3.7* presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
City of Celina	2	1	0

Source: Celina GIS Dept

Critical Facilities

There are 8 critical facilities, which are considered non-emergency in the City of Celina. The critical facilities include 7 schools, and 1 historical properties. (*Table 3.8*). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
City of Celina	7	1

Source: Celina GIS Dept

1 High School – Celina ISD

1 Middle School – Celina ISD

3 Elementary Schools – Prosper ISD

2 Elementary Schools – Celina ISD

Critical Infrastructure

There are 6 identified critical infrastructure facilities in City of Celina, including 3 water treatment facilities, 1 wastewater treatment facility, 1 dam, and 1 bridge (*Table 3.9*).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
City of Celina	0	0	1	3	5	1

Source: Celina GIS Dept

4 Low Hazard Dam and 1 Unknown Hazard Dam within the City Limits

Methodology

Based on the type of information available for analysis, the City of Celina vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for the City of Celina, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.10* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	

Flooding	X		
Hail	X		
High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) 0 recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Celina are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the City of Celina are expected mostly during water shortages, financially unknown due to lack of accurate reporting.
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the City of Celina. The City of Celina and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas and the improved property in the City of Celina is not vulnerable to this hazard.
Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings and the emergency facilities in the City of Celina are not vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the critical facilities in the City of Celina are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI) there is no impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in the City of Celina

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero fatalities and injuries per year. Approximately 332 residential parcels in the City of Celina are located within the 100-year floodplain.
Improved Property	Though there have been six (6) recorded flood events in the City of Celina, property losses are at \$12,666.67 per year however these values are underestimated due to lack of accurate reporting. No crop losses are expected or recorded county-wide. Approximately \$27,779,401 of the total assessed value is at risk from the 100-year storm event.
Emergency Facilities	Emergency facilities have the potential to be as risk in the 100-year storm event.
Critical Facilities	Critical facilities have the potential to be as risk in the 100-year storm event.
Critical Infrastructure	Critical Infrastructure have the potential to be as risk in the 100-year storm event.

Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Celina are expected at \$7,714.29 per year however these values are underestimated due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data for the City of Celina indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in the City of Celina are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the City of Celina are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in the City of Celina are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events. All the population of the City of Celina is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Celina are expected at \$1,312.86 per year however these values are underestimated due to lack of accurate reporting. No crop losses resulted from this hazard in the City of Celina.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in the City of Celina are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the City of Celina are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in the City of Celina are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), lightning events can be expected to cause no deaths or injuries in The City of Celina. All the population of the City of Celina is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Celina are expected at \$1,041.67 per year however these values are underestimated due to lack of accurate reporting.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in the City of Celina are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the City of Celina are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in the City of Celina are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in the City of Celina. All the population of the City of Celina is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Celina are expected at \$428.57 per year however these values are underestimated due to lack of accurate reporting. No crop losses are expected from this hazard in the City of Celina.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in the City of Celina are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the City of Celina are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the City of Celina are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 41.77% of the City of Celina is vulnerable to wildfires. There have been no recorded injuries or fatalities due to wildfires.
Improved Property	Based on historical data, annual financial losses expected from property loss due to wildfires are unknown but unknown due to lack of accurate reporting; therefore, 41.77% percentage of the overall property improvement values across the City of Celina are also unknown.
Emergency Facilities	Based on geographic information there are 0 fire stations at risk from wildfire events.
Critical Facilities	Based on geographic information there are no schools at risk from wildfire events.
Critical Infrastructure	Based on geographic information there are 0 bridges, 0 dams, 0 wastewater treatment facility, and 0 water treatment facility at risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the City of Celina. All the population of City of Celina is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Celina are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in City of Celina.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in City of Celina are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in City of Celina are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in City of Celina are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serve as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the City of Celina considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
<i>City of Celina</i>	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	Y	N	71%
Average % Yes Capabilities – 71%															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes per Jurisdiction
City of Celina	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	90%
Average % Yes Capabilities – 90%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes per Jurisdiction
City of Celina	N	Y	Y	Y	Y	Y	Y	Y	N	N	70%
Average % Yes Capabilities – 70%											
Y- Yes N- No ?- Don't Know											

To quantify the city of Celina's legal and regulatory, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that, on average, the city of Celina has 71% of identified legal and regulatory capabilities, 90% of identified and technical capabilities, and 70% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
City of Celina	City Manager	The city council, including the mayor, mayor pro-tem, and council members, along with the city manager, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. As the governing body, the ability to implement and approve mitigation actions, expand, and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2016 HazMAP, the City of Celina Hazard Mitigation Planning Committee developed mitigation strategies for this plan.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones within Celina.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis, economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Celina Action Items: Deferred from 2016 Plan

City of Celina Action Item	Purchase and utilize mobile back-up generator
Hazard(s) Addressed	Flooding, Tornado, Earthquake, Extreme Heat, Lightning, Wildfire, Winter Storms, Dam Failure, Hail, High Winds
Goal/Objective	2-D
Priority	High
Estimated Cost	\$5,000 - \$10,000
Potential Funding Sources	Local Funding
Potential Matching Sources	Local Funding
Lead Department	Public Works, OEM
Implementation Schedule	1-2 years
Effect on Old Buildings	Some buildings will need to be retrofit with ability to connect with generator
Effect on New Buildings	Buildings will need to be planned with the ability to connect to generator
Cost Effectiveness	Backup generator will prevent loss of power and data to critical government buildings
Discussion	Introduction of a mobile back-up generator will allow the City of Celina or other critical facilities to function as close to normal as possible in the event of a massive power loss.
Status	Deferred – will be included in 2021 Plan

City of Celina Action Item	Develop and implement a drought contingency plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on the stages of drought. Plan would include strategies for soil movement abatement depending on drought stage.
Status	Deferred – will be included in 2021 Plan

City of Celina Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken on structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken on structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information

Status	Deferred – will be included in 2021 Plan
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City of Celina Action Item	Implement all-hazards community education program, including information on mitigation activities.
Hazard(s) Addressed	Flooding, Tornado, Extreme Heat, Lightning, Wildfire, Winter Storms, Dam Failure, Hail, High Winds, Earthquake, Expansive Soils, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	High
Estimated Cost	\$1,000 - \$5,000
Potential Funding Sources	Local funding
Potential Matching Sources	Local grants, FEMA
Lead Department	OEM
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Educating public on mitigation against loss of life and property will save government resources in the event of a disaster event
Discussion	Community education is important for reducing loss of life and property.
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

City of Celina Action Item	Analyze needs, develop and implement water conservation measures for new populations
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2-C
Priority	High
Estimated Cost	\$1,000 - \$5,000
Potential Funding Sources	Local funding
Potential Matching Sources	Local grants, citizen match
Lead Department	Public Works, OEM
Implementation Schedule	2-3 years
Effect on Old Buildings	New constraints will be placed on water usage without compromising soil integrity.
Effect on New Buildings	New constraints will be placed on water usage without compromising soil integrity.

Cost Effectiveness	Expanded water and soil consistency standards will help the city of Celina plan for a boost in infrastructure and population and help maintain normal water levels
Discussion	As the City of Celina grows water conservation measures will encompass new infrastructure and residential/commercial areas. This plan implements conservation efforts that also maintain soil consistency, mitigating damage from expansive soils.
Status	Deferred – will be included in 2021 Plan

City of Celina Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS, Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

City of Celina Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works, Planning Zoning

Implementation Schedule	1-2 years
Effect on Old Buildings	Results would help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results would identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Celina Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	TBD
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

City of Celina Action Items: New

City of Celina Action Item	Purchase and utilize mobile back-up generator
Hazard(s) Addressed	Flooding, Tornado, Earthquake, Extreme Heat, Lightning, Wildfire, Winter Storms, Dam Failure, Hail, High Winds
Goal/Objective	2-D
Priority	High
Estimated Cost	\$5,000 - \$10,000
Potential Funding Sources	Local Funding

Potential Matching Sources	Local Funding
Lead Department	Public Works, OEM
Implementation Schedule	1-2 years
Effect on Old Buildings	Some buildings will need to be retrofit with ability to connect with generator
Effect on New Buildings	Buildings will need to be planned with the ability to connect to generator
Cost Effectiveness	Backup generator will prevent loss of power and data to critical government buildings
Discussion	Introduction of a mobile back-up generator will allow the City of Celina or other critical facilities to function as close to normal as possible in the event of a massive power loss.

City of Celina Action Item	Develop and implement a drought contingency plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on the stages of drought. Plan would include strategies for soil movement abatement depending on drought stage. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

City of Celina Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High

Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken on structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken on structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information

City of Celina Action Item	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Dam Failure, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	High
Estimated Cost	\$1,000 - \$5,000
Potential Funding Sources	Local funding
Potential Matching Sources	Local grants, FEMA
Lead Department	OEM
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.

City of Celina Action Item	Analyze needs, develop and implement water conservation measures for new populations
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Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2-C
Priority	High
Estimated Cost	\$1,000 - \$5,000
Potential Funding Sources	Local funding
Potential Matching Sources	Local grants, citizen match
Lead Department	Public Works, OEM
Implementation Schedule	2-3 years
Effect on Old Buildings	New constraints will be placed on water usage without compromising soil integrity.
Effect on New Buildings	New constraints will be placed on water usage without compromising soil integrity.
Cost Effectiveness	Expanded water and soil consistency standards will help the city of Celina plan for a boost in infrastructure and population and help maintain normal water levels
Discussion	As the City of Celina grows water conservation measures will encompass new infrastructure and residential/commercial areas. This plan implements conservation efforts that also maintain soil consistency, mitigating damage from expansive soils. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

City of Celina Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS, Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low

Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
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City of Celina Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results would help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results would identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.

City of Celina Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	TBD
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.

Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
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City of Celina Action Item	Purchase and implement citywide radio communications system
Hazard(s) Addressed	Dam Failure, Earthquake, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$150,000 - \$165,000
Potential Funding Sources	Local funding, Grant funding
Potential Matching Sources	Local grants, citizen match
Lead Department	Public Works, OEM, Police, Fire
Implementation Schedule	2-3 years
Effect on Old Buildings	No effect on old buildings
Effect on New Buildings	No effect on old buildings
Cost Effectiveness	Allow for consistent and reliable communication across all departments in the city. To include Police, Fire, Emergency Management, Public Works, and City officials
Discussion	This project will improve the overall communication in the city by installing repeaters and implementing a clear and reliable city wide radio system.

City of Celina Action Item	Frontier/Parvin Road extension and bridge project
Hazard(s) Addressed	2-A, 2-B, 2-D, 2-E, 4-C
Goal/Objective	Flooding
Priority	High
Estimated Cost	\$60,000,000
Potential Funding Sources	Local funds, in-kind, donations, citizen cost-share, Local grants, Federal grants, State grants
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Public Works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results would help identify/define retrofits or additions to reduce vulnerability to flooding
Effect on New Buildings	Results would identify/define codes for new construction to reduce vulnerability to flooding by adding bridges over low lying roadway
Cost Effectiveness	Low

Discussion	Project outputs will guide development of future flood mitigation projects.
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National Flood Insurance Program (NFIP) Compliance

The City of Celina is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 Celina NFIP Compliance

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
480133#	CELINA, CITY OF	DENTON COUNTY/COLLIN COUNTY	4/12/1974	11/1/1979	4/18/2011	11/1/1979	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Compliance

Once the community applies for the NFIP, FEMA arranges for a study of the community to determine base flood elevations and flood risk zones. Consultation with the community occurs at the start of and during the study, and those communities with minimal flood risk are converted to the Regular Program without a study.

FEMA provides the studied community with a Flood Insurance Rate Map delineating base flood elevations and flood risk zones. The community is then given 6 months to adopt base flood elevations in its local zoning and building code ordinances. Once the community adopts more stringent ordinances, FEMA converts the community to the NFIP's Regular Program. FEMA then authorizes the sale of additional flood insurance in the community up to the Regular Program limits. The community must implement and enforce the adopted floodplain management measures. FEMA provides periodic community assistance visits with local officials to provide technical assistance regarding complying with NFIP floodplain management requirements.

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 Celina NIFP Activity

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
City of Celina	City Manager	Actions are taken to prevent flood damage to pre-existing structures, reduce loss of life	Regularly hold educational seminars within the community to inform citizens in flood-prone areas	During meetings to create, adopt, update, or otherwise change any documents that have an effect on vulnerability to natural

		in flood prone areas	about the benefits of having flood insurance	hazards, the City of Celina will consult the most recent version of the Hazard Mitigation Action Plan. Provided there is sufficient political, fiscal, and administrative capability, actions detailed in the HazMAP will be integrated into the document wherever applicable.
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7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), Collin County has developed a plan maintenance process which is described in the following paragraphs. Collin County, along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the City of Celina, the county, and the city/town council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) will be implemented by participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning team, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, Celina will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	Activity	Schedule
Deputy Fire Chief	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Likewise, each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting same for approval by the state, FEMA and each local jurisdiction's governing body. The plan will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives and actions outlined in this plan will be integrated into these existing mechanisms as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
City of Celina	City Council, City Manager	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Fire Chief, Deputy Fire Chief	Emergency Action Plan updates	Every five years	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	County Commissioners	Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, County Commissioners	Drought Contingency plans	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education
	Public Works Director, County Commissioners	Natural Resource Conservation Plan	Annually	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Once the plan is adopted, the HMPT will coordinate implementation with the engineering, planning, and emergency management departments for the county, participating jurisdictions, river authorities, and drainage districts.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The HMPT and committees will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex F: Town of Fairview



1. Introduction

This annex was prepared in 2021 as part of an update to the Town of Fairview Multi-Jurisdictional Hazard Mitigation Action Plan. Following the review and approval of the Texas Division of Emergency Management (TDEM) and the Federal Emergency Management Agency (FEMA), This annex shall be updated every five (5) years or as necessary to ensure its continued accuracy and effectiveness. The Town of Fairview participates on the Collin County HazMAP Hazard Mitigation Planning Team (HMPT). In addition to the countywide hazards and strategies discussed

in the main plan, this annex serves as a complete hazard mitigation planning tool for the Town of Fairview. It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While Fairview has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Fairview officials to recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Fairview's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and online.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), The Town of Fairview developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten The Town of Fairview and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. Table 2.1 outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2021	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Centers for Environmental Information (NCEI)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Wildland/Urban Interface

Source	Data
National Inventory of Dams	Dam Information
Texas Commission on Environmental Quality	Dam Information

Planning Committee

This Hazard Mitigation Action Plan was developed by The Town of Fairview Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the Collin County.

The Collin County HMPT was assembled with representatives from participating planning committees, including mayors, police chiefs, fire chiefs, and the general public. Collin County acted as the plan development consultant providing hazard mitigation planning services. Table 2.2 provides a list of the primary representatives on the Fairview planning committee and the departments they represent.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
The Town of Fairview Town Council	Mayor	Input and Review
The Town of Fairview Town Administration	Town Manager	Input and Review
The Town of Fairview Emergency Management	Emergency Management Coordinator	Plan Leader
The Town of Fairview Fire Department	Fire Chief	Input and Review
The Town of Fairview Public Works	Town Engineer	Input and Review
The Town of Fairview Police Department	Police Chief	Input and Review

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Office to provide technical assistance and necessary data to the HMPT and planning committees.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning committee as coordinated by the Town of Fairview or

Collin County.

- Assisted the Town of Fairview and Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted the Town of Fairview and Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with the Town of Fairview and Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders emailed and involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Baxter I.T. Consulting Services	Owner/Operator	Review of plan
Lincoln Property Company	COO/Senior Vice President	Review of plan

Subsequent to the State of Texas and FEMA approval of the plan, each organization above is committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were hosted by Collin County and included all participating jurisdictions:

- HazMAP Kickoff Meeting – August 12, 2020
- Collin County Planning Meeting – November 11, 2020
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committee provided opportunities, announced through public communication means, for public

participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.
- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee for the Town of Fairview identified several natural hazards and man-made hazards that could affect the town. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016-2021 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for the Town of Fairview and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for the Town of Fairview jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Town of Fairview HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in the Town of Fairview based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for the Town of Fairview, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaking down the value of each category is below.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
		Level	Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3

Collin County Hazard Mitigation Action Plan

35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for the Town of Fairview

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	0	0	0	0
Drought	2	0	1	3	1.15
Earthquake	0	1	0	0	0.35
Expansive Soils	2	0	0	1	0.7
Extreme Heat	1	1	0	2	0.85
Flooding	1	1	0	1	0.75
Hail	2	0	0	1	0.7
High Winds	1	0	0	1	0.4
Lightning	1	0	0	0	0.3
Tornado	2	1	1	1	1.3
Wildfire	1	0	0	1	0.4
Winter Storms	2	0	0	2	0.8

The conclusions drawn from the hazard profiling process for the Town of Fairview resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in the Town of Fairview.

Table 3.3 Hazard Rankings for the Town of Fairview

High Risk (PRI 2.00-3.00)	
Moderate Risk (PRI 1.01 -1.9)	Tornado Drought
Low Risk (PRI 0.50 – 1)	Extreme Heat Winter Storms Flooding Expansive Soils Hail
Negligible to No Risk (PRI 0-0.49)	Wildfire Earthquake High Winds Lightning Dam Failure

Changes in Development and Priorities (Requirement §201.6(d) (3))

Our jurisdiction is in one of the fastest growing areas of the nation, hence development has increased and will continue to increase our vulnerability to hazards that may impact us.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the Town of Fairview faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation.

Dam and Levee Failure The Town of Fairview has three (3) dams or levees in its jurisdiction and we are unaware of any significant structures upstream from our jurisdiction which could potentially cause harm within our jurisdiction. This hazard was identified as having negligible to no risk to the jurisdiction, but as a participant in the county plan inundation studies will be considered.

Drought This hazard was identified as having moderate risk similar to the rest of the county and surrounding jurisdictions. Drought has the potential to impact the entire planning area equally; all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of the Town of Fairview are vulnerable to this hazard. The agriculture industry is typically affected the hardest due to a lack of crops, water for livestock, and feed. The Town of Fairview has minimal agricultural crops and livestock in its jurisdiction. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma, Lake Tawakoni, Lake Fork and the Lake Chapman-Cooper reservoir system are water sources for the town and are vulnerable to drought. As a drought continues, many residents

who are on private wells as well as those served by the over taxed North Texas Municipal Water District begin to experience water shortages. The lack of water can also impact emergency responder capabilities in the form of firefighting efforts.

Earthquake Due to the risk being associated to a distant quake, earthquakes have the potential to affect the entire planning area. This hazard was identified as having negligible to no risk to the jurisdiction. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

Expansive Soils While there are no documented significant occurrences of damage to structures in its jurisdiction, the Town of Fairview residents do from time-to-time experience foundation issues due to shifting soils. This hazard was identified as having low risk similar to the rest of the county and surrounding jurisdictions.

Extreme Heat This hazard was identified as having low risk similar to the rest of the county and surrounding jurisdictions. Extended extreme heat can cause a rapid and continual loss of moisture in vegetation leading to an escalation of wildfires. Most of the Town of Fairview jurisdiction is developed residential property with some areas of wild land interface in our ETJ. Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air conditioning are most vulnerable. The potential exists for extended heat emergencies to exceed capabilities of our local hospital and Emergency Medical System (in surrounding jurisdictions) due to a large elderly population (1144 units) in Heritage Ranch, an active adult community within the Town of Fairview.

Flooding Common flooding hazards within the planning area include flood hazards from flash flooding and from new development. Flash floods are a high risk hazard since they can roll boulders, tear out trees, and destroy buildings and bridges. This hazard was identified as having low risk in the Town of Fairview's jurisdiction mainly due to limited areas in a flood plain and the potential for flash flooding in the extreme eastern portion of the Town of Fairview's and the ETJ.

Hail occurs when, at the outgrowth of a severe thunderstorm, balls or irregularly shaped lumps of ice greater than 0.75 inches in diameter fall with rain. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to warm air rising rapidly into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until, having developed sufficient weight, they fall as precipitation. Hail has the potential to affect the entire planning area. This hazard was identified as having low risk similar to the rest of the county and surrounding jurisdictions. Exposed populations, manufactured homes, and older properties are most vulnerable.

High Winds Wind is defined as the motion of air relative to the earth's surface. The horizontal component of the three-dimensional flow and the near-surface wind phenomenon are the most significant aspects of the hazard. Straight-line winds are often responsible for the wind damage associated with a thunderstorm. These winds are often confused with tornadoes because of similar damage and wind speeds. However, the strong and gusty winds associated with straight-line winds blow roughly in a straight line unlike the rotating winds of a tornado. Downbursts or micro-bursts are examples of damaging straight-line winds. A downburst is a small area of rapidly descending rain and rain-cooled air beneath a thunderstorm that produces a violent, localized downdraft covering 2.5 miles or less. Wind speeds in some of the stronger downbursts can reach 100 to 150 miles per hour, which is similar to that of a strong

tornado. The winds produced from a downburst often occur in one direction, and the worst damage is usually on the forward side of the downburst. High winds may affect the entire planning area.

The Town of Fairview has the potential for power outages, fires, damage to roofs, cars, out buildings, and electrical utilities due to high winds. Areas affected may pose access challenges due to fallen trees on roadways. High winds can occur suddenly and without warning during severe weather. Outside of primary residential structures, there are few locations for the public to seek shelter during high winds. This hazard was identified as having negligible risk to the jurisdiction.

Lightning results from the buildup and discharge of electrical energy between positively and negatively charged areas within thunderstorms. A “bolt” or brilliant flash of light is created when the buildup becomes strong enough. These bolts of lightning can be seen in cloud-to-cloud or cloud-to-ground strikes.

Bolts of lightning can reach temperatures approaching 50,000° Fahrenheit. While lightning is mostly affiliated with thunderstorms, lightning often strikes outside of these storms, as far as 10 miles away from any rainfall. The Federal Emergency Management Agency states that an average of 300 people are injured and 80 people are killed in the United States each year by lightning. Direct strikes have the power to cause significant damage to buildings, critical facilities, infrastructure, and ignition of wildfires which can result in widespread damages to property. All geographic areas, property, and populations in the Town of Fairview have the potential to be vulnerable to lightning. This hazard was identified as having negligible to no risk to the jurisdiction. Property without lightning protection and exposed populations are most vulnerable.

Tornado A tornado is a violently rotating column of air, in contact with the ground, both pendant from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a condensation funnel. Tornadoes have the potential affect the entire planning area. This hazard was identified as having moderate risk similar to the rest of the county and surrounding jurisdictions. Exposed populations, manufactured homes, and older properties are most vulnerable.

Wildland Fire A wildland fire is any fire occurring on grassland, forest, or prairie, regardless of ignition source, damages or benefits. Wildland fires are fueled almost exclusively by natural vegetation. They typically occur in national forests and parks, where federal agencies are responsible for fire management and suppression. Interface or intermix fires are urban/wildland fires in which vegetation and the built-environment provide fuel. Firestorms are events of such extreme intensity that effective suppression is virtually impossible. Firestorms occur during extreme weather and generally burn until conditions change or the available fuel is exhausted. Wildland fires affect the entire planning area. For the purposes of this hazard analysis, wildland fires are assessed under what is known as the Wildland Urban Interface (WUI). The WUI is an area of development that is susceptible to wildland fires due to the number of structures located in an area with vegetation that can act a fuel for a wildland fire. 91% of the Town of Fairview is located in the WUI. The Texas A&M Forest Services' wildfire risk assessment report ranks the wildfire threat from low to moderate with the west side of the town located in the low threat area and the east side of town in the moderate threat area.

Winter Storms Winter storms originate as mid-latitude depressions or cyclonic weather systems, sometimes following the path of the jet stream. A winter storm or blizzard combines heavy snowfall, high winds, extreme cold and ice storms. Many winter depressions give rise to exceptionally heavy rain and widespread flooding and conditions worsen if the precipitation falls in the form of snow. The winter storm season varies widely, depending on latitude, altitude and proximity to moderating influences. Winter

storms affect the entire planning area. Cold snaps in which temperatures fall below the freezing point of 32° Fahrenheit do happen on an annual basis in the planning area and can lead to issues with infrastructure, especially frozen roads and bridges. For the Town of Fairview, this hazard was identified as having low risk similar to the rest of the county and surrounding jurisdictions. These winter storms have the potential to make roads impassable for days. Residents may be confined to their homes due to the storm and may be without basic services, such as water and electricity, for an extended period of time.

Identification of Assets and Vulnerability Assessment

An inventory of the Town of Fairview geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population**: Includes the number of people residing in Collin County as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property**: Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities**: Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities**: Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure**: Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the 2020 NCTCOG Population Estimates and the Collin County Appraisal District, the total population of the Town of Fairview in 2020 was 9,770 people, with 3,601 households. The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4. Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total**	Population Density (Sq. Mile)	Household	% of County Total**	Household Density (Sq. Mile)
Town of Fairview	9,770	.90%	1,045.35	4,582	1.20%	490.25

Source: 2020 NCTCOG Population Estimates Publication, US Census Bureau & Collin County Appraisal District

**Includes totals from incorporated jurisdictions not participating in the plan

Table 3.5 summarizes population counts and population change (absolute and percent predictions for Town of Fairview).

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
Town of Fairview	7,248	9,520	9,610	90	.95%

Source: 2020 Census Data & 2020 NCTCOG Population Estimates Publication

Property

There are an estimated 4,547 parcels in the Town of Fairview, with an estimated \$1,596,754,123 in total assessed value of, Table 3.6 lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
Town of Fairview	4,547	1.30%	\$1,596,754,123

Source: Collin County Appraisal District

¹ Includes public buildings (residential, commercial, industrial, agricultural, religion, government, education)

Emergency Facilities

There are three (3) identified emergency facilities in the Town of Fairview, including two (2) fire stations, one (1) police station and zero (0) hospitals. Table 3.7 presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
Town of Fairview	2	1	0

Source: County Data and Regional Hazard Assessment Tool

Critical Facilities

There are three (3) critical facilities, which are considered non-emergency in the Town of Fairview. The critical facilities include three (3) schools and zero (0) historical property sites (*Table 3.8*). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
Town of Fairview	3	0

Source: Local jurisdictions

Critical Infrastructure

There are eight (8) identified critical infrastructure facilities in the Town of Fairview, including zero (0) airports, zero (0) natural gas facilities, zero (0) water treatment facilities, zero (0) wastewater treatment facility, zero (0) dams, and eight (8) railway/highway bridges (*Table 3.9*).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
Town of Fairview	0	0	0	0	3	7

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, the Town of Fairview's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for the Town of Fairview, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.10* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail	X		
High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) zero (0) recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of Fairview are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the Town of Fairview are expected mostly during water shortages, financially unknown due to lack of accurate reporting.
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.

Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the Town of Fairview. The Town of Fairview and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is minor impact of extreme heat to developed areas and the improved property in the Town of Fairview is not vulnerable to this hazard.
Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is minor impact of extreme heat to buildings and the emergency facilities in the Town of Fairview are not vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there is minor impact of extreme heat to buildings, and the critical facilities in the Town of Fairview are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI) there is minor impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in the Town of Fairview.

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero fatalities and injuries per year. Approximately 7.38% of the population of the Town of Fairview is located within the 100-year floodplain.
Improved Property	Property losses in the Town of Fairview are expected to be \$8,734.83 per year. No crop losses are expected or recorded county-wide. Approximately \$7,594,973 of the total assessed value of improvements in the Town of Fairview is at risk from the 100-year storm event.
Emergency Facilities	There are zero (0) emergency facilities at imminent risk from the 100-year storm event.
Critical Facilities	There are zero (0) critical facilities located within the 100-year storm event.

Critical Infrastructure	0% of railways/highways and bridges, 0% of dams, 0% of water treatment works, and 0% waste water treatment facilities are at risk from the 100-year storm event. Many of these structures are designed to traverse or be located within the floodplain due to unavoidable circumstances. Additionally, treated wastewater is typically discharged towards streams, which makes portions of wastewater treatment facilities likely to be located within the floodplain.
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Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of Fairview are expected at \$6,426.57 per year however these values are underestimated due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data for the Town of Fairview indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in the Town of Fairview are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the Town of Fairview are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in the Town of Fairview are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events. All the population of the Town of Fairview is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of Fairview are expected at \$814.29 per year however these values are underestimated due to lack of accurate reporting. No crop losses resulted from this hazard in the Town of Fairview.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in the Town of Fairview are vulnerable to this hazard.

Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the Town of Fairview are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in the Town of Fairview are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from lightning events in the Town of Fairview. All the population of the Town of Fairview is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of Fairview are expected but unknown due to lack of accurate reporting.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in the Town of Fairview are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the Town of Fairview are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in the Town of Fairview are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in the Town of Fairview. All the population of the Town of Fairview is exposed and vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI) property losses in the Town of Fairview are expected but unknown due to lack of accurate reporting. No crop losses are expected from this hazard in the Town of Fairview.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in the Town of Fairview are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the Town of Fairview are exposed and vulnerable to this hazard.

Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the Town of Fairview are exposed and vulnerable to this hazard.
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Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 84.42% of the Town of Fairview is vulnerable to wildfires. There have been no recorded injuries or fatalities due to wildfires.
Improved Property	Based on historical data, annual financial losses expected from property loss due to wildfires are unknown due to lack of accurate reporting; therefore, percentage of the overall property improvement values across the Town of Fairview are also unknown.
Emergency Facilities	Based on geographic information there are two (2) fire stations and one (1) police station at risk from wildfire events.
Critical Facilities	Based on geographic information there are three (3) schools at risk from wildfire events.
Critical Infrastructure	Based on geographic information there are zero (0) bridges, zero (0) dams, zero (0) wastewater treatment facility, and zero (0) water treatment facility at risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the Town of Fairview. All the population of the Town of Fairview is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of Fairview are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the Town of Fairview.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in the Town of Fairview are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in the Town of Fairview are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in the Town of Fairview are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serve as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the Town of Fairview considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
<i>Town of Fairview</i>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	93%
Average % Yes Capabilities – %															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes per Jurisdiction
<i>Town of Fairview</i>	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	90%
Average % Yes Capabilities – %											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes per Jurisdiction
<i>Town of Fairview</i>	N	Y	Y	Y	Y	Y	Y	N	Y	Y	80%
Average % Yes Capabilities – 80%											
Y- Yes N- No ?- Don't Know											

To quantify the Town of Fairview's legal and regulatory, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, the town of Fairview has a moderate level of identified legal and regulatory capabilities, a strong level of identified administrative and technical capabilities, and strong level of identified fiscal capabilities per the rating categories.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
Town of Fairview	Town Manager	The town council, including the mayor, mayor pro-tem, and council members, along with the town manager, address the budget; approve/pass ordinances, regulations, and codes; hire staff; approve plans; and determine the direction of the town overall. As the governing body, the ability to implement and approve mitigation actions, expand, and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2016-2021 HazMAP, the Town of Fairview Hazard Mitigation Planning Committee developed mitigation strategies for the Plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through encouragement of the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Work with stake holders to identify high hazard critical infrastructure for the possibility of rehabilitation or retrofit.

Objective 2-C Assess the need for enacting and/or enforcing regulatory measures that enforce hazard mitigation measures.

Objective 2-D Ensure the construction of new facilities take into account methods designed to mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events.

Objective 3-A Update hazard/vulnerability assessments of personal properties and structures located in flood zones within the Town of Fairview.

Objective 3-B Develop and execute new awareness programs which identify and reduce threats from natural hazards.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties.

6. Action Items

Below is a list of action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis, economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

Town of Fairview Action Items: Deferred from 2016 Plan

Town of Fairview Action Item	Implement all-hazards public education program, including hazard mitigation activities for each identified hazard
Hazard(s) Addressed	Tornado, Winter Storm, Drought, Extreme Heat, Flooding, Wildfire, Expansive Soils, Hail, Earthquake, High Winds, Lightning, Dam Failure
Goal/Objective	3-B, 4-A, 4-B, 4-C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	Operating Budget
Potential Matching Sources	Local Grants
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public Education is extremely effective for low cost
Discussion	The Town of Fairview will implement an all-hazards comprehensive public education program based on the hazards identified in this annex and what actions can be taken to mitigate impacts. This program will use a variety of means for distributing information,

Collin County Hazard Mitigation Action Plan

	including social media, printed literature, and via the Town of Fairview official website.
Status	Town began the implementation of this action item via online public education materials. Town plans to receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

Town of Fairview Action Item	Implement tornado safe room education program
Hazard(s) Addressed	High Winds, Tornadoes
Goal/Objective	1-C
Priority	Medium
Estimated Cost	\$500
Potential Funding Sources	Operating Budget
Potential Matching Sources	Local Grants/FEMA
Lead Department	Emergency Management
Implementation Schedule	1-3 years
Effect on Old Buildings	Retrofit will be required on some structures
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Moderate to high depending on level of acceptance
Discussion	Residential safe room shelters potentially decrease the likelihood of personal injuries and death during severe weather, tornado or hail events.
Status	Will be included in 2021, however, some residents were able to obtain funds through the NCTCOG Saferoom Rebate Program

Town of Fairview Action Item	Implement and actively promote Nixle Notification alert system.
Hazard(s) Addressed	Tornado, Winter Storm, Drought, Extreme Heat, Flooding, Wildfire, Expansive Soils, Hail, Earthquake, High Winds, Lightning, Dam Failure
Goal/Objective	1-A, 1-B, 3-B, 4-A, 4-B
Priority	Medium
Estimated Cost	\$1,500
Potential Funding Sources	Operating Budget
Potential Matching Sources	Local Grants/FEMA
Lead Department	Emergency Management
Implementation Schedule	1-3 years

Collin County Hazard Mitigation Action Plan

Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warnings will assist in saving lives for no cost.
Discussion	Weather/all-hazards notifications are a proven means to alert and warn citizens about severe weather conditions and other emergency and hazard information.
Status	This action item was implemented and will continue to be promoted in order to increase subscribers. Continue – will be included in 2021.

Town of Fairview Action Item	Update and enforce water conservation measures and implement public education outreach
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2-C, 3-C
Priority	Medium/Low
Estimated Cost	\$1000
Potential Funding Sources	Operating Budget
Potential Matching Sources	North Texas Municipal Water District
Lead Department	Public Works, Code Enforcement
Implementation Schedule	1-2 years
Effect on Old Buildings	Water conservations measures would stabilize soils, mitigating damage to existing structures.
Effect on New Buildings	Water conservations measures would stabilize soils, mitigating damage to new structures.
Cost Effectiveness	Low-cost effort for increasing awareness of water restrictions.
Discussion	Town of Fairview will review water conservation measures and update as necessary. These conservation efforts regulate water used for maintaining soil consistency. Updates will be communicated to the public.
Status	The Town has a Water Conservation Plan and a Drought Contingency and Water Emergency Response Plan it reviews and updates, if necessary. No updates were necessary in recent years. Continue – will be included in 2021.

Town of Fairview Action Item	Develop and implement regulations for the construction of town buildings deemed “critical infrastructure”.
Hazard(s) Addressed	Tornado, Winter Storm, Drought, Extreme Heat, Flooding, Wildfire, Expansive Soils, Hail, Earthquake, High Winds, Lightning, Dam Failure
Goal/Objective	1-C, 2-A, 2-B, 2-C, 2-D, 2-E
Priority	Medium/Low

Collin County Hazard Mitigation Action Plan

Estimated Cost	\$5000
Potential Funding Sources	Operating Budget
Potential Matching Sources	NCTCOG/FEMA
Lead Department	Emergency Management
Implementation Schedule	2-3 years
Effect on Old Buildings	May involve cascading retrofits
Effect on New Buildings	Strengthening construction requirements for new critical infrastructure will result in greater resiliency to hazards
Cost Effectiveness	Moderate to High.
Discussion	Town will develop and implement construction design regulations for new Critical Infrastructure, as defined by the EMC. Regulations would include elevating structures, reinforcing doors and windows, using flame-retardant, hail and wind resistant external materials, roof bracing, installing higher grade insulation, stabilizing foundations, installing lightning rods, and using low-flow technology for all plumbing.
Status	Deferred – will be included in 2021 Plan

Town of Fairview Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	2-A, 3-A
Priority	Medium/Low
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Engineering/ NRCS
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

Collin County Hazard Mitigation Action Plan

Town of Fairview Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	Earthquake
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Engineering
Implementation Schedule	1-2 years
Effect on Old Buildings	Results would help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results would identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

Town of Fairview Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	TBD
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency Management, Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

Town of Fairview Action Items: New

Town of Fairview Action Item	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	3-B, 4-A, 4-B, 4-C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	Operating Budget
Potential Matching Sources	Local Grants
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.

Town of Fairview Action Item	Implement tornado safe room education program
Hazard(s) Addressed	High Winds, Tornadoes
Goal/Objective	1-C
Priority	Medium
Estimated Cost	\$500
Potential Funding Sources	Operating Budget
Potential Matching Sources	Local Grants/FEMA
Lead Department	Emergency Management
Implementation Schedule	1-3 years
Effect on Old Buildings	Retrofit will be required on some structures
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Moderate to high depending on level of acceptance
Discussion	Residential safe room shelters potentially decrease the likelihood of personal injuries and death during severe weather, tornado or hail events.

Town of Fairview Action Item	Implement and actively promote Nixle Notification alert system.
Hazard(s) Addressed	Tornado, Winter Storm, Drought, Extreme Heat, Flooding, Wildfire, Expansive Soils, Hail, Earthquake, High Winds, Lightning
Goal/Objective	1-A, 1-B, 3-B, 4-A, 4-B
Priority	High
Estimated Cost	\$1,500
Potential Funding Sources	Operating Budget
Potential Matching Sources	Local Grants/FEMA
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warnings will assist in saving lives for no cost.
Discussion	Weather/all-hazards notifications are a proven means to alert and warn citizens about severe weather conditions as well as other emergency and hazard information.

Town of Fairview Action Item	Update and enforce water conservation measures and implement public education outreach
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2-C, 3-C
Priority	Medium/Low
Estimated Cost	\$1000
Potential Funding Sources	Operating Budget
Potential Matching Sources	North Texas Municipal Water District
Lead Department	Public Works, Code Enforcement
Implementation Schedule	1-2 years
Effect on Old Buildings	Water conservations measures would stabilize soils, mitigating damage to existing structures.
Effect on New Buildings	Water conservations measures would stabilize soils, mitigating damage to new structures.
Cost Effectiveness	Low-cost effort for increasing awareness of water restrictions.
Discussion	Town of Fairview will review water conservation measures and update as necessary. These conservation efforts regulate water used for maintaining soil consistency. Updates will be communicated to the

Collin County Hazard Mitigation Action Plan

	public. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.
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Town of Fairview Action Item	Develop and implement regulations for the construction of town buildings deemed “critical infrastructure”.
Hazard(s) Addressed	Tornado, Winter Storm, Drought, Extreme Heat, Flooding, Wildfire, Expansive Soils, Hail, Earthquake, High Winds, Lightning
Goal/Objective	1-C, 2-A, 2-B, 2-C, 2-D, 2-E
Priority	Medium/Low
Estimated Cost	\$5000
Potential Funding Sources	Operating Budget
Potential Matching Sources	NCTCOG/FEMA
Lead Department	Emergency Management
Implementation Schedule	2-3 years
Effect on Old Buildings	May involve cascading retrofits
Effect on New Buildings	Strengthening construction requirements for new critical infrastructure will result in greater resiliency to hazards
Cost Effectiveness	Moderate to High.
Discussion	Town will develop and implement construction design regulations for new Critical Infrastructure, as defined by the EMC. Regulations would include elevating structures, reinforcing doors and windows, using flame-retardant, hail and wind resistant external materials, roof bracing, installing higher grade insulation, stabilizing foundations, installing lightning rods, and using low-flow technology for all plumbing.

Town of Fairview Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	Earthquake
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Engineering
Implementation Schedule	1-2 years
Effect on Old Buildings	Results would help identify/define retrofits or additions to reduce vulnerability to earthquakes

Collin County Hazard Mitigation Action Plan

Effect on New Buildings	Results would identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.

Town of Fairview Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	TBD
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency Management, Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

National Flood Insurance Program (NFIP) Compliance

The Town of Fairview is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
481069#	FAIRVIEW, TOWN OF	COLLIN COUNTY	1/10/1975	11/1/1979	6/7/2017	11/1/1979	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Compliance

Once the community applies for the NFIP, FEMA arranges for a study of the community to determine base flood elevations and flood risk zones. Consultation with the community occurs at the start of and during the study, and those communities with minimal flood risk are converted to the Regular Program without a study.

FEMA provides the studied community with a Flood Insurance Rate Map delineating base flood elevations and flood risk zones. The community is then given 6 months to adopt base flood elevations in its local zoning and building code ordinances. Once the community adopts more stringent ordinances, FEMA converts the community to the NFIP's Regular Program. FEMA then authorizes the sale of additional flood insurance in the community up to the Regular Program limits. The community must implement and enforce the adopted floodplain management measures. FEMA provides periodic community assistance visits with local officials to provide technical assistance regarding complying with NFIP floodplain management requirements.

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
Town of Fairview	Town Engineer	Review new development adjacent to floodplains and require 3 feet of freeboard (existing floodplain) or 2 feet of freeboard	Development plans are reviewed. If base flood elevations are known, then set minimum FF elevations on plats. If base flood elevations are unknown, developer must perform flood modeling to establish the BFE.	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, the use of Flood Hazard zoning regulations, and compliance inspections pending approval. Failure to comply with the Town's flood damage prevention order shall result in fines up to \$2000 per violation per day.
		Floodplain development permits	Permits are required for any new construction in a floodplain, including fill. Fairview prohibits structures that enclose people or animals in the flood plain.	
		Reduce flooding effects of upstream development on downstream properties in or near the flood plain	Fairview is having a drainage master plan prepared to lessen the effects of upstream development on downstream flooding including regional detention	
		Maintain a zero rise in the floodplain near sensitive properties	Fairview requires computer modeling and hydraulic calculations to demonstrate a zero rise in the 100 year flood plain near properties that are threatened	
		Future Mitigation Projects	Fairview has identified some property for floodplain mitigation and will work with developers to make improvements at the time of development	

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), Fairview has developed a plan maintenance process which is described in the following paragraphs. The Town of Fairview along with participating jurisdictions is responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the Town of Fairview, the county, and the city/town council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) will be implemented by participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, the Town of Fairview will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	Activity	Schedule
Emergency Management Coordinator	Monitoring Plan: Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Likewise, each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting same for approval by the state, FEMA and each local jurisdiction's governing body. The plan will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives and actions outlined in this plan will be integrated into these existing mechanisms as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
Town of Fairview	Town Council	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Emergency Management Coordinator	Emergency Action Plan updates	Every Five Year	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	Town Council, Town Engineer	Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, Town Council	Drought Contingency plans	Assessed annually and updated as needed.	Integrate drought actions such as xeriscaping, water restrictions, and public education
	Town Engineer, Town Council	Natural Resource Conservation Plan	Assessed annually and updated as needed.	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Fairview Hazard Mitigation Planning Committee considers this HazMAP, including development and maintenance, to be the primary vehicles to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committees will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.



1. Introduction

This annex was prepared in 2020 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan. The City of Farmersville participated on the Collin County Hazard Mitigation Planning Team (HMPT). In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete hazard mitigation planning tool for the City of Farmersville.

It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While Farmersville has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Collin County officials recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and online.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. The table below outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Centers for Environmental Information (NCEI)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Urban Interface
National Inventory of Dams	Dam Information

Planning Committee

This Hazard Mitigation Action Plan was developed by the Farmersville Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the Collin County HMPT.

The Collin County HMPT was assembled in November 2020 with representatives from participating county jurisdiction planning committees, including mayors, police chiefs, fire chiefs, and the general public. Collin County acted as the plan development consultant providing hazard mitigation planning services. The efforts of the planning committees and the HMPT were led by the Collin County Assistant Emergency Management Coordinator. The table below provides a list of the primary representatives on the Farmersville planning committee.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
City of Farmersville	Fire Chief	Plan Development
City of Farmersville	GIS Analyst	Plan Development
City of Farmersville	City Manager	Plan Development
City of Farmersville	City Secretary	Plan Development/Primary Point of Contact
City of Farmersville	Chief of Police	Plan Development
Collin County Homeland Security	Assistant Emergency Manager	Plan Assistance

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified

risks.

- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders emailed and involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Farmers Insurance	Insurance Agent	Review of plan
State Farm Insurance	Insurance Agent	Review of plan
First Baptist Church, Farmersville	Disaster Response Coordinator	Review of plan
North Texas Municipal Water District	Representative for Farmersville	Review of plan
RE/MAX International	Realtor	Review of plan

Subsequent to the State of Texas and FEMA approval of the plan, the City of Farmersville organization is committed to accomplishing the following activities:

- Appoint members to a Coordinating Committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by the City of Farmersville:

- Collin County HazMAP Kickoff Meeting – August 12, 2020
- Collin County Planning Meeting – April 21, 2021
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022TBD

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.
- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee identified several natural hazards and man-made hazards that could affect Farmersville. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for the City of Farmersville and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy. The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
		Level	Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for City of Farmersville

The conclusions drawn from the hazard profiling process for the City of Farmersville resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in the City of Farmersville.

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	1	2	1	0	1.25
Drought	2	0	1	3	1.15
Earthquake	0	1	0	1	0.45
Expansive Soils	2	0	0	1	0.7
Extreme Heat	1	1	0	2	0.85
Flooding	1	1	0	0	0.65
Hail	2	0	0	1	0.7
High Winds	2	1	0	1	1.05
Lightning	1	0	0	0	0.3
Tornado	2	1	1	1	1.3
Wildfire	1	2	0	1	1.1
Winter Storms	2	1	2	3	1.75

Table 3.3 Hazard Rankings City of Farmersville

High Risk (PRI 2 - 3)	
Moderate Risk (PRI 1.01 -1.9)	Winter Storm Dam Failure Tornado Drought Wildfire High Winds
Low Risk (PRI 0.50 – 1)	Expansive Soils Extreme Heat Hail Flooding
Negligible to No Risk (PRI 0 – 0.49)	Earthquake Lightning

Changes in Development and Priorities (Requirement §201.6(d) (3))

Our jurisdiction is in one of the fastest growing areas of the nation, hence development has increased and will continue to increase our vulnerability to hazards that may impact us.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the City of Farmersville faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation.

Dam and Levee Failure A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams typically are constructed of earth, rock, concrete, or mine tailings. A dam failure is an accidental or unintentional collapse, breach, or other failure of an impoundment structure that results in downstream flooding. Because dams are man-made structures, dam failures are usually considered technological hazards. However, since most dam failures result from prolonged periods of rainfall, they are often cited as secondary or cascading effects of natural flooding disasters and are not named as the primary hazard that causes disaster declarations.

Development of the downstream areas necessitates the original low hazard classifications to be changed to higher hazard classifications because the dams are no longer adequate for the increased downstream risks. NRCS data shows that there are 6 dams in Collin County that are no longer adequate for increased downstream risks. This percentage could actually be higher because detailed current evaluations of NRCS dams have not been conducted due to resource limitations. In addition, many of these inadequate dams have not been updated because many of the legally responsible entities of these dams do not have sufficient mechanisms funding for updates, or even adequate maintenance, in some cases. Soil and Water Conservation Districts do not have any statutory funding capability of their own, and counties, especially those with small populations and multiple dams, are not able to generate the resources needed to sustain a consistent and comprehensive effort upgrade these structures. While no record could be found of any previous dam failures in Collin County, three things are clear:

- These dams are in desperate need of detailed evaluations and consistent maintenance
- Increased development downstream of the dams has put more people, property, and infrastructure at risk.

The City of Farmersville is responsible for 2 high hazard dams identified by the NRCS in both the City Limits of Farmersville due to the use of easements and the Emergency Operations Plans for those dam sites. While a dam failure event would affect jurisdictions not participating in the Collin County Local Mitigation Strategy, the HMT has chosen to include all High Hazard dams the City is responsible for in Emergency Planning for plan incorporation purposes.

Drought Drought has the potential to impact the entire planning area equally; all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of Farmersville are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma, Lake Tawakoni, Lake Fork, and the Lake Chapman-Cooper reservoir system are water sources for the City of Farmersville and are vulnerable to drought. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations. The lack of water can also impact emergency responder capabilities (not facilities) in the form of firefighting efforts as Farmersville has one of the largest fire districts in Collin County.

Earthquake An earthquake is a sudden motion or trembling caused by an abrupt release of accumulated strain on the tectonic plates that comprise the Earth's crust. The theory of plate tectonics

holds that the Earth's crust is broken into several major plates. These rigid, 50- to 60- mile thick plates move slowly and continuously over the interior of the earth, meeting in some areas and separating in others. As the tectonic plates move together they bump, slide, catch, and hold. Eventually, faults along or near plate boundaries slip abruptly when the stress exceeds the elastic limit of the rock, and an earthquake occurs. The ensuing seismic activity and ground motion provoke secondary hazards: surface faulting, ground failure, and tsunamis. The vibration or shaking of the ground during an earthquake is referred to as ground motion. In general, the severity of ground motion increases with the amount of energy released and decreases with distance from the causative fault or epicenter. When a fault ruptures, seismic waves are propagated in all directions, causing the ground to vibrate at frequencies ranging from 0.1 to 30 Hz. Seismic waves are referred to as P waves, S waves, and surface waves. Earthquakes have the potential to occur anywhere in the geographic planning area; therefore, all geographic areas are potentially vulnerable. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity. This hazard was identified as having negligible or no risk to the City of Farmersville.

Expansive Soils Any soil that expands when wet and shrinks when dry is an expansive soil. Soils are tested using an accepted standard of measurement to determine swell potential. Expansive soils can exert pressures up to 15,000 lbs. per foot causing the breakdown of building foundations and structural integrity. Roadbeds may also be affected, and could lead to avalanche and collapse when cutting into mountains and hillsides. Problems often associated with expansive soils include foundation cracks, heaving and cracking of floor slabs and walls, jammed doors and windows, ruptured pipelines, heaving and cracking of sidewalks and roads, and damage to the upper floors of a building when motion in the structure is significant. Expansive soils are present throughout the world and are known in every United States state. Every year they cause billions of dollars in damage. The entire Farmersville geographic planning area has the potential to be vulnerable to expansive soils.

Extreme Heat Severe summer heat is characterized by a combination of a very high temperatures and exceptionally humid conditions. When persisting over a period of time, it is called a heat wave. Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air conditioning are most vulnerable. Utilities can also be impacted due to rolling blackouts.

Flooding Flooding is defined as the accumulation of water within a water body and the overflow of excess water onto adjacent floodplain lands. 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. The statistical meaning of terms like “25-year storm” and “100-year flood” can be confusing. Simply stated, a floodplain can be located anywhere; it just depends on how large and how often a flood event occurs. Floodplains are those areas that are subject to inundation from flooding. Floods and the floodplains associated with them are often described in terms of the percent chance of a flood event happening in any given year. As a community management or planning term, “floodplain” most often refers to an area that is subject to inundation by a flood that has a one percent chance of occurring in any given year (commonly and incorrectly referred to as the 100-year floodplain). Common flooding hazards within the planning area include impacts from flash flooding and from new development.

A flash flood is a rapid flood that inundates low-lying areas in less than six hours. This is caused by intense rainfall from a thunderstorm or several thunderstorms. Flash floods can also occur from the collapse of a man-made structure or ice dam. Construction and development can change the natural drainage and create brand new flood risks as new buildings, parking lots, and roads create less land that

can absorb excess precipitation from heavy rains, hurricanes, and tropical storms. Flash floods are a high risk hazard since they can roll boulders, tear out trees, and destroy buildings and bridges.

The City of Farmersville has identified several low water crossings that are subject to periodic flash flooding. Affected areas differ with each storm as there are several different branches and tributaries of rivers and creeks subject to overflow, and also are dependent upon which area receives the rain. These areas are low water crossings mainly on improved city streets.

Hail Hail is an outgrowth of a severe thunderstorm in which balls or irregularly shaped lumps of ice greater than 0.75 inches in diameter fall with rain. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to warm air rising rapidly into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until, having developed sufficient weight, they fall as precipitation. The entire geographic planning area has the potential to be vulnerable to hail, exposed populations, manufactured homes, and older properties are most vulnerable.

High Winds Straight-line winds are often responsible for the wind damage associated with a thunderstorm. Downbursts or micro-bursts are examples of damaging straight-line winds. A downburst is a small area of rapidly descending rain and rain-cooled air beneath a thunderstorm that produces a violent, localized downdraft covering 2.5 miles or less. Wind speeds in some of the stronger downbursts can reach 100 to 150 miles per hour, which is similar to that of a strong tornado. The winds produced from a downburst often occur in one direction, and the worst damage is usually on the forward side of the downburst. High winds have the potential to affect the entire planning area, manufactured homes and exposed populations are most vulnerable.

High winds are a frequent occurrence with severe thunderstorms and they can affect all areas of Farmersville. These winds can occur suddenly and without warning during severe weather and may pose access challenges due to fallen trees on roadways. There have been several instances of damage occurring to business and commercial structures as a result of high winds. Outside of primary residential structures, there are few locations for the public to seek shelter during high winds.

Lightning Lightning damage results from four (4) effects of lightning strike: electrocution of humans and animals; vaporization of materials along the path of strike; fire caused by the high temperature produced by the strike; and a sudden power surge that can damage electrical and electronic utility substations and distribution lines. It is estimated that throughout the United States, a power outage caused by lightning occurs on 50 percent of the days throughout the year. Lightning has the potential to affect all populations and property in the City of Farmersville. Property without lightning protection and exposed populations are most vulnerable.

Tornado A violently rotating column of air, in contact with the ground, either pendant from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a condensation funnel cloud. The entire Farmersville geographic planning area has the potential to be vulnerable to tornadoes. Manufactured homes and exposed populations are extremely vulnerable to tornadoes.

Wildfire Wildfires are any fire occurring on grassland, forest, or prairie, regardless of ignition source, damages or benefits. Wildfires are fueled almost exclusively by natural vegetation. Interface or intermix fires are urban/wildfires in which vegetation and the built-environment provide fuel. Firestorms are events of such extreme intensity that effective suppression is virtually impossible. Firestorms occur during

extreme weather and generally burn until conditions change or the available fuel is exhausted. 66.43% of the population is vulnerable to the WUI and the risk is identified as moderate by the Texas Forest Service. Automatic mutual aid between city fire departments is enacted to respond to wildfires, especially during times of drought, burn bans and high fire threat.

Winter Storms Winter storms originate as mid-latitude depressions or cyclonic weather systems, sometimes following the path of the jet stream. A winter storm or blizzard, combines heavy snowfall, high winds, extreme cold and ice storms. Many winter depressions give rise to exceptionally heavy rain and widespread flooding and conditions worsen if the precipitation falls in the form of snow. The winter storm season varies widely, depending on latitude, altitude and proximity to moderating influences. The entire geographic planning area has the potential to be vulnerable to winter storms. Populations at greatest risk are the elderly, the homeless, and populations without access to heat. Critical facilities are also vulnerable.

Identification of Assets and Vulnerability Assessment

An inventory of unincorporated Collin County geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population**: Includes the number of people residing in Collin County as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property**: Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities**: Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, and the Collin County Emergency Management Coordinator.
- **Critical facilities**: Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure**: Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, and the Collin County Emergency Management Coordinator.

The following tables provide a breakdown of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the 2020 NCTCOG Population Estimates, the total population of the City of Farmersville in 2020 was 3,351 people, with 1,206 households. The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4. Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total	Population Density (Sq. Mile)	Household	% of County Total	Household Density (Sq. Mile)
City of Farmersville	3,351	0.31%	786.62	1,179	0.31%	276.98

Source: 2020 NCTCOG Population Estimate & Collin County Appraisal District

Table 3.5 summarizes population counts and population change (absolute and percent predication for the City of Farmersville).

Table 3.5 Population Predictions*

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
City of Farmersville	3,301	3,330	3,340	10	.03%

Source: 2020 NCTCOG Population Estimate

Property

There are an estimated 1,888 parcels in the City of Farmersville, with an estimated \$217,208,478 in total assessed value of improvements. *Table 3.6* lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
City of Farmersville	1,888	0.48%	\$217,208,478

Source: Collin County Appraisal District

Emergency Facilities

There is one identified emergency facilities in Farmersville, including Public Safety Building which houses the fire station and police station. *Table 3.7* presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
City of Farmersville	1	1	0

Source: City/County Data

Critical Facilities

There is four critical facility, which is considered non-emergency in Farmersville. The critical facility is the Public Safety Building which will include schools. (*Table 3.8*). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
City of Farmersville	4	0

Source: Local jurisdictions

Critical Infrastructure

There are 7 identified critical infrastructure facilities in Farmersville, including one airport, a water treatment facility, a wastewater treatment facility, three dams, and one railway/highway bridges (*Table 3.9*). In addition to the information on the table Farmersville also has one electric city wide system.

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
City of Farmersville	1	0	1	1	3	1

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, the City of Farmersville's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for Collin County, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.10* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X

Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail	X		
High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) zero (0) recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Farmersville are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the City of Farmersville are expected mostly during water shortages, financially unknown due to lack of accurate reporting .
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the City of Farmersville. The City of Farmersville and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas and the improved property in the City of Farmersville is not vulnerable to this hazard.
Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings and the emergency facilities in the City of Farmersville are not vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the critical facilities in the City of Farmersville are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI), the impact of extreme heat to critical infrastructure would be on the one city-wide electrical system.

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. Approximately 5.54% of the population of the City of Farmersville is located within the 100-year floodplain.
Improved Property	There have been three (3) recorded flood events in the City of Farmersville. Property losses are expected but unknown due to inaccurate reporting. No crop losses are expected or recorded county-wide.
Emergency Facilities	There are not emergency facilities at imminent risk from the 100-year storm event.
Critical Facilities	There are not critical facilities located within the 100-year storm event.
Critical Infrastructure	100% of railways/highways and bridges, 100% of dams, 100% of water treatment works, 100% waste water treatment facilities, and 100% electric system facilities are at risk from the 100-year storm event. Many of these structures are designed to traverse or be located within the floodplain due to unavoidable circumstances. Additionally, treated wastewater is typically discharged towards streams, which makes portions of wastewater treatment facilities likely to be located within the floodplain.

Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Farmersville are expected at \$871.43 per year however these values are underestimated due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data for the City of Farmersville indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in the City of Farmersville are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the City of Farmersville are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in the City of Farmersville are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are three (3) recorded injuries and no recorded fatalities from high wind events. All the population of the City of Farmersville is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Farmersville are expected at \$16,642.86 per year however these values are underestimated due to lack of accurate reporting. No crop losses resulted from this hazard in the City of Farmersville.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in the City of Farmersville are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the City of Farmersville are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in the City of Farmersville are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), lightning events can be expected to cause no deaths or injuries the City of Farmersville. All the population of the City of Farmersville is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Farmersville are expected but unknown due to lack of accurate reporting.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in the City of Farmersville are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the City of Farmersville are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in the City of Farmersville are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in the City of Farmersville. All the population of the City of Farmersville is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Farmersville are expected at \$22,142.86 per year however these values are underestimated due to lack of accurate reporting. No crop losses resulted from this hazard in the City of Farmersville.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in the City of Farmersville are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the City of Farmersville are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the City of Farmersville are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 66.43%% of the City of Farmersville is vulnerable to wildfires. There have been no recorded injuries or fatalities due to wildfires.
Improved Property	Based on historical data, property losses in the City of Farmersville are expected but unknown due to lack of accurate reporting; therefore, percentage of the overall property improvement values across the City of Farmersville are also unknown..
Emergency Facilities	Based on geographic information there is one fire station in City of Farmersville at risk from wildfire events.
Critical Facilities	Based on geographic information there are four schools at risk from wildfire events.
Critical Infrastructure	Based on geographic information there are one bridge, three dams, one wastewater treatment facility, one water treatment facility, and one electric system at risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the City of Farmersville. All the population of the City of Farmersville is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Farmersville are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the City of Farmersville.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in the City of Farmersville are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in the City of Farmersville are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in the City of Farmersville are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serves as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the City of Farmersville considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities														
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other
Farmersville	Y	Y	Y	Y	?	Y	Y	Y	Y	Y	Y	Y	N	N
Average % Yes Capabilities – 84%														
Y- Yes N- No ?- Don't Know														
84%														

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes
<i>Farmersville</i>	Y	Y	Y	Y	Y	Y	N	N	Y	Y	80%
Average % Yes Capabilities – 80%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes
<i>Farmersville</i>	Y	Y	Y	Y	Y	Y	Y	N	Y		90%
Average % Yes Capabilities – 90%											
Y- Yes N- No ?- Don't Know											

To quantify Farmersville's legal and regulatory, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, Farmersville has a strong level of identified legal and regulatory capabilities, a strong level of identified administrative and technical capabilities, and a strong level of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
City of Farmersville	City Manager	The city council, including the mayor, mayor pro-tem, and council members, along with the city manager, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. As the governing body, the ability to implement and approve mitigation actions, expand, and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2016 HazMAP, the City of Farmersville Hazard Mitigation Planning Committee developed mitigation strategies for the plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis, economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Farmersville Action Items: Deferred from 2016 Plan

City of Farmersville Action Item	Develop and Implement a Comprehensive Public Education Program to Mitigate the Impacts of Each Identified Hazard.
Hazard(s) Addressed	Tornado, Winter Storm, Drought, Extreme Heat, Flooding, Wildfire, Expansive Soils, Hail, Earthquake, High Winds, Lightning, Dam Failure
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	Farmersville will develop a program for educating the public on our hazards and effective mitigation activities for each. Program will combine distributed written literature and social media to educate residents on hazards, their dangers, and how to mitigate against them to protect life and property.

Collin County Hazard Mitigation Action Plan

Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021
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City of Farmersville Action Item	Develop and implement water conservation measures
Hazard(s) Addressed	Drought
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Farmersville will develop stringent regulations/codes for water conservation.
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Item	Develop and Implement an Extreme Temperature Program
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.

Collin County Hazard Mitigation Action Plan

Discussion	Developing heating and cooling shelters as part of an extreme temperature program would allow threatened residents to reduce their vulnerability to extreme temperature hazards.
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C, 2-D
Priority	High
Estimated Cost	\$25,000
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	Enhance safety of existing residential structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	By implementing its own program separate of that run by the North Central Texas COG, Farmersville would be able to directly target its residents for storm shelter rebates, ensuring their lives and property are protected against High Winds, Tornado, and Hail
Status	Will be included in 2021, however, some residents were able to obtain funds through the NCTCOG Saferoom Rebate Program

City of Farmersville Action Item	Purchase and install outdoor warning sirens to increase coverage for new development areas.
Hazard(s) Addressed	Dam Failure, High Winds, Tornado, Wildfire, Hail, Lightning, Flooding
Goal/Objective	1-A
Priority	High
Estimated Cost	\$25,000 per siren
Potential Funding Sources	General Fund, HMGP, PDM
Potential Matching Sources	Local funds, in-kind, user fees
Lead Department	EMC
Implementation Schedule	1-3 years
Effect on Old Buildings	Could entail tower construction on existing buildings

Collin County Hazard Mitigation Action Plan

Effect on New Buildings	None
Cost Effectiveness	High. Early warning is a key element in outdoor safety
Discussion	Installing sirens in areas of new development, Farmersville can ensure long-term reduction of vulnerability to life and personal property.
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	2-3 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire

Collin County Hazard Mitigation Action Plan

Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	A CWPP would identify locations in Farmersville that are vulnerable to wildfire. These locations might include critical facilities, critical infrastructure, or other properties that are vital to the interests of Farmersville. By identifying these locations, targeted preparedness and response measures can be implemented.
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results would help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results would identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds

Collin County Hazard Mitigation Action Plan

Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information
Status	Deferred – will be included in 2021 Plan

City of Farmersville Action Items: New

City of Farmersville Action Item	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Dam Failure, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.

City of Farmersville Action Item	Develop and implement water conservation measures
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.

Collin County Hazard Mitigation Action Plan

Discussion	Farmersville will develop stringent regulations/codes for water conservation. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.
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City of Farmersville Action Item	Develop and Implement an Extreme Temperature Program
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Developing heating and cooling shelters as part of an extreme temperature program would allow threatened residents to reduce their vulnerability to extreme temperature hazards.

City of Farmersville Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C, 2-D
Priority	High
Estimated Cost	\$25,000
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	Enhance safety of existing residential structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures

Collin County Hazard Mitigation Action Plan

Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	By implementing its own program separate of that run by the North Central Texas COG, Farmersville would be able to directly target its residents for storm shelter rebates, ensuring their lives and property are protected against High Winds, Tornado, and Hail

City of Farmersville Action Item	Purchase and install outdoor warning sirens to increase coverage for new development areas.
Hazard(s) Addressed	Dam Failure, High Winds, Tornado, Wildfire, Hail, Lightning, Flooding, Earthquake
Goal/Objective	1-A
Priority	High
Estimated Cost	\$25,000 per siren
Potential Funding Sources	General Fund, HMGP, PDM
Potential Matching Sources	Local funds, in-kind, user fees
Lead Department	EMC
Implementation Schedule	1-3 years
Effect on Old Buildings	Could entail tower construction on existing buildings
Effect on New Buildings	None
Cost Effectiveness	High. Early warning is a key element in outdoor safety
Discussion	Installing sirens in areas of new development, Farmersville can ensure long-term reduction of vulnerability to life and personal property. This action item would be specific to installation/placement of new OWS sirens in the jurisdiction.

City of Farmersville Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones

Collin County Hazard Mitigation Action Plan

Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.

City of Farmersville Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	2-3 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	A CWPP would identify locations in Farmersville that are vulnerable to wildfire. These locations might include critical facilities, critical infrastructure, or other properties that are vital to the interests of Farmersville. By identifying these locations, targeted preparedness and response measures can be implemented.

City of Farmersville Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years

Collin County Hazard Mitigation Action Plan

Effect on Old Buildings	Results would help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results would identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.

City of Farmersville Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

City of Farmersville Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years

Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information

National Flood Insurance Program (NFIP) Compliance

The City of Farmersville is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
481627#	FARMERSVILLE, CITY OF	COLLIN COUNTY		4/2/1991	06/02/09(M)	4/2/1991	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

Jurisdiction	Community Floodplain Manager	NFIP Activity	Activity Description	Enforcement
City of Farmersville	City Secretary	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the City Secretary. The City of Farmersville requires 2 feet of freeboard above the base flood elevation for the top of bottom floor on residential structures and non-residential structures that will be built on properties created or platted after the effective date of the Flood Damage Prevention Order	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood damage prevention order shall result in fines up to \$500
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Participate with FEMA in identifying Special	The City of Farmersville participates in Risk Assessment, Mapping	

Collin County Hazard Mitigation Action Plan

Jurisdiction	Community Floodplain Manager	NFIP Activity	Activity Description	Enforcement
		Flood Hazard Areas for future FIRM maps	and Planning Partners (RAMPP) meetings held by FEMA and/or their contractors to better identify areas that are flood prone that are not shown on current Flood Insurance Rate Maps.	per violation plus court costs.
		Take action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning	County Road Operations department installs signs at low water crossings that indicate "When flooded turn around don't drown".	
		Future Mitigation Projects	The City of Farmersville will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In compliance with requirement § 201.6(c)(4)(i), the City of Farmersville has developed a plan maintenance process which is described in the following paragraphs. The City of Farmersville, along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the City of Farmersville, the county, and the city council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) will be implemented by participating jurisdictions as described throughout this document.

The City of Farmersville's Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, the City of Farmersville will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	What	Time
City Manager	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning committee members, changes to capabilities, plan integrations	Biannually
External Stakeholders and Planning Committee	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
City Council	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting them for approval. The plans will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and committees will establish a process in

which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives and actions outlined in this plan will be integrated into these existing mechanisms as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
City of Farmersville	City Council	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Emergency Management Coordinator	Emergency Action Plan updates	Once every five years	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council, Director of Planning	Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, City Council	Drought Contingency plans	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education
	Planning Director, City Council	Natural Resource Conservation Plan	Annually	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Farmersville Hazard Mitigation Planning Committee considers this HazMAP, including development and maintenance, to be the primary vehicles to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committees will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex H: City of Frisco



1. Introduction

This annex was prepared in 2021 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan. This plan updates the Frisco hazard mitigation plan submitted to FEMA as part of the 2016 Collin County plan. The City of Frisco participated on the Collin County Hazard Mitigation Team (HMPT) for this update. In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete hazard mitigation planning tool for the City of Frisco. It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for

developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While the City of Frisco has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped the City of Frisco officials to recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and jurisdictional websites.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. The table below outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2012	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Climatic Data Center (NCDC)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Wildland/Urban Interface analysis
National Inventory of Dams	Dam Information

Planning Committee

This Hazard Mitigation Action Plan was developed by the City of Frisco Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and the Collin County HMPT. Frisco planning committee representatives participated on the HMPT, with local efforts led by the City of Frisco Emergency Management Specialist.

The Planning Committee was assembled with representatives from participating planning committees, including city management, police and fire chiefs, engineers, public and private representatives. Collin County acted as the plan development consultant providing hazard mitigation planning services. The table below provides a list of the primary representatives on the Frisco planning committee.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
City of Frisco	Deputy Emergency Management Coordinator	General Policy Guidance
City of Frisco	Emergency Management Analyst	Coordination / Information Gathering / Submittals
City of Frisco	Public Safety GIS	Information Support

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.

- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders emailed and involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Frisco Independent School District	Director of Emergency Management	Review of plan
Centennial Medical Center	Director of Emergency Management	Review of plan
Baylor Medical Center of Frisco	Director of Emergency Management	Review of plan
American Red Cross	Collin County VOAD Member	Review of plan

Subsequent to the State of Texas and FEMA approval of the plan, each organization above is committed to accomplishing the following activities:

- Appoint members to a Coordinating Committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the planning committee met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Collin County and included all jurisdictions' participation:

- Collin County Kickoff Meeting – August 12, 2020
- Collin County HazMAP Planning Meeting – Week of 11/05/2020
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring

communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.

- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee for the City of Frisco identified several natural hazards and man-made hazards that could affect the city. The committee decided to focus on the natural hazards identified in Chapter 3 of this update. This was done after reviewing the 2016 Collin County HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for the City of Frisco and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
		Level	Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for the City of Frisco

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	1	0	0	0.35
Drought	2	0	0	3	0.9
Earthquake	0	1	0	1	0.45
Expansive Soils	3	0	0	2	1.1
Extreme Heat	2	0	0	3	0.9
Flooding	1	1	0	1	0.75
Hail	2	1	1	3	1.5
High Winds	2	1	1	3	1.5
Lightning	2	1	1	3	1.5
Tornado	2	1	1	3	1.5
Wildfire	1	0	0	0	0.3
Winter Storms	2	0	1	3	1.15

The conclusions drawn from the hazard profiling process for the City of Frisco, resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in the City of Frisco.

Table 3.3 Hazard Rankings for the City of Frisco

High Risk (PRI 2 - 3)	
Moderate Risk (PRI 1.01 -1.9)	Hail High Winds Lightning Tornado Winter Storms Expansive Soils Earthquake
Low Risk (PRI 0.50 – 1)	Drought Extreme heat Flooding
Negligible to No Risk (PRI 0 – 0.49)	Dam Failure Wildfire

Changes in Development and Priorities (Requirement §201.6(d)(3))

Since 2011, the City of Frisco has seen tremendous growth both in population and development. The population in 2011 was 119,738; it is now 203,795. Frisco Independent School District grew from 37,300 students to over 60,000 students across 10 high school, 17 middle schools and 42 elementary schools. Commercial permits issued each year continues to rise; in 2014 we issued 85 new permits and in 2020 we issued 82 permits. Housing permits are estimated to have increased 15% from 2019 with the city issuing 7,399 single family and multi family dwelling permits. The Fire Department has added an additional two stations within this timeframe. Frisco is home to five large capacity special event venues, which host a variety of sporting and special events including the NFL Dallas Cowboys Headquarters and Training facility, NCAA Division I Finals, Major League Soccer, Minor League Baseball, basketball, and hockey as well as a variety of concerts. Frisco will also be home to the Professional Golf Association (PGA) in the coming year. It is not uncommon to have events occurring simultaneously at all five venues, effectively bringing an additional 20,000 to 30,000 visitors into the city within a matter of hours. Yearly the City of Frisco hosts approximately 6.6 million visitors. These increases alter the city's vulnerabilities to natural hazards by not only adding more citizens, more visitors and more infrastructure but also major commercial development. The City of Frisco was a participating jurisdiction in the 2016 Collin County Hazard Mitigation Action Plan. Since then, Frisco has completed several of their original action items, in an effort to lower vulnerability on populations and property from natural hazards. The following actions, sorted by type of action, have had a direct impact on lowering vulnerability:

- Natural Systems Protection
 - o Develop and implement system for ensuring maintenance of utility infrastructure in easement right-of-ways are clear of obstructions to include excessive tree/brush growth.
 - o Establish water systems to handle increased rates and volumes of runoff from new developments.
- Local Rules and Regulations
 - o Compliance with the NFIP through enforcement of local floodplain ordinances.
- Education and Awareness Projects
 - o Expanding early warning sirens and local warning system to notify the public of impending severe weather and reduce the loss of life and mitigate the effects of the hazards.

The development and implementation of these projects have directly led to lower vulnerability for residents and property located in Frisco. It should be noted that, although these action items, have been completed, these action items may continue to be necessary to reduce vulnerability in the future.

New priorities are noted and ranked in each new action item, Section 6. Except for actions completes or cancelled, other priorities remain the same as in the previous version of this plan.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the City of Frisco faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation.

Dam and Levee Failure This hazard was identified as having negligible to no risk to the City of Frisco, but as a participant in the county plan inundation studies will be considered.

Drought This hazard was identified as having low risk to the City of Frisco. Drought has the potential to impact the entire planning area equally; all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of Frisco are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma, Lake Tawakoni, Lake Fork and the Lake Chapman-Cooper reservoir system are water sources for the City of Frisco and are vulnerable to drought. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake This hazard was identified as having moderate risk to the City of Frisco. All populations and property have the potential to be vulnerable to earthquake. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

Expansive Soils The City of Frisco has building requirements for the design and engineering of foundations based on the soils. All populations and property have the potential to be vulnerable to expansive soils, especially those constructed under older building codes.

Extreme Heat This hazard was identified as having low risk to the City of Frisco. All geographic areas have the potential to be vulnerable to extreme heat. Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air conditioning are most vulnerable.

Flooding This hazard was identified as having low risk to the City of Frisco. Flood events often occur on neighborhood streets, and in one instance in 2007 the Collin County Health Department flooded.

Hail All geographic areas, property, and populations in the City of Frisco have the potential to be vulnerable to hail. Exposed populations, manufactured homes, and older properties are most vulnerable. It is common for roofs of houses and vehicles to suffer damage from the occasional hail storm. Most citizens carry insurance that covers these damages.

High Winds All geographic areas in the City of Frisco have the potential to be vulnerable to high winds; however, manufactured homes and exposed populations are most vulnerable. It is common for fences and trees to suffer damage from the occasional high wind storm. Most citizens carry insurance that covers these damages. The city participates in public education and public alerting for high wind scenarios. High Winds also contribute to debris removal. The city has a storm management plan that addresses debris removal.

Lightning All geographic areas, property, and populations in the planning area have the potential to be vulnerable to lightning. This hazard was identified as having moderate risk to the City of Frisco. Property without lightning protection and exposed populations are most vulnerable.

Tornado The City of Frisco is within “tornado alley.” Although the city has not experienced a devastating tornado, there is the potential for one. The City of Frisco has one manufactured home park in the center of the City that would be severely impacted by a tornado.

Wildland Fire This hazard was identified as having low to no risk to the City of Frisco. 32.75% of the population is vulnerable to the WUI.

Winter Storms The city has three major highways, State Hwy 121, US 380, and the Dallas North Tollway. All of these can be impacted during winter storms. These highways give access to and from our critical infrastructure including our receiving hospital and fire and police stations. Winter storms also contribute to debris removal. The City has a storm management plan that addresses debris removal. The homeless, elderly, and populations without access to heat are most vulnerable.

Identification of Assets and Vulnerability Assessment

An inventory of the City of Frisco's geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population**: Includes the number of people residing in Collin County as delineated by U.S. Census 2010 block data provided by NCTCOG.
- **Improved property**: Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities**: Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities**: Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure**: Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities

was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the 2020 NCTCOG Population Estimates and the US Census Bureau, the total population of Frisco in 2019 was 200,490 people, with 31,334 households. The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4 Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total**	Population Density (Sq. Mile)	Household	% of County Total**	Household Density (Sq. Mile)
Frisco	200,490	19.38%	2,897.67	31,334	10.71%	452.87

Source: US Census Bureau & Collin County Appraisal District

Table 3.5 summarizes population counts and population change (absolute and percent predications for the City of Frisco).

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
Frisco	116,989	171,960	182,580	10,620	6.18%

Source 2020 NCTCOG Population Estimate

Property

There are an estimated 40,956 parcels in the City of Frisco, making up \$17,625,127,264 of the parcels in Collin County. *Table 3.6* lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
Frisco (Collin County)	40,956	10.46%	\$17,625,127,264
Frisco (Denton County)	27,676	7.35%	\$10,008,823,511
Frisco Total	68,632		\$27,633,950,775

Table 3.6 Parcel Counts and Improvements Value

Source: Collin County Appraisal District

¹Includes public buildings (residential, commercial, industrial, agricultural, religion, government, education)**Emergency Facilities**

There are sixteen identified emergency facilities in the City of Frisco, including nine fire stations, one police station, and six hospitals.

Table 3.7 presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
Frisco	9	1	6

Source: Local data

Critical Facilities

There are 157 critical facilities, which are considered non-emergency in the City of Frisco. The critical facilities include 95 schools and twenty-nine (29) historical property sites (Table 3.8). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Number
Frisco ISD	89 (includes other FISD facilities)
Private Schools	6
Senior Living, Assisted Living, Nursing Homes	30
Dialysis Centers	3
Historic Sites	29

Source: Local jurisdictions

Critical Infrastructure

There are forty-one (41) identified critical infrastructure facilities in the City of Frisco, including, two (2) wastewater treatment facilities, two (2) dams, and thirty-eight (38) railway/highway bridges (Table 3.9).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
Frisco	0	0	2	0	2	38

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, the City of Frisco's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for the City of Frisco, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.9* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			x
Drought	x		
Earthquake			x
Expansive Soils			x
Extreme Heat		x	
Flooding	x		
Hail	x		
High Winds		x	
Lightning		x	
Tornado		x	
Wildfire	x		
Winter Storms		x	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) no recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Frisco are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the City of Frisco are expected mostly during water shortages, financially unknown due to lack of accurate reporting.
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the City of Frisco. The City of Frisco and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is zero (0) impact of extreme heat to developed areas and the improved property in the City of Frisco is not vulnerable to this hazard.
Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is zero (0) impact of extreme heat to buildings and the emergency facilities in the City of Frisco are not vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there is zero (0) impact of extreme heat to buildings, and the critical facilities in the City of Frisco are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI) there is zero (0) impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in the City of Frisco.

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero fatalities and injuries per year. Approximately 1.56% of the population of the City of Frisco is located within the 100-year floodplain.
Improved Property	There have been three (3) recorded flood events in the City of Frisco. Property losses are at \$16,666.67 per year. No crop losses are expected or recorded county-wide. Approximately 0% of the total assessed value of improvements in the City of Frisco is at risk from the 100-year floodplain.
Emergency Facilities	There are 0 emergency facilities located within the 100-year floodplain.
Critical Facilities	There are 0 critical facilities located within the 100-year floodplain.
Critical Infrastructure	0 railways/highways and bridges, 0 dams, 1 water treatment plant and 1 water storage tank are at risk from the 100-year storm event.

Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Frisco are expected at \$89,914.28 per year however these values are underestimated due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data for the City of Frisco indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in the City of Frisco are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the City of Frisco are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in the City of Frisco are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events. All the population of the City of Frisco is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Frisco are expected at \$4,200 per year however these values are underestimated due to lack of accurate reporting. No crop losses resulted from this hazard in the City of Frisco.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in the City of Frisco are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the City of Frisco are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in the City of Frisco are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), lightning events can be expected to cause no deaths or injuries in the City of Frisco. All the population of the City of Frisco is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Frisco are expected at \$25,916.67 per year however these values are underestimated due to lack of accurate reporting.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in the City of Frisco are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the City of Frisco are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in the City of Frisco are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in the City of Frisco. All the population of the City of Frisco is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Frisco are expected but unknown due to lack of accurate reporting.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in the City of Frisco are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the City of Frisco are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the City of Frisco are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 32.75% of the City of Frisco is vulnerable to wildfires, with the City of Frisco and the unincorporated areas contributing with the majority of the exposed population. There have been no recorded injuries or fatalities due to wildfires.
Improved Property	Based on historical data, annual financial losses expected from property loss due to wildfires are expected but unknown due to lack of accurate reporting; therefore, percentage of the overall property improvement values across the City of Frisco are also unknown.
Emergency Facilities	Based on geographic information there are 0 fire stations in the City of Frisco at risk from wildfire events.
Critical Facilities	Based on geographic information there are 0 schools at risk from wildfire events.
Critical Infrastructure	Based on geographic information there are 0 bridges, 0 dams, 0 wastewater treatment facilities, and 0 water treatment facilities at risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the City of Frisco. All the population of the City of Frisco is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Frisco are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the City of Frisco County.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in the City of Frisco are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in the City of Frisco are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in the City of Frisco are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serves as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the City of Frisco considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities														
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	% Yes per Jurisdiction
<i>City of Frisco</i>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	93%
Average % Yes Capabilities – 93%														
Y- Yes N- No ?- Don't Know														

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes
City of Frisco	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%
Average % Yes Capabilities – 100%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities										
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas Other	% Yes
City of Frisco	Y	Y	Y	Y	Y	Y	Y	Y	Y	100%
Average % Yes Capabilities – 100%										
Y- Yes N- No ?- Don't Know										

To quantify the city of Frisco's legal and regulatory, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, the city of Frisco and its jurisdictions have 93% of identified legal and regulatory capabilities, 100% of identified administrative and technical capabilities, and 100% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
City of Frisco	City Manager	The city council, including the mayor, mayor pro-tem, and council members, along with the city manager, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. As the governing body, the ability to implement and approve mitigation actions, expand, and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2016 HazMAP, the City of Frisco Hazard Mitigation Planning Committee developed mitigation strategies for the plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones within the City of Frisco.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of the new and deferred action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Frisco Action Items: Deferred from 2016 Plan

City of Frisco Action Item	Expanding the Early Warning Sirens and Local Warning System to notify new populations of impending severe weather or imminent hazards to reduce the loss of life and mitigate the effects of the hazards.
Hazard(s) Addressed	Tornado, hail, high winds, lightning, wildfire
Goal/Objective	1-B
Priority	High
Estimated Cost	\$40,000 - \$50,000 each siren / total to be determined
Potential Funding Sources	City of Frisco annual budget, HMGP
Lead Department	Fire Department
Implementation Schedule	2-5 years
Effect on Old Buildings	Outdoor warning sirens do not have an impact on structures; they are designed to be heard outdoors only.
Effect on New Buildings	The outdoor warning sirens do not have an impact on structures; they are designed to be heard outdoors only.
Cost Effectiveness	The costs associated with maintaining an outdoor warning system are minimal and less expensive than total replacement of an outdoor warning system.
Discussion	The outdoor warning siren system is the most effective tool for outdoor notification, especially as relative to the fact that Frisco has many outdoor parks, trails, and nature areas that are used by citizens.

City of Frisco Action Item	Implement the Texas Individual Tornado Safe Room Rebate Program Locally
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Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1-C
Priority	Medium
Estimated Cost	50% of cost (up to) \$3,000 per shelter. Number of shelters to be determined
Potential Funding Sources	County Budget, HMGP, PDM, Homeowner, Work-in-kind
Lead Department	Building Inspections Department, Emergency Management, HMC
Implementation Schedule	2-5 years
Effect on Old Buildings	This action will improve the safety of existing homes with either in-ground or in-house shelters.
Effect on New Buildings	This action will improve the safety of new homes with either in-ground or in-house shelters.
Cost Effectiveness	The cost of this project is low compared to the potential benefits of reduction in personal injuries and/or deaths.
Discussion	Residential safe room sheltering can decrease potential personal injuries or deaths in the event of a tornado.

City of Frisco Action Items: New

City of Frisco Action Item	Emergency power generators to provide life safety due to power outages caused by natural hazards.
Hazard(s) Addressed	Tornado, Winter Storm, Drought, Extreme Heat, Flooding, Wildfire, Expansive Soils, Hail, Earthquake, High Winds, Lightning, Dam Failure
Goal/Objective	2-D
Priority	Medium
Estimated Cost	\$100,000- \$1.2M each
Potential Funding Sources	Local funds, Federal grants, state grants
Potential Matching Sources	Local funds, donations, in kind
Lead Department	Emergency Management, Facilities, Public Works
Implementation Schedule	0-5 years
Effect on Old Buildings	Any old buildings would meet building construction standards.
Effect on New Buildings	New structures would have standards for construction
Cost Effectiveness	Medium-High, Relative
Discussion	Frisco will install, upgrade, and/or replace generators for critical facilities, including fire stations, City Hall, the Police Department, Public Works, water/wastewater pump and lift stations, shelter sites, and any facility that is essential to maintain city services.

City of Frisco Action Item	Harden existing critical facilities to protect against natural hazard damage.
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Hazard(s) Addressed	Tornado, Winter Storm, Drought, Extreme Heat, Flooding, Wildfire, Expansive Soils, Hail, Earthquake, High Winds, Lightning, Dam Failure
Goal/Objective	2-D
Priority	Medium
Estimated Cost	\$20,000- \$150,000 each
Potential Funding Sources	Local funds, Federal grants, state grants
Potential Matching Sources	Local funds, donations, in kind
Lead Department	Engineering
Implementation Schedule	2-5 years
Effect on Old Buildings	Old buildings protected against damage from natural hazards
Effect on New Buildings	New structures would have standards for construction
Cost Effectiveness	Medium-High, Relative
Discussion	Frisco will harden critical infrastructure through mitigation by use of tornado, wind, fire, hail, ground movement, and impact resistant materials (windows, doors, roofing, construction, siding, roof bracings); dry-proofing buildings; upgrading to higher standard insulation; installing lightning rods and grounding systems; retrofitting for low-flow plumbing; replacing landscaping with drought and fire resistant plants; implementing higher standards for foundations. This includes hail-resistant covered parking for city facilities.

City of Frisco Action Item	Identify and implement building standards to reduce or avert expansive-soils damages and losses to structures and infrastructure, with emphasis on critical facilities and utilities.
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-C
Priority	Medium
Estimated Cost	\$10,000 - \$15,000
Potential Funding Sources	Private
Potential Matching Sources	None
Lead Department	Engineering
Implementation Schedule	2-5 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	New standards for constructing buildings to defend against expansive soils
Cost Effectiveness	Relative

Discussion	Building standards will keep buildings from being built in expansive soil troubled areas.
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City of Frisco Action Item	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Dam Failure, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B
Priority	High
Estimated Cost	\$5,000 - \$10,000
Potential Funding Sources	General Fund
Potential Matching Sources	None
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.

City of Frisco Action Item	Add all-directional sirens and solar panels to the outdoor warning system to notify the public of impending severe weather.
Hazard(s) Addressed	Tornado, High Winds, Hail, Lightning, Flooding
Goal/Objective	1-A, 1-B, 2-D
Priority	High
Estimated Cost	\$200,000 - \$300,000
Potential Funding Sources	General Fund
Potential Matching Sources	None
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Cost is minimal compared to possibility of injury

Discussion	All directional sirens would multiply the area of effect for the outdoor warning system. Solar panels would add a level of resiliency by protecting the sirens against power outages that can accompany severe weather. This action item would be specific to installation/placement of new OWS sirens in the jurisdiction.
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City of Frisco Action Item	Implement seasonal trimming/removal of trees along utility and road corridors, preventing potential winter storm damage.
Hazard(s) Addressed	Winter Storms
Goal/Objective	3-C
Priority	High
Estimated Cost	\$10,000 - \$15,000
Potential Funding Sources	General Fund
Potential Matching Sources	None
Lead Department	Public Works
Implementation Schedule	2-5 years
Effect on Old Buildings	Reduce potential for debris/limb damages during severe weather
Effect on New Buildings	Reduce potential for debris/limb damages during severe weather
Cost Effectiveness	Cost is minimal compared to possibility of injury
Discussion	Separate from regular maintenance, this program would identify high-hazard areas adjacent to roadways or utility areas and target those locations for abatement measures, including, but not limited to, tree trimming and/or removal.

City of Frisco Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	2-A, 3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones

Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.

City of Frisco Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.

City of Frisco Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.

Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

City of Frisco Action Item	Update Frisco's Drought Contingency & Water Emergency Response Plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local funds; in-kind
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Will identify needs for retrofits, such as low flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing
Cost Effectiveness	Low cost for effective means of preserving water resources
Discussion	Develop a plan for conserving water based on the stages of drought. Plan would include strategies for soil movement abatement depending on drought stage. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

National Flood Insurance Program (NFIP) Compliance

Frisco is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

Collin County							
Communities Participating in the National Flood Program							
CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
480134#	FRISCO, CITY OF	DENTON COUNTY/COLLIN COUNTY	1/24/1975	6/18/1980	4/18/2011	6/18/1980	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

Community Floodplain Administrator	NFIP Activities	Activity Description	Enforcement
Senior Stormwater Engineer	Require permits for all proposed construction or other development in the community.	Permits are issued through the Development Services or Engineering Department.	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval.
	Review proposed development to assure that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law.		
	Review all permit applications to determine whether proposed buildings site will be reasonably safe from flooding.		
	Review subdivision proposals and other proposed developments to determine whether such proposals will be reasonably safe from flooding.		

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), the City of Frisco has developed a plan maintenance process which is described in the following paragraphs. The City of Frisco, along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the City of Frisco, the county, and the city council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) will be implemented by participating jurisdictions as described throughout this document.

The City of Frisco Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, the City of Frisco will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	Activity	Schedule
Emergency Management Analyst	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdictions, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting them for approval. The plans will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

2011 Plan Incorporation: Collin County's 2011 mitigation plan was incorporated into Frisco's fire codes and building codes through code updates (2012), as appropriate and planned in the 2011 HazMAP.

2016 Plan Incorporation: The vulnerability and capabilities assessments for each jurisdiction were carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into existing local planning strategies and mechanisms. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
City of Frisco	Emergency Management Analyst	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
		Emergency Operations Plan updates	Triennially	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Frisco Hazard Mitigation Planning Committee considers this HazMAP, including development and maintenance, to be the primary vehicle to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement *(In compliance with 201.6(c)(4)(iii))*

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committees will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex I: City of Josephine

1. Introduction

This annex was prepared in 2020 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan. The City of Josephine participated in the Collin County Hazard Mitigation Planning Team (HMPT). This is a new hazard mitigation plan and the first to be submitted to FEMA for the City of Josephine. In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete hazard mitigation planning tool for the City of Josephine. It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While the City of Josephine has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Josephine officials recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and online.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. The table below outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
Nationals Centers of Environmental Information (NCEI)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Urban Interface
National Inventory of Dams	Dam Information

Planning Committee

This Hazard Mitigation Action Plan was developed by the City of Josephine Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the Collin County HMPT.

The Collin County HMPT was assembled in November 2020 with representatives from participating county jurisdiction planning committees, including mayors, police chiefs, fire chiefs, and the general public. Collin County acted as the plan development consultant providing hazard mitigation planning services. The efforts of the planning committees and the HMPT were led by the Collin County Assistant Emergency Management Coordinator. The table below provides a list of the primary representatives on the Josephine planning committee.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
Josephine City Council	Mayor	Plan Development
Josephine Police Department	Police Chief	Plan Development
Josephine Fire Department	Assistant Fire Chief	Plan Development Coordinator
Engineering	City Engineer	Plan Development

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.

- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders emailed and involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Josephine Economic Development Committee	Committee Secretary	Review of plan
Josephine Food Bank	Food Bank Coordinator	Review of plan

Subsequent to the State of Texas and FEMA approval of the plan, each organization above is committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Collin County and included all jurisdiction's participation:

- Collin County Kickoff Meeting – August 12, 2020
- Collin County HazMAP Planning Meeting – Week of 11/05/2020
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022TBD at 9AM

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.

- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee for the City of Josephine identified several natural and man-made hazards that could affect the city. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for the city of Josephine and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
		Level	Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%		Minor	Very few injuries, if at all none	0

	Life Impact	Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for the City of Josephine

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	0	0	0	0
Drought	2	0	1	3	1.15
Earthquake	0	1	0	1	0.45
Expansive Soils	2	0	0	1	0.7
Extreme Heat	1	1	0	2	0.85
Flooding	1	1	0	0	0.65
Hail	2	0	0	1	0.7
High Winds	1	0	1	1	0.65
Lightning	1	0	0	0	0.3
Tornado	2	1	1	2	1.4
Wildfire	1	2	0	1	1.1

Winter Storms	2	0	2	3	1.4
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The conclusions drawn from the hazard profiling process for the City of Josephine, resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in the City of Josephine.

Table 3.3 Hazard Ranking for the City of Josephine

High Risk (PRI 2 - 3)	
Moderate Risk (PRI 1.01 -1.9)	Tornado Winter Storms Drought Wildfire
Low Risk (PRI 0.50 – 1)	Extreme Heat Expansive Soils Hail High Winds
Negligible to No Risk (PRI 0 – 0.49)	Earthquake Flooding Lightning Dam Failure

Changes in Development and Priorities (Requirement §201.6(d) (3))

Our jurisdiction is in one of the fastest growing areas of the nation, hence development has increased and will continue to increase our vulnerability to hazards that may impact us.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the City of Josephine faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation in this plan.

Dam and Levee Failure This hazard was identified as having negligible to no risk to the city of Josephine because there are no dams within the city Limits. There are dams to the north west of the city, therefore as a participant in the county plan inundation studies will be considered.

Drought Drought has the potential to impact the entire planning area equally; all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of Josephine are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma,

Lake Tawakoni, Lake Fork and the Lake Chapman-Cooper reservoir system are water sources for the City of Josephine and are vulnerable to drought. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake Earthquakes have the potential to occur anywhere in the geographic planning area, therefore all geographic areas are potentially vulnerable. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

Expansive Soils Although expansive soils are prevalent throughout Collin County, this hazard is considered a low risk to the City of Josephine. All property has the potential to be vulnerable to expansive soils, especially those constructed under older building codes.

Extreme Heat Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air conditioning are most vulnerable.

Flooding There is a history of minor flooding at FM 1777 and FM6 that obstructs the roadway. Flooding around city hall occurs during heavy rainfall events, roughly an estimated 1-2 times per year. Roadway at Main and Swanson is obstructed from minor flooding.

Hail All geographic areas, property, and populations in Josephine have the potential to be vulnerable to hail. Exposed populations, manufactured homes, and older properties are most vulnerable.

High Winds All geographic areas of Josephine have the potential to be vulnerable to high winds; however, due to Josephine's geography (flat, open area), manufactured homes and exposed populations are most vulnerable.

Lightning All geographic areas, property, and populations in Josephine have the potential to be vulnerable to lightning. Property without lightning protection and exposed populations are most vulnerable.

Tornado Residents on the northwest side of Josephine are most vulnerable to tornados. Many of the houses are manufactured homes whose residents, due to the secluded nature of the area, may be unable to reach shelter quickly.

Wildland Fire 51.41% of the city is in the WUI; therefore, most, if not all, areas, property, and population of Josephine are vulnerable to wildfire.

Winter Storms Winter storms are a significant threat to the City of Josephine. These winter storms have the potential to make roads impassable for days. Residents may be confined to their homes due to the storm and may be without basic services, such as water and electricity, for an extended period of time. Josephine residents live a distance from stores and may be unable to buy supplies in the event of a prolonged storm.

Identification of Assets and Vulnerability Assessment

An inventory of the City of Josephine geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population:** Includes the number of people residing in Collin County as delineated by U.S. Census 2020 block data provided by NCTCOG.
 - **Improved property:** Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
 - **Emergency facilities:** Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
 - **Critical facilities:** Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- Critical infrastructure:** Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the 2020 NCTCOG Population Estimates, the total population of the City of Josephine in 2020 was 1,966 people, with 695 households. The count breakdown by is provided in *Table 3.4*.

Table 3.4. The City of Josephine Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total**	Population Density (Sq. Mile)	Household	% of County Total**	Household Density (Sq. Mile)
Josephine	1,966	0.18%	1127.68	702	0.24%	397.07

Source: 2020 NCTCOG Population Estimate & Collin County Appraisal District

**Includes totals from incorporated jurisdictions not participating in the plan

Table 3.5 summarizes population counts and population change (absolute and percent predication for the City of Josephine).

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
Josephine	812	1450	1550	100	6.89%

Source: 2020 NCTCOG Population Estimate

Property

There are an estimated 993 parcels in the City of Josephine, with an estimated \$102,041,382 in total assessed value of, *Table 3.6* lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
Josephine	993	0.20%	\$102,041,382

Source: Collin County Appraisal District

¹Includes public buildings (residential, commercial, industrial, agricultural, religion, government, education)

Emergency Facilities

There are 2 identified emergency facilities in the City of Josephine, including 1 fire station, 1 police station, and 0 hospitals. *Table 3.7* presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
Josephine	1	1	0

Source: County Data and Regional Hazard Assessment Tool

Critical Facilities

There are six critical facilities, which are considered non-emergency in the City of Josephine. The critical facilities include 0 schools and six historical property sites (*Table 3.8*). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
Josephine	0	6

Source: Local jurisdictions

Critical Infrastructure

There are 5 identified critical infrastructure facilities in the City of Josephine, including 0 airports, 0 natural gas facilities, 1 water treatment facilities, 0 wastewater treatment facilities, 0 dams, and 4 railway/highway bridges (*Table 3.9*).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
Josephine	0	0	0	1	0	4

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, the City of Josephine's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for the City of Josephine, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.10* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail	X		
High Winds		X	
Lightning		X	

Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) no recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Josephine are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the City of Josephine are expected mostly during water shortages, financially unknown due to lack of accurate reporting .
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were four (4) county-wide fatalities recorded due to extreme heat, none from the City of Josephine. The City of Josephine and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas and the improved property in the City of Josephine is not vulnerable to this hazard.
Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings and the emergency facilities in the City of Josephine are not vulnerable to this hazard.

Critical Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the critical facilities in the City of Josephine are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI) there is no impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in the City of Josephine.

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. Approximately 92 residential parcels in the City of Josephine are located within the 100-year floodplain.
Improved Property	There have been zero (0) recorded flood events in the City of Josephine. Property losses are expected but unknown due to inaccurate reporting. No crop losses are expected or recorded county-wide. Approximately \$4,467,551 of the total assessed value is at risk from the 100-year storm event.
Emergency Facilities	Emergency facilities have the potential to be at risk in the 100-year storm event.
Critical Facilities	Critical facilities have the potential to be at risk in the 100-year storm event.
Critical Infrastructure	Critical Infrastructure have the potential to be at risk in the 100-year storm event.

Summary Table 3.14

Hail	
Population	National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Josephine are expected but unknown due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data for the City of Josephine indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in the City of Josephine are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the City of Josephine are vulnerable to this hazard.

Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in the City of Josephine are vulnerable to this hazard.
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Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events. All the population in the City of Josephine are vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Josephine are expected but unknown due to lack of accurate reporting. No crop losses resulted from this hazard in the City of Josephine.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in the City of Josephine are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the City of Josephine are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in the City of Josephine are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), lightning events can be expected to cause no deaths or injuries in the City of Josephine. All the population in the City of Josephine are vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Josephine are expected but unknown due to lack of accurate reporting.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in the City of Josephine are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the City of Josephine are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in the City of Josephine are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in the City of Josephine. All the population of Josephine is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Josephine are expected but unknown due to lack of accurate reporting. No crop losses are expected from this hazard in the City of Josephine.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in the City of Josephine are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the City of Josephine are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the City of Josephine are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 51.41% of the City of Josephine is vulnerable to wildfires. There have been no recorded injuries or fatalities due to wildfires.
Improved Property	Based on historical data, annual financial losses expected from property loss due to wildfires are unknown due to lack of accurate reporting; therefore, percentage of the overall property improvement values across the City of Josephine are also unknown.
Emergency Facilities	Based on geographic information there are 0 fire stations at risk from wildfire events.
Critical Facilities	Based on geographic information there are no schools at risk from wildfire events.
Critical Infrastructure	Based on geographic information there are 0 bridges, 0 dams, 0 wastewater treatment facilities, and 0 water treatment facilities at risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the City of Josephine. All the population of the City of Josephine are exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Josephine are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the City of Josephine.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in the City of Josephine are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in the City of Josephine are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in the City of Josephine are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serves as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the City of Josephine considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities														
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard mitigation requirements)	Growth management ordinances (also called "smart growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other
City of Josephine	Y	Y	Y	Y	N	Y	Y	N	N	Y	N	N	Y	N
Average % Yes Capabilities – 61%														
Y- Yes N- No ?- Don't Know														
														61%

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes per Jurisdiction
City of Josephine	Y	Y	Y	Y	Y	Y	N	N	N	N	60%
Average % Yes Capabilities – %											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes per Jurisdiction
City of Josephine	Y	Y	Y	Y	Y	Y	Y	Y	N	N	90%
Average % Yes Capabilities – %											
Y- Yes N- No ?- Don't Know											

To quantify Josephine's legal and regulatory capabilities, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, Josephine has 61% of identified legal and regulatory capabilities, 60% of identified administrative and technical capabilities, and 90% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
City of Josephine	City Manager	The city council, including the mayor, mayor pro-tem, and council members, along with the city manager, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. Ability to implement and approve mitigation actions and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2016 HazMAP, the City of Josephine Hazard Mitigation Planning Committee developed mitigation strategies for the plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones within City of Josephine.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis, economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Josephine Action Items: Deferred from 2016 Plan

City of Josephine Action Item	Develop and implement a comprehensive public education program to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Winter Storm, Drought, Extreme Heat, Flooding, Wildfire, Expansive Soils, Hail, Earthquake, High Winds, Lightning, Dam Failure
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	This public education program would be based on the hazards that the City of Josephine identified. The program would use a combination of distributed literature, social media, and civic

	presentations to educate residents on natural hazards and promote hazard mitigation.
Status	Receive supplies and materials from the NCTCOG KnoWhat2do Program and provide to residents. Continue – will be included in 2021

City of Josephine Action Item	Identify and establish heating and cooling centers for vulnerable populations
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D, 3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Establishing heat and cooling shelters would allow special populations to reduce their vulnerability to extreme heat and cold
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	Enhance safety of existing residential structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.

Discussion	This program gives rebates to residents who purchase and install safe rooms in their homes or on their properties to protect against severe weather.
Status	Deferred – Residents did received funding through the NCTCOG Saferoom Rebate Program. The NCTCOG Program has been suspended

City of Josephine Action Item	Increase outdoor warning siren coverage for new development areas
Hazard(s) Addressed	Dam Failure, High Winds, Tornado, Wildfire, Hail, Flooding, Lightning
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$25,000 per siren. Number of sirens TBD.
Potential Funding Sources	General Fund, HMGP, PDM
Potential Matching Sources	Local funds, in-kind, donations
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in keeping citizens that are outdoors notified of hazards.
Discussion	This project will expand Josephine's siren coverage to new areas of development not currently protect by sirens.
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	2-A, 3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones

Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Item	Develop and implement a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	2-3 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	A CWPP will identify all structures and infrastructures that would be impacted by a potential wildfire, and identify potential targeted mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Item	Develop, adopt, and enforce water conservation measures
Hazard(s) Addressed	Drought
Goal/Objective	2-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-3 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing

Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	City of Josephine will develop, adopt, and enforce water conservation ordinances, codes, and other regulatory measures to conserve water during times of drought.
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	TBD
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.

Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information
Status	Deferred – will be included in 2021 Plan

City of Josephine Action Items: New

City of Josephine Action Item	Develop and implement a comprehensive public education program to educate on the actions to help mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium

Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.

City of Josephine Action Item	Identify and establish heating and cooling centers for vulnerable populations
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D, 3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Establishing heat and cooling shelters would allow special populations to reduce their vulnerability to extreme heat and cold

City of Josephine Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter

Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	Enhance safety of existing residential structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	This program gives rebates to residents who purchase and install safe rooms in their homes or on their properties to protect against severe weather.

City of Josephine Action Item	Increase outdoor warning siren coverage for new development areas
Hazard(s) Addressed	High Winds, Tornado, Wildfire, Hail, Flooding, Lightning
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$25,000 per siren. Number of sirens TBD.
Potential Funding Sources	General Fund, HMGP, PDM
Potential Matching Sources	Local funds, in-kind, donations
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in keeping citizens that are outdoors notified of hazards.
Discussion	This project will expand Josephine's siren coverage to new areas of development not currently protect by sirens. This action item would be specific to installation/placement of new OWS sirens in the jurisdiction.

City of Josephine Action Item	Develop and implement a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants

Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	2-3 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	A CWPP will identify all structures and infrastructures that would be impacted by a potential wildfire, and identify potential targeted mitigation projects.

City of Josephine Action Item	Develop, adopt, and enforce water conservation measures
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-3 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	City of Josephine will develop, adopt, and enforce water conservation ordinances, codes, and other regulatory measures to conserve water during times of drought. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

City of Josephine Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake

Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.

City of Josephine Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	TBD
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

City of Josephine Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Drought, Earthquake, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High

Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as other emergency and hazard information

National Flood Insurance Program (NFIP) Compliance

Josephine is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
480756#	JOSEPHINE, CITY OF	HUNT COUNTY/COLLIN COUNTY	05/28/76	01/02/80	01/06/12	12/15/95	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

Jurisdiction	Community Floodplain Manager	NFIP Activity	Activity Description	Enforcement
City of Josephine	City Secretary	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through City Hall. City of Josephine requires 2 feet of freeboard above the base flood elevation for the top of bottom floor on residential structures and non-residential structures that will be built on properties created or platted after the effective date of the Flood Damage Prevention Order	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Any person who violates this article or fails to comply with any of its requirements shall upon conviction thereof be fined in accordance with the general penalty found in section 1.01.009 of this code per violation, and in addition shall pay all costs and expenses involved in the case. Each day a
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Future Mitigation Projects	City of Josephine will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	

				violation occurs is a separate offense.
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7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), Collin County has developed a plan maintenance process which is described in the following paragraphs. Collin County, along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the City of Josephine, the county, and the city council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) will be implemented by participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, Josephine will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	Activity	Time
Police Chief	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation

action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting them for approval. The plans will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives and actions outlined in this plan will be integrated into these existing mechanisms as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
City of Josephine	City Council	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Police Chief	Emergency Action Plan updates	Annually	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council, Director of Planning	Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, City Council	Drought Contingency plans	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
	Planning Director, City Council	Natural Resource Conservation Plan	Annually	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Josephine Hazard Mitigation Planning Team considers this HazMAP, including development and maintenance, to be the primary vehicles to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committees will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex J: City of Lavon



1. Introduction

This annex was prepared in 2020 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan. This plan updates the Lavon hazard mitigation plan submitted to FEMA as part of the 2016 Collin County plan. The City of Lavon participated on the Collin County Hazard Mitigation Planning Team (HMPT) for this update. In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete hazard mitigation planning tool for the City of Lavon. It contains capability assessment information, a specific

vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While the City of Lavon has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Lavon officials recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and online.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. The table below outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Climatic Data Center (NCDC)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Wildland/Urban Interface
National Inventory of Dams	Dam Information

Planning Committee

This Hazard Mitigation Action Plan was developed by the Lavon Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the Collin County HMPT. The efforts of the planning committee were coordinated with the HMPT by the Collin County Assistant Emergency Management Coordinator; the City of Lavon acted as the plan development consultant providing hazard mitigation planning services.

The Collin County HMPT was assembled in 2020 with representatives from participating jurisdiction planning committees, including mayors, police chiefs, fire chiefs, and the general public. The table below provides a list of the primary representatives on the Lavon planning committee.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
Fire Department	Fire Chief	Plan Development
City Council	Councilmember	Plan Development
City Council	Mayor	Plan Development
Police Department	Police Chief	Plan Development
Public Works	Director of Public Works	Plan Development

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.

- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders emailed and involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Community ISD	School Board Member	Review of plan
North Texas Municipal Water District	Board Member	Review of plan

Subsequent to the State of Texas and FEMA approval of the plan, each organization above is committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The City of Lavon was provided the plan for update on 8/18/2020 and provided input and updates on April 30, 2021. The city provided updates that included information from multiple departments within the city including council and the fire department.

The following meetings were held by Collin County:

- Collin County Kickoff Meeting – August 12, 2020
- Collin County HazMAP Planning Meeting – Week of 11/05/2020
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.
- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee for the City of Lavon identified several natural and man-made hazards that could affect the city. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for the city of Lavon and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

PRI Value = (Probability x .30) + (Life Impact x .35) + (Property Impact x .25) + (Spatial Extent x .10)

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
		Level	Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for the City of Lavon

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	0	1	0	0.25
Drought	2	0	0	3	0.9
Earthquake	0	1	0	1	0.45
Expansive Soils	2	0	0	1	0.7
Extreme Heat	2	1	0	2	1.15
Flooding	1	1	0	1	0.75
Hail	2	0	0	1	0.7
High Winds	2	0	0	2	0.8
Lightning	1	0	0	0	0.3
Tornado	2	2	2	2	2
Wildfire	2	1	2	2	1.65
Winter Storms	2	0	2	3	1.4

The conclusions drawn from the hazard profiling process for the City of Lavon, resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in the City of Lavon.

Table 3.3 Hazard Rankings for City of Lavon

High Risk (PRI 2 - 3)	Tornado
Moderate Risk (PRI 1.01 -1.9)	Wildfire Winter Storms Extreme Heat
Low Risk (PRI 0.50 – 1)	High Winds Flooding Expansive Soils Hail Drought
Negligible to No Risk (PRI 0 – 0.49)	Earthquake Lightning Dam Failure

Changes in Development and Priorities (Requirement §201.6(d)(3))

In terms of physical development for the City of Lavon, based on 2020 Census estimates the population of Lavon increased 100%, from 2,219 to 4,469. Housing units increased from approximately 775 to 1500.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the City of Lavon faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation in this plan.

Dam and Levee Failure The City of Lavon is not subject to dam failure because no Dams are located inside the city limits and the city is not vulnerable to a Dam failure that might occur outside the city limits, but as a participant in the county plan inundation studies will be considered.

Drought Drought has the potential to impact the entire planning area equally; all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of Lavon are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma, Lake Tawakoni, Lake Fork and the Lake Chapman-Cooper reservoir system are water sources for the City of Lavon and are vulnerable to drought. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake Earthquakes have the potential to occur anywhere in the geographic planning area, therefore all geographic areas are potentially vulnerable. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity. However, this hazard was identified as having negligible or no risk to the City of Lavon.

Expansive Soils All property has the potential to be affected by expansive soils, especially those constructed under older building codes.

Extreme Heat The entire population has the potential to be vulnerable to extreme heat. The homeless, very young, elderly, and populations without air conditioning are most vulnerable.

Flooding There are several undersized culverts that need to be upgraded. This makes the City of Lavon at risk for flooding.

Hail The entire geographic planning area, properties, and populations have the potential to be vulnerable to hail. Exposed populations, manufactured homes, and older properties are most vulnerable.

High Winds The entire geographic planning area has the potential to be vulnerable to high winds. Significant vegetative debris generated during high wind events requires removal to keep roads passable. Manufactured homes and exposed populations are most vulnerable.

Lightning All geographic areas, property, and populations in Josephine have the potential to be vulnerable to lightning. Direct strikes have the power to cause significant damage to buildings, critical facilities, infrastructure, and ignition of wildfires which can result in widespread damages to property. The

City of Lavon is at low risk for lightning. Property without lightning protection and exposed populations are most vulnerable.

Tornado The entire geographic planning area has the potential to be vulnerable to tornadoes, with manufactured home populations being most vulnerable.

Wildland Fire All geographic areas in Lavon are susceptible to wildfire, with the most vulnerable structures and populations located in the WUI. 52.46% of the city's population lives in the Wildland Urban Interface, and this area is at a high level of risk according to the Texas Forest Service Wildfire Risk Assessment Summary.

Winter Storms The entire geographic area of Lavon has the potential to be vulnerable to winter storms, with the homeless, elderly, and populations without access to heat being most vulnerable. These winter storms have the potential to make roads impassable for days. Residents may be confined to their homes due to the storm and may be without basic services, such as water and electricity, for an extended period of time.

Identification of Assets and Vulnerability Assessment

An inventory of the City of Lavon geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population**: Includes the number of people residing in Collin County jurisdictions as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property**: Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities**: Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities**: Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure**: Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the 2020 NCTCOG Population Predictions, the total population of the City of Lavon in 2020 was 4,102 people, with 1,610 households. The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4. Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total	Population Density (Sq. Mile)	Household	% of County Total	Household Density (Sq. Mile)
City of Lavon	4,210	0.38%	1354.24	1,500	0.38%	454.55

Source: 2020 NCTCOG Population Estimate & Collin County Appraisal District

Table 3.5 summarizes population counts and population change (absolute and percent predictions for the City of Lavon).

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
City of Lavon	2,219	3,750	4,090	340	9.07%

Source: 2020 NCTCOG Population Estimate

Property

There are an estimated 2,458 parcels in the City of Lavon, with an estimated \$362,865,134 in total assessed value of, *Table 3.6* lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
City of Lavon	2,458	0.26%	\$362,865,134

Source: Collin County Appraisal District 7-2021

Emergency Facilities

There is one identified emergency facility in the City of Lavon, including one fire station, one police station, and no hospitals. *Table 3.7* presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Number of Fire Stations	Number of Police Stations	Number of Hospitals
City of Lavon	1	1	0

Source: County Data and Regional Hazard Assessment Tool

Critical Facilities

There is one critical facility, which are considered non-emergency in the City of Lavon. The critical facilities include one school and two historical property sites (*Table 3.8*). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
City of Lavon	1	2

Source: Local jurisdictions

Critical Infrastructure

There are 4 identified critical infrastructure facilities in the City of Lavon, including no airports, no natural gas facilities, no water treatment facilities, one wastewater treatment facilities, no dams, and 3 railway/highway bridges (*Table 3.9*).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
City of Lavon	0	0	1	0	0	3

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, the City of Lavon's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for the City of Lavon, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding

these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.10* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail	X		
High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) zero (0) recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lavon are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the City of Lavon are expected mostly during water shortages, financially unknown due to lack of accurate reporting.
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.

Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the City of Lavon. The City of Lavon and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is little impact of extreme heat to developed areas and the improved property in City of Lavon is not vulnerable to this hazard.
Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is little impact of extreme heat to buildings and the emergency facilities in City of Lavon are not vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there is little impact of extreme heat to buildings, and the critical facilities in City of Lavon are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI) there is little impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in City of Lavon

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. Approximately 14 residential parcels in the City of Lavon are located within the 100-year floodplain.
Improved Property	There have been four (4) recorded flood events in the City of Lavon. Property losses are expected but unknown due to inaccurate reporting. No crop losses are expected or recorded county-wide. Approximately \$259,195 of the total assessed value is at risk from the 100-year storm event.
Emergency Facilities	Emergency facilities have the potential to be at risk in the 100-year storm event.
Critical Facilities	Critical facilities have the potential to be at risk in the 100-year storm event.

Critical Infrastructure	Critical Infrastructure have the potential to be at risk in the 100-year storm event.
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Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lavon are expected at \$7,142.86 per year however these values are underestimated due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data for City of Lavon indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in City of Lavon are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in City of Lavon are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in City of Lavon are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are one (1) recorded injury and no recorded fatalities from high wind events. All the population of City of Lavon is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lavon are expected at \$628.57 per year however these values are underestimated due to lack of accurate reporting. No in crop losses resulted from this hazard in City of Lavon.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in City of Lavon are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in City of Lavon are vulnerable to this hazard.

Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in City of Lavon are vulnerable to this hazard.
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Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), lightning events can be expected to cause no deaths or injuries in City of Lavon. All the population of City of Lavon is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lavon are expected at \$2,083.33 per year however these values are underestimated due to lack of accurate reporting.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in City of Lavon are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in City of Lavon are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in City of Lavon are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in City of Lavon. All the population of City of Lavon is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lavon are expected but unknown due to lack of accurate reporting.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in City of Lavon are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in City of Lavon are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in City of Lavon are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 52.46% of City of Lavon is vulnerable to wildfires. There have been no recorded injuries or fatalities due to wildfires.
Improved Property	Based on historical data, annual financial losses expected from property loss due to wildfires are unknown due to lack of accurate reporting; therefore, percentage of the overall property improvement values across the City of Lavon are also unknown.
Emergency Facilities	Based on geographic information there are 1 fire stations at risk from wildfire events.
Critical Facilities	Based on geographic information there are no schools at risk from wildfire events.
Critical Infrastructure	Based on geographic information there are 0 bridges, 0 dams, 0 wastewater treatment facility, and 0 water treatment facility at risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the City of Lavon. All the population of City of Lavon exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lavon are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in City of Lavon.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in City of Lavon are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in City of Lavon are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in City of Lavon are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serves as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, Lavon considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
City of Lavon	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	?	76%
Average % Yes Capabilities – 76%															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes
City of Lavon	Y	Y	Y	Y	N	N	N	N	Y	Y	60%
Average % Yes Capabilities – 60%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes
City of Lavon	Y	Y	Y	Y	Y	Y	Y	N	N	?	70%
Average % Yes Capabilities – 70%											
Y- Yes N- No ?- Don't Know											

To quantify Lavon’s legal and regulatory capabilities, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, Lavon has 76% of identified legal and regulatory capabilities, 60% of identified administrative and technical capabilities, and 70% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
City of Lavon	Mayor	The city council, including the mayor, mayor pro-tem, and council members, along with the department heads, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. As the governing body, the ability to implement and approve mitigation actions and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2021 HazMAP, the City of Lavon Hazard Mitigation Planning Committee developed mitigation strategies for the plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Expand adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones within Lavon.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of the new and deferred action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Lavon Action Items: Modified from 2016 Plan

Lavon Action Item	Employ an automated alert system to broadcast weather conditions, hazards and road closures. Also will allow for broadcast of watches, warnings, evacuation routes, shelter information, and mitigation information.
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$3,000
Potential Funding Sources	City Budget
Lead Department	City Manager's Office
Implementation Schedule	Done
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	This project's cost effectiveness is in the lives it saves by alerting citizens to take shelter during extreme weather conditions.
Discussion	The automated alert system will reduce the threats to the citizens by alerting them to impending severe weather and warn citizens to seek appropriate shelter inside.
Status	Completed

Lavon Action Item	Reduce the impact of Severe Heat by utilizing Green Landscaping Roofing on all new city construction.
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Hazard(s) Addressed	Extreme Heat
Goal/Objective	2-B, 2-D
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	Local funding, HMGP
Lead Department	Public Works
Implementation Schedule	1-5 years
Effect on Old Buildings	No effect
Effect on New Buildings	The green landscaping will reduce overall effect of extreme heat on buildings, making cooling more efficient and reducing the use of electricity as well as reducing the effects of extreme summer heat on the citizens.
Cost Effectiveness	This project is cost effective in the reduction of hazards to citizens as well as the reduced power and electricity requirements for cooling buildings in summer heat.
Discussion	By utilizing landscaping on the roofs several significant benefits will be utilized. Including, insulation in the facility reducing the need for electricity, reducing the impact of extreme heat on the residents.
Status	Deferred – included in 2021 Action Items

Lavon Action Item	Develop and implement a Master Storm Water Drainage Plan for the City.
Hazard(s) Addressed	Flooding
Goal/Objective	2-E
Priority	High
Estimated Cost	\$50,000
Potential Funding Sources	City Budget, Grant Programs
Lead Department	Department of Public Works
Implementation Schedule	1-5 years
Effect on Old Buildings	Improved planning reduces potential flooding impacts
Effect on New Buildings	Mitigates flooding impacts
Cost Effectiveness	This project is extremely cost effective when compared to the property and agriculture/crop damage that will be avoided once the Master Storm Drainage plan enactment begins.
Discussion	There is a Storm Sewer Map currently, but no Master Storm Drainage Plan. By preparing and implementing this plan, it will reduce the occurrence of flash flooding and sudden inundation of areas. It will improve transportation during severe weather. Reduce vulnerabilities to those homeowners who are located in areas outside of flood zones but vulnerable to overflow flooding. And eliminate the rerouting of storm water to unattended areas.
Status	Deferred – included in 2021 Action Items

Lavon Action Item	Implement Building Codes requiring New Commercial Facilities to utilize Hail Resistant Roofing Materials to the extent allowed by State law..
Hazard(s) Addressed	Hail
Goal/Objective	2-C
Priority	Medium
Estimated Cost	\$5,000-\$10,000
Potential Funding Sources	HMGP, Local budget
Lead Department	Emergency Management
Implementation Schedule	1-5 years
Effect on Old Buildings	Hail resistant roofing and window coverings will significantly mitigate the potential hazards of property damage as well as possible personal injury due to severe storm and hail.
Effect on New Buildings	Reduce impacts of hail on new structures
Cost Effectiveness	The cost effectiveness of the project will be the reduction of damage to property as well as reducing the need for debris disposal after a storm.
Discussion	The City of Lavon will enact codes for new development and city construction by requiring developers to install hail resistant roofing and window coverings, thus reducing the effect of severe weather and damage.
Status	Deferred – included in 2021 Action Items

Lavon Action Item	Retrofit an existing structure or construct a new City Hall built to withstand an EF2 Tornado.
Hazard(s) Addressed	Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	\$5,000,000
Potential Funding Sources	City Budget, Grant Programs
Lead Department	Department of Public Works
Implementation Schedule	5-10 years
Effect on Old Buildings	No effect on existing buildings unless retrofit
Effect on New Buildings	This would affect the new City Hall building, making it able to withstand an EF2 tornado, mitigating the loss of such critical infrastructure.
Cost Effectiveness	This project is cost effective because the current City Hall building is a renovated historic structure and will not withstand an EF2 tornado. City Hall houses many functions, documents, and records, and the potential loss of those greatly outweighs the cost of a new hardened structure.
Discussion	The current City Hall houses Administration and Finance, Development Services, Building Inspection and Permitting, , Municipal Court and City

	Council Chambers, PW, community meeting rooms, gymnasium and all the records are housed. The City Hall facility is a historic structure. The construction or retrofit of the new City Hall should include a hardened infrastructure to withstand known hazard extent levels.
Status	Deferred – included in 2021 Action Items

Lavon Action Item	Retrofit an existing structure or construct a new Public Works office and shop built to withstand a EF2 Tornado
Hazard(s) Addressed	Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	\$1,000,000
Potential Funding Sources	City Budget, Grant Programs
Lead Department	Department of Public Works
Implementation Schedule	2-4 years
Effect on Old Buildings	No effect on existing buildings unless retrofit
Effect on New Buildings	This would affect the new Public Works office and shop buildings, making them able to withstand an EF2 tornado, mitigating the loss of such critical infrastructure and protecting critical equipment.
Cost Effectiveness	This project is cost effective because the current Public Works building will not withstand an EF2 tornado. The building houses many functions, documents, operations equipment, heavy equipment, and records, and the potential loss of those greatly outweighs the cost of a new hardened structure.
Discussion	The current Public Works building contain operations and heavy equipment. The building would not withstand an EF2 tornado. In order to mitigate the effects of that hazard, the retrofit or construction of the new Public Works office and shop should include a hardened infrastructure to withstand known hazard extent levels.
Status	Deferred – included in 2021 Action Items

Lavon Action Item	Implement a program to inspect and clear excessive brush along high-voltage power lines and surrounding land, reducing the vulnerability to citizens located in potential wildland fire areas.
Hazard(s) Addressed	Wildland Fire
Goal/Objective	2-C
Priority	High
Estimated Cost	\$500,000/year
Potential Funding Sources	Local funding, HMGP
Lead Department	Public Works, Fire Department
Implementation Schedule	1-2 years

Effect on Old Buildings	This would mitigate the effects of wildland fire encroaching upon built up areas for existing construction.
Effect on New Buildings	This would mitigate the effects of wildland fire encroaching upon built up areas for new structures.
Cost Effectiveness	This project's cost effectiveness is seen in the management of wildland fire fuels to significantly reduce the damage or loss of buildings, structures, agriculture products, or homes to wildland fire.
Discussion	Currently the City of Lavon is susceptible to wildland fires due to the large amounts of family owned and un-maintained land along with the large farming industry. With the clearing of brush around high power voltage lines and surrounding land, this will create a fire break, greatly reducing the hazard and risks associated with possible ignition sources of wildland fire.
Status	Deferred – included in 2021 Action Items

Lavon Action Item	Develop and implement a community awareness program utilizing the City's existing communication outlets including the website, social media, and newsletter in order to mitigate the effects of wildland fire.
Hazard(s) Addressed	Wildland Fire
Goal/Objective	4-A, 4-B
Priority	High
Estimated Cost	\$7,000-\$10,000
Potential Funding Sources	City Budget
Lead Department	Development Services
Implementation Schedule	1-5 years
Effect on Old Buildings	This will greatly mitigate the effect of wildland fire on all buildings by increasing mitigation actions through public awareness and education campaigns, especially during periods of low rain and high heat.
Effect on New Buildings	This will greatly mitigate the effect of wildland fire on all buildings by increasing mitigation actions through public awareness and education campaigns, especially during periods of low rain and high heat.
Cost Effectiveness	This project is cost effective when compared to property damage, crop consumption, and potential loss of life that can be attributed to the hazards of wildland fire.
Discussion	The City of Lavon is highly susceptible to the dangers posed by wildland fire. By educating the public, they will be more aware of conditions, hazard assessment, and any applicable codes or burn ban enforcements applied by the city. This will mitigate the hazards associated with wildland fire.
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021 Plan

City of Lavon Action Items: New

City of Lavon Action Item	Implement Hazard Mitigation Education Series to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Dam Failure, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	High
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	9-12 months
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation

City of Lavon Action Item	Develop and implement an extreme temperature program that establishes heating and cooling centers for vulnerable residents
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-A, 2-D, 3-C
Priority	High
Estimated Cost	Current staffing project time/resources
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	12 months
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.

Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
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City of Lavon Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	Enhance safety of existing residential structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	Program would give rebates to residents who purchase and install safe rooms for their homes or properties.

City of Lavon Action Item	Continue to increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Tornado, Wildfire, High Winds, Flooding, Hail, Lightning, Dam Failure
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$25,000
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	High. Cost to implement small compared to benefits
Discussion	Early warning is a key element in keeping citizens that are outdoors notified of hazards. This action item would be specific to installation/placement of new OWS sirens in the jurisdiction.

City of Lavon Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	2-A, 3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Watershed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.

City of Lavon Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	2-A, 3-C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	1-3 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify all structures and infrastructures that would be impacted by a potential wildfire and measures to mitigate vulnerability.

City of Lavon Action Item	Adopt and enforce water conservation measures
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Adopt and enforce water restriction ordinances to limit water consumption to mitigate against drought. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

City of Lavon Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.

City of Lavon Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

City of Lavon Action Item	Hardening of critical public buildings to include installation of generators and other measures necessary to ensure continuous operation.
Hazard(s) Addressed	Flood, Winter Storm, Thunderstorm, Wind, Earthquake
Goal/Objective	
Priority	High
Estimated Cost	\$2,000,000
Potential Funding Sources	FEMA, HMGP, GLO
Potential Matching Sources	Local funds
Lead Department	City Administration, Approved Contractor
Implementation Schedule	1-2 years
Effect on Old Buildings	Significant protection for City Hall, Police Department, Fire Department and other critical public buildings throughout the City.
Effect on New Buildings	Improve effectiveness of new structures and infrastructure.
Cost Effectiveness	High. This reduces the risk to existing and future structures and interruption of critical services.

Discussion	Ensure continuous operation of critical facilities to reduce environmental impacts due to failure to function, reduce threat to public health and safety.
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City of Lavon Action Item	Develop Cybersecurity and Response Plan
Hazard(s) Addressed	Critical information systems for emergency and public safety services, traffic signals, sanitary sewer operations
Goal/Objective	
Priority	High
Estimated Cost	\$20,000
Potential Funding Sources	General Fund
Potential Matching Sources	Local funds
Lead Department	City Administration
Implementation Schedule	1-2 years
Effect on Old Buildings	NA.
Effect on New Buildings	NA
Cost Effectiveness	High. This Plan would provide additional training and resources to prevent cybersecurity incidents
Discussion	Plan would be used to identify vulnerabilities and improvements.

National Flood Insurance Program (NFIP) Compliance

Lavon is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
481313#	LAVON, CITY OF	COLLIN COUNTY	5/23/1978	4/2/1991	06/02/09(M)	5/13/1991	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
City of Lavon	City Engineer	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the City Services office. The City of Lavon requires 2 feet of freeboard above the base flood elevation for the top of bottom floor on residential structures and non-residential structures that will be built on properties created or platted after the effective date of the Flood Damage Prevention Ordinance.	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood damage prevention order shall result in fines up to \$500 per violation plus court costs.
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Participate with FEMA in identifying Special Flood Hazard Areas for future FIRM maps	The City of Lavon participates in Risk Assessment, Mapping and Planning Partners (RAMPP) meetings held by FEMA and/or their contractors to better identify areas that are flood prone that are not shown on current Flood Insurance Rate Maps.	
		Take action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning	City public works department installs signs at low water crossings.	
		Future Mitigation Projects	The City of Lavon will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	

7. Plan Maintenance

Monitoring, Evaluating, and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), the City of Lavon has developed a plan maintenance process which is described in the following paragraphs. Collin County, along with participating jurisdictions, is ultimately responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the City of Lavon, the county, and the city council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) will be implemented by participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, the City of Lavon will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	Activity	Schedule
City Administrator	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
Fire Chief	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Likewise, each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting same for approval by the state, FEMA and each local jurisdiction's governing body. The plan will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms (In compliance with 201.6(c)(4)(ii))

2016 Plan Incorporation: The vulnerability and capabilities assessments for each jurisdiction were carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into existing local planning strategies and mechanisms. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
City of Lavon	City Council	Budget.	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Fire Chief	Emergency Action Plan	Triennially	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain Ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council, City Administrator	Capital Improvement Plan	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, City Council	Drought Contingency Plans	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education
	Planning Director, City Council	Natural Resource Conservation Plan	As needed	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Lavon Hazard Mitigation Planning Committee considers this HazMAP, including development and maintenance, to be the primary vehicle to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committees will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.



Annex K: City of Lowry Crossing

1. Introduction

This annex was prepared in 2020 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan. The City of Lowry Crossing participated on the Collin County Hazard Mitigation Planning Team (HMPT). This is a new hazard mitigation plan and the first to be submitted to FEMA for the main plan; this annex serves as a complete hazard mitigation planning tool for the City of Lowry Crossing. It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex is explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While Lowry Crossing has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Lowry Crossing officials to recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and online.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. The table below outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences

Source	Data
National Climatic Data Center (NCDC)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Wildland/Urban Interface
National Inventory of Dams	Dam Information

Planning Committee

This Hazard Mitigation Action Plan was developed by the Lowry Crossing Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the Collin County HMPT.

The Collin County HMPT was assembled in November 2020 with representatives from participating jurisdiction planning committees, including mayors, police chiefs, fire chiefs, and the general public. Collin County acted as the plan development consultant providing hazard mitigation planning services; the efforts of the planning committee were led by the Lowry Crossing Emergency Management Coordinator. The table below provides a list of the primary representatives on the Lowry Crossing planning committee.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
Lowry Crossing City Council	Mayor Pro Tem	Plan Development
City of Lowry Crossing	City Secretary	Plan Development
Lowry Crossing Fire Dept.	Chief	Plan Development

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified

risks.

- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders emailed and involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Milligan Water Supply	General Manager	Review of plan

Subsequent to the State of Texas and FEMA approval of the plan, each organization above is committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the planning committee met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Collin County and included all jurisdiction's participation:

- Mitigation Plan sent to Lowry Crossing for update – August 18, 2020
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2021 at 9AM

The City provided input back to the County after internal review and updates on March 23, 2020.

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring

communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX

- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee for the City of Lowry Crossing identified several natural and man-made hazards that could affect the city. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for Lowry Crossing and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
			Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%		Minor	Very few injuries, if at all none	0

	Life Impact	Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for Lowry Crossing

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	0	0	0	0
Drought	2	0	1	2	1.05
Earthquake	0	1	0	1	0.45
Expansive Soils	2	0	1	1	0.95
Extreme Heat	2	0	0	0	0.6
Flooding	1	0	1	0	0.55
Hail	2	0	0	1	0.7
High Winds	2	0	1	1	0.95
Lightning	1	0	0	0	0.3
Tornado	2	1	1	2	1.4
Wildfire	2	0	0	1	0.7
Winter Storms	2	0	2	2	1.3

The conclusions drawn from the hazard profiling process for Collin County jurisdictions, resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in Lowry Crossing.

Table 3.3 Hazard Rankings for the City of Lowry Crossing

High Risk (PRI 2 - 3)	
Moderate Risk (PRI 1.01 -1.9)	Drought Tornado Winter Storm
Low Risk (PRI 0.50 – 1)	High Winds Expansive Soils Flooding Hail Wildfire Extreme Heat
Negligible to No Risk (PRI 0 – 0.49)	Dam Failure Earthquake Lightning

Changes in Development and Priorities (Requirement §201.6(d) (3))

Our jurisdiction is in one of the fastest growing areas of the nation, hence development has increased and will continue to increase our vulnerability to hazards that may impact us.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability Lowry Crossing faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included in this plan.

Dam Failure the City of Lowry Crossing is not known to be subject to dam failure, but as a participant in the county plan inundation studies will be considered.

Drought has the potential to impact the entire planning area equally; all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of Lowry Crossing are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma, Lake Tawakoni, Lake Fork and the Lake Chapman-Cooper reservoir system are water sources for the City of Lowry Crossing and are vulnerable to drought. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake While there are no known reports of seismic activity in Lowry Crossing, there is always the possibility that it could happen. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

Expansive Soil Lowry Crossing is extremely vulnerable to the effects of expansive soil. Road failures are a common occurrence from this hazard. This can create driving conditions that may be dangerous for an experienced driver, let alone a new driver.

Extreme Heat Extreme Heat is a definite threat throughout all of Collin County, including Lowry Crossing. We have experienced rolling blackouts due to extreme heat through the years. Extreme heat generally affects the entire population, but it is especially dangerous to the homeless, elderly, the very young, those without air conditioning, and those who require refrigerated medications.

Flooding The City of Lowry Crossing has experienced some flash flooding in the past, specifically on Bridgefarmer Road in the 2200 block and the 1700 block area. FM 546 also has issues with flooding from Lake Lavon.

Hail As all other areas, populations and properties in Lowry Crossing have the potential to be vulnerable to hail and hail damage. Exposed populations, manufactured homes, and older properties are most vulnerable.

High Winds Lowry Crossing usually has at least one high wind event with damage each year. Most of these are roof and fence damage events with debris

Lightning is a threat to everyone. Lowry Crossing relies on the volunteer fire department to respond to any situation created by lightning. Direct strikes have the power to cause significant damage to buildings, critical facilities, infrastructure, and ignition of wildfires which can result in widespread damages to property. Property without lightning protection and exposed populations are most vulnerable.

Tornadoes The City of Lowry Crossing has several areas that are vulnerable to tornadoes. The City does not have storm sirens at this time. A few citizens have storm shelters or safe rooms. Exposed populations, manufactured homes, and older properties are most vulnerable.

Wildfires According to the Texas Forest Service Lowry Crossing is moderate risk for wildfires with 93.39% of the population in the WUI area. While we are primarily a bedroom community, there are still many open areas and borders Corps of Engineer land along the East Fork of the Trinity River. During times of drought, burn bans, and high fire threat, automatic mutual aid between the cities is enacted. The Lowry Crossing Volunteer Fire Department has a brush truck. They have supplied mutual aid to nearby cities and county areas for grass fires. We provide fire-wise education to the citizens on a regular basis.

Winter Storms Lowry Crossing has experienced winter storms and the winter of 2013 provided power outages for multiple days for many of our citizens. Travel was treacherous. Vulnerable populations include the elderly, homeless, and those without heat.

Identification of Assets and Vulnerability Assessment

An inventory of Lowry Crossing's geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population**: Includes the number of people residing in Collin County jurisdictions as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property**: Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities**: Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities**: Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure**: Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the 2020 NCTCOG population estimates, the total population of the City of Lowry Crossing in 2020 was 1,756 people, with 607 households. The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4. Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total	Population Density (Sq. Mile)	Household	% of County Total	Household Density (Sq. Mile)
Lowry Crossing	1,756	0.16%	683.27	618	0.16%	240.59

Source: 2020 NCTCOG Population Estimate

Table 3.5 summarizes population counts and population change (absolute and percent predications for Lowry Crossing).

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
Lowry Crossing	1,711	1,710	1,710	0	0%

Source: 2020 NCTCOG Population Estimate

Property

There are an estimated 855 parcels in Lowry Crossing, with an estimated \$127,734,063 in total assessed value of, Table 3.6 lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
Lowry Crossing	855	0.10%	\$127,734,063

Source: County Data and Regional Hazard Assessment Tool

Emergency Facilities

There is one identified emergency facilities in Lowry Crossing, a volunteer fire station located at 1407 S. Bridgefarmer Road. Table 3.7 presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
Lowry Crossing	1	0	0

Source: County Data and Regional Hazard Assessment Tool

Critical Facilities

There are no critical facilities, which are considered non-emergency in Lowry Crossing.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
Lowry Crossing	0	0

Source: Local jurisdictions

Critical Infrastructure

There is one identified critical infrastructure facilities in Lowry Crossing, including one helipad, there are no natural gas facilities, no water treatment facilities, no wastewater treatment facilities, no dams, or railway/highway bridges (*Table 3.9*).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
Lowry Crossing	1	0	0	0	0	1

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, Lowry Crossing's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for Lowry Crossing, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. Table 3.10 summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail	X		
High Winds		X	

Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) zero (0) recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lowry Crossing are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the City of Lowry Crossing are expected mostly during water shortages, financially unknown due to lack of accurate reporting.
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the City of Lowry Crossing. The City of Lowry Crossing and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is zero (0) impact of extreme heat to developed areas and the improved property in the City of Lowry Crossing is not vulnerable to this hazard.

Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is zero (0) impact of extreme heat to buildings and the emergency facilities in City of Lowry Crossing are not vulnerable to this hazard.
Critical Facilities	According to National Climatic Data Center (NCDC), there is zero (0) impact of extreme heat to buildings, and the critical facilities in City of Lowry Crossing are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI) there is zero (0) impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in City of Lowry Crossing .

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. Approximately 19.70% of the population of City of Lowry Crossing is located within the 100-year floodplain.
Improved Property	There have been zero (0) recorded flood events in the City of Lowry Crossing. Property losses are expected but unknown due to inaccurate reporting however county-wide property loss is estimated at \$15,166.67 per year. No crop losses are expected or recorded county-wide. Approximately \$213,547,769 of the total assessed value is at risk from the 100-year storm event.
Emergency Facilities	There are zero (0) emergency facilities at imminent risk from the 100-year storm event.
Critical Facilities	There are zero (0) critical facilities located within the 100-year storm event.
Critical Infrastructure	10% of railways/highways and bridges, 0% of dams, 0% of water treatment works, and 0% waste water treatment facilities are at risk from the 100-year storm event. Many of these structures are designed to traverse or be located within the floodplain due to unavoidable circumstances. Additionally, treated wastewater is typically discharged towards streams, which makes portions of wastewater treatment facilities likely to be located within the floodplain.

Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lowry Crossing are expected but unknown due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards,

	available historical data for Lowry Crossing indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in the City of Lowry Crossing are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the City of Lowry Crossing are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in the City of Lowry Crossing are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events. All the population of the City of Lowry Crossing is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lowry Crossing are expected but unknown due to lack of accurate reporting. No crop losses resulted from this hazard in the City of Lowry Crossing.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in the City of Lowry Crossing are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the City of Lowry Crossing are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in the City of Lowry Crossing are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), lightning events can be expected to cause no deaths or injuries in Lowry Crossing. All the population of the City of Lowry Crossing is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lowry Crossing are expected but unknown due to lack of accurate reporting.

Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in the City of Lowry Crossing are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the City of Lowry Crossing are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in the City of Lowry Crossing are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in the City of Lowry Crossing. All the population of Lowry Crossing is exposed and vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI) property losses in the City of Lowry Crossing are expected but unknown due to lack of accurate reporting. No crop losses are expected from this hazard in the City of Lowry Crossing.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in the City of Lowry Crossing are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the City of Lowry Crossing are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the City of Lowry Crossing are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 93.39% of Lowry Crossing is vulnerable to wildfires, with the City of Lowry Crossing and the unincorporated areas contributing with the majority of the exposed population. There have been one (1) recorded injuries or fatalities due to wildfires.
Improved Property	Based on historical data, property losses in the City of Lowry Crossing are expected but unknown due to lack of accurate reporting; therefore, percentage of the overall property improvement values across the City of Lowry Crossing are also unknown.

Emergency Facilities	Based on geographic information there are one fire stations at risk from wildfire events.
Critical Facilities	Based on geographic information there are zero schools at risk from wildfire events.
Critical Infrastructure	Based on geographic information there are one helipad, one bridge, zero dams, zero wastewater treatment facility, and zero water treatment facility at risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the City of Lowry Crossing. All the population of the City of Lowry Crossing are exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lowry Crossing are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the City of Lowry Crossing.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in the City of Lowry Crossing are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in the City of Lowry Crossing are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in the City of Lowry Crossing are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serves as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, Lowry Crossing considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
Lowry Crossing	Y	Y	Y	Y	N	Y	N	N	Y	Y	Y	N	N	N	75%
Average % Yes Capabilities – 75%															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes
Lowry Crossing	Y	Y	Y	Y	N	Y	N	N	Y	Y	70%
Average % Yes Capabilities – 70%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes
Lowry Crossing	N	N	N	N	N	Y	N	N	N	N	10%
Average % Yes Capabilities – 10%											
Y- Yes N- No ?- Don't Know											

To quantify Collin County's legal and regulatory capabilities, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-

70%), and strong (70-100%). Questionnaire responses indicated that on average, Collin County and its jurisdictions have 70% of identified legal and regulatory capabilities, 10% of identified administrative and technical capabilities, and 10% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
Lowry Crossing	Mayor	The city council, including the mayor, mayor pro-tem, and council members, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. Ability to implement and approve mitigation actions and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2016 HazMAP, the Town of Lowry Crossing Hazard Mitigation Planning Team developed mitigation strategies for the Plan update. The goals are similar to the goals identified in Section 6 by the Collin County Hazard Mitigation Action Plan Working Group.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis, economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Lowry Crossing Action Items: Deferred from 2016 Plan

Lowry Crossing Action Item	Implement Hazard Mitigation Education Series to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning, Dam Failure
Goal/Objective	2A, 2B, 2C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	FEMA
Potential Matching Sources	N/A
Lead Department	City Administration
Implementation Schedule	0 – 24 Months
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Will be instrumental in planning and correction.
Discussion	In FY2022 Lowry Crossing is partnering with NCTCOG on a flood study of 17 miles of tributary within the city.
Status	Continue - Received supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

Lowry Crossing Action Item	Implement Storm Shelter/Safe Room Rebate Program
Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1B
Priority	High
Estimated Cost	\$3000/safe room
Potential Funding Sources	Federal Grants
Potential Matching Sources	NCTCOG
Lead Department	City Administration
Implementation Schedule	1-3 years
Effect on Old Buildings	Existing construction could have safe room added
Effect on New Buildings	New building could be constructed with safe rooms
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind.
Discussion	Develop list of storm shelter and safe rooms for emergency personnel to check safety of inhabitants.
Status	Continue - Will be included in 2021, however, some residents were able to obtain funds through the NCTCOG Saferoom Rebate Program

Lowry Crossing Action Item	Develop and adopt a drought contingency plan.
Hazard(s) Addressed	Drought
Goal/Objective	3A, 3B, 3C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	Local Funds
Potential Matching Sources	
Lead Department	City Administration
Implementation Schedule	1-2 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Very low cost to ensure benefit of saving water for future generations.
Discussion	Drought contingency plan will limit water usage based on drought conditions.
Status	Deferred – will be included in 2021 Plan

Lowry Crossing Action Item	Develop and implement an extreme temperature program that establishes heating and cooling centers for vulnerable residents
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-A, 2-D, 3-C
Priority	Medium
Estimated Cost	\$5,000-\$15,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	12 months
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
Status	Deferred – will be included in 2021 Plan

Lowry Crossing Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	Protect existing and new properties from the effects of all natural hazards.
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS
Implementation Schedule	12-18 Months
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.

Status	Deferred – will be included in 2021 Plan
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Lowry Crossing Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	4-B
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	6 months – 18 months
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

Lowry Crossing Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	4-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	12-18 months
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.

Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

Lowry Crossing Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information
Status	Deferred – will be included in 2021 Plan

City of Lowry Crossing Action Items: New Items

Lowry Crossing Action Item	Encourage all residents to use weather alert apps on smart phones
Hazard(s) Addressed	Tornado, Wildfire, High Winds, Flooding, Hail, Lightning, Earthquake
Goal/Objective	1A
Priority	High
Estimated Cost	0
Potential Funding Sources	N/A
Potential Matching Sources	N/A
Lead Department	Department of City Administration
Implementation Schedule	12 – 36 months

Effect on Old Buildings	N/A
Effect on New Buildings	N/A
Cost Effectiveness	
Discussion	Lowry Crossing would encourage residents to utilize severe weather alerts on smart phones to warn about impending natural hazard events.

Lowry Crossing Action Item	Implement Hazard Mitigation Education Series to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning
Goal/Objective	2A, 2B, 2C
Priority	High
Estimated Cost	\$75,000 (city portion)
Potential Funding Sources	FEMA
Potential Matching Sources	N/A
Lead Department	Department of City Administration
Implementation Schedule	0 – 24 Months
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Will be instrumental in planning and correction.
Discussion	In FY2022 Lowry Crossing is partnering with NCTCOG on a flood study of 17 miles of tributary within the city.

Lowry Crossing Action Item	Implement Storm Shelter/Safe Room Rebate Program
Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1B
Priority	High
Estimated Cost	\$3000/safe room
Potential Funding Sources	Federal Grants
Potential Matching Sources	NCTCOG
Lead Department	Department of City Administration
Implementation Schedule	1-3 years
Effect on Old Buildings	Existing construction could have safe room added
Effect on New Buildings	New building could be constructed with safe rooms

Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind.
Discussion	Develop list of storm shelter and safe rooms for emergency personnel to check safety of inhabitants.

Lowry Crossing Action Item	Develop and adopt a drought contingency plan.
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3A, 3B, 3C
Priority	High
Estimated Cost	\$5,000
Potential Funding Sources	Local Funds
Potential Matching Sources	
Lead Department	Department of City Administration
Implementation Schedule	1-2 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Very low cost to ensure benefit of saving water for future generations.
Discussion	Drought contingency plan will limit water usage based on drought conditions. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

Lowry Crossing Action Item	Develop and implement an extreme temperature program that establishes heating and cooling centers for vulnerable residents
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-A, 2-D, 3-C
Priority	Medium
Estimated Cost	\$5,000-\$15,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	12 months
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.

Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
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Lowry Crossing Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	4-B
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	6 months – 18 months
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.

Lowry Crossing Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	4-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Department of City Administration
Implementation Schedule	12-18 months
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.

Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
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Lowry Crossing Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Department of City Administration
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information

Lowry Crossing Action Item	Generator on City Hall
Hazard(s) Addressed	Winter Weather, Tornado, Severe Storms, Earthquake
Goal/Objective	2-B, 1-A
Priority	High
Estimated Cost	TBD
Potential Funding Sources	General Funds
Potential Matching Sources	General Funds
Lead Department	Department of City Administration
Implementation Schedule	FY 2022
Effect on Old Buildings	Provides backup power to current City Hall in the event of power loss from an all-hazards event
Effect on New Buildings	N/A (RetroFit)
Cost Effectiveness	Low

Discussion	This will provide backup power to the City Hall. This space could be used for multiple functions in the City in the event of power outages. It also would allow for City Functions to continue following a power outage.
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National Flood Insurance Program (NFIP) Compliance

Lowry Crossing is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
481631#	LOWRY CROSSING, CITY OF	COLLIN COUNTY	12/6/1977	3/16/1981	6/2/2009	8/22/1991	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Compliance

Once the community applies for the NFIP, FEMA arranges for a study of the community to determine base flood elevations and flood risk zones. Consultation with the community occurs at the start of and during the study, and those communities with minimal flood risk are converted to the Regular Program without a study.

FEMA provides the studied community with a Flood Insurance Rate Map delineating base flood elevations and flood risk zones. The community is then given 6 months to adopt base flood elevations in its local zoning and building code ordinances. Once the community adopts more stringent ordinances, FEMA converts the community to the NFIP's Regular Program. FEMA then authorizes the sale of additional flood insurance in the community up to the Regular Program limits. The community must implement and enforce the adopted floodplain management measures. FEMA provides periodic community assistance visits with local officials to provide technical assistance regarding complying with NFIP floodplain management requirements.

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
Lowry Crossing	City Secretary	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the office of the City Secretary. Lowry Crossing requires 2 feet of freeboard above the base flood elevation for the top of bottom floor on residential structures and non-residential structures that will be built on properties created or platted after the effective date of the Flood Damage Prevention Order	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood damage prevention order shall result in fines up to \$2000 per violation plus court costs.
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Participate with FEMA in identifying Special Flood Hazard Areas for future FIRM maps	Lowry Crossing works with Collin County in Risk Assessment, Mapping and Planning Partners (RAMPP) meetings held by FEMA and/or their contractors to better identify areas that are flood prone that are not shown on current Flood Insurance Rate Maps.	

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), Collin County has developed a plan maintenance process which is described in the following paragraphs. Collin County, along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the City of Lowry Crossing, the county, and the city council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) will be implemented by participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, Lowry Crossing will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or

magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	Activity	Schedule
City Secretary	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting them for approval. The plans will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms (*In compliance with 201.6(c)(4)(ii)*)

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives and actions outlined in this plan will be integrated into these existing mechanisms as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
Lowry Crossing	City Secretary, City Council	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
		Emergency Action Plan updates	Triennially	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
		Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
		Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
		Drought Contingency plans	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education
		Natural Resource Conservation Plan	Annually	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Lowry Crossing Hazard Mitigation Planning Team considers this HazMAP, including development and maintenance, to be the primary vehicles to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committees will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex L: City of Lucas



1. Introduction

This annex was updated in 2021 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan. This plan updates the Lucas Hazard Mitigation Plan submitted to FEMA as part of the 2021 Collin County HazMAP. The City of Lucas participated on the Collin County Hazard Mitigation Planning Team (HMPT) for this update. In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete hazard mitigation planning

tool for the City of Lucas. It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CRF Part 201.6. While the City of Lucas has historically implemented measures to reduce vulnerability to hazards, passage of the DMA 2000 helped city officials to recognize the benefits of a long-term approach to hazard mitigation, which seeks to achieve a gradual decrease of hazard impacts through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts and collaboration of all participating jurisdictions, the public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for members of the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and the local newspaper.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. The table below outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
2020 Collin County Appraisal District; U.S. Census Bureau – QuickFacts: City of Lucas, TX; North Central Texas Council of Governments (NCTCOG) Regional Data Center	Population and demographics

Source	Data
Regional Hazard Assessment Tool; National Climatic Data Center (NCDC)	Hazard occurrences
Texas Forest Service – Texas Wildfire Risk Assessment Summary Report	Wildfire threat and Wildland Urban Interface data
National Inventory of Dams	Dam information

Planning Committee

This Hazard Mitigation Action Plan was developed by the City of Lucas Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the Collin County HMPT.

The Collin County HMPT was assembled in November 2020 with representatives from participating jurisdictions' planning committees. Representatives included mayors, police chiefs, fire chiefs, and the general public. Collin County acted as the plan development consultant providing hazard mitigation planning services. The efforts of the planning committees and the HMPT were led by the Collin County Assistant Emergency Management Coordinator. The table below provides a list of the primary representatives on the City of Lucas Hazard Mitigation Planning Committee.

Table 2.2 City of Lucas Hazard Mitigation Planning Committee – Primary Representatives

Representing	Position	Role
Fire-Rescue/Emergency Management	Assistant Fire Chief/EMC	Plan Development and Update
Fire-Rescue/Emergency Management	Division Chief/Assistant EMC	Plan Development and Update
Emergency Management	Emergency Management Intern	Plan Development and Update
Fire-Rescue	Fire Chief	Plan Development and Update
Development Services	Development Services Director	Plan Feedback
Engineering/Public Works	City Engineer/Public Work Director	Plan Feedback
Public Works	Public Works Supervisor	Plan Feedback

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing, and formatting.

- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders involved in reviewing the City of Lucas Annex:

PlanTable 2.3 External Stakeholders

Representing	Position	Role
Love Joy ISD	Facilities Supervisor	Plan review/comment

After State of Texas and FEMA approval of the plan, each organization is committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Collin County and the City of Lucas:

- Collin County 2021 Kickoff Meeting – August 12, 2020
- Collin County Hazard Mitigation Committee Meeting – November 5, 2020
- City of Lucas Hazard Mitigation Committee Meeting – January 10, 2021
- City of Lucas HazMAP Discussion and Update – February 10, 2021 and May 24, 2021

- Collin County 2021 HazMAP Update Meeting 2 – June 10, 2021
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022 at 9AM

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan.

Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.
- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

As there were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties, no feedback was incorporated.

Public meetings provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee for the City of Lucas identified several natural and technological (man-made) hazards that could affect the city. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources from federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for Lucas and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the PRI allows for the prioritization of identified high hazard risks for mitigation planning purposes and, more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but, rather, is meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in the City of Lucas based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

PRI Value = (Probability x .30) + (Life Impact x .35) + (Property Impact x .25) + (Spatial Extent x .10)

The higher the PRI value, the greater the hazards risk. These values were determined by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%) in decimal form. These values may be adjusted during future updates to this plan. In order to evaluate the risk of each hazard, the assigned Index Value for each category is multiplied by the Weighing Factor. Then, the PRI value for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
			Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for City of Lucas

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	0	0	0	0
Drought	2	0	1	3	1.15
Earthquake	0	1	0	1	0.45
Expansive Soils	2	0	0	1	0.70
Extreme Heat	2	1	0	2	1.15
Flooding	2	1	1	0	1.2
Hail	2	0	1	1	0.95
High Winds	1	0	0	1	0.4
Lightning	3	0	2	0	1.40
Tornado	2	1	2	1	1.55
Wildfire	2	1	0	1	1.05
Winter Storms	2	0	2	3	1.40

The conclusions drawn from the hazard profiling process for the City of Lucas resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For classification purposes, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in Collin County.

Table 3.3 Hazard Rankings for City of Lucas

High Risk (PRI 2 - 3)	
Moderate Risk (PRI 1.01 -1.9)	Drought Tornado Winter Storm Extreme Heat Wildfire Lightning Flooding
Low Risk (PRI 0.50 – 1)	Expansive Soils Hail
Negligible to No Risk (PRI 0 – 0.49)	Earthquake High Winds Dam Failure

Changes in Development and Priorities (Requirement §201.6(d)(3))

The City of Lucas was a participating jurisdiction in the 2011 and 2016 Collin County Hazard Mitigation Action Plans (HazMAP) and this 2021 Collin County HazMAP update and will participate in future HazMAP updates.

According to U.S. Census and the North Central Texas Council of Governments (NCTCOG) data, projections estimate that the population of Lucas has grown from 5,166 (2010) to approximately 8,110 (2020), an increase of 67%. According to Collin County Appraisal District data, new housing developments have been established, increasing housing units from approximately 1,641 to 2,227. Structural and economic development (including Walmart, Wendy's, Starbucks, Chipotle, other fast food restaurants, Bank of America, 10 small business buildings, and several shopping centers) has taken place, with several other business buildings currently in development.

No new developments were built within a floodplain. To help mitigate the impacts of a disaster, Lucas has adopted storm water run-off regulations/ordinances and a design manual for retention ponds. To further mitigate impact of disaster, Lucas is committed to staying a certified Storm Ready and Firewise community.

New priorities are noted and ranked in each new action item, Section 6. Except for actions completed or cancelled, other priorities remain the same as in the previous version of this plan.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the City of Lucas faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation in this plan.

Dam and Levee Failure – This hazard was identified as having negligible to no risk to the City of Lucas, but as a participant in the county plan inundation studies will be considered.

Drought – Drought is considered a moderate risk in Lucas. Drought has the potential to impact the entire planning area equally. All improved property, emergency facilities, critical facilities, and the entire population of Lucas are vulnerable to this hazard. Foundations of all buildings are vulnerable, however, older structures and those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma, Lake Tawakoni, Lake Fork and the Lake Chapma-Cooper reservoir system are water sources for City of Lucas and are vulnerable to drought. In turn, the city's population, wildlife, and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake – This hazard was identified as having negligible to no risk to the City of Lucas. Although considered negligible risk using the PRI, the hazard can occur anywhere in the geographic planning area. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

Expansive Soils – Although expansive soils are prevalent throughout Collin County, this hazard is considered a low risk to the City of Lucas based on the PRI. Structures with unmitigated foundations are at highest risk.

Extreme Heat – Extreme heat generally affects the entire population, but the homeless, children, elderly, and populations without air conditioning are most vulnerable. Extreme heat is considered a moderate risk in the City according to the PRI.

Flooding – The City of Lucas has two bridges that are occasionally affected by flash flooding and five roadways that are seldom affected by flash flooding, but are still a concern. These two bridges mentioned below are within the 1% (100-year) flood zone. As the City utilizes culverts instead of storm drains, multiple days of heavy rain can overwhelm culverts and cause flooding in residential areas. Flooding is considered a moderate risk in the City, according to the PRI.

The primary areas of flash flooding concern are the following bridges:

- The bridge at Stinson Road at Muddy Creek
- The bridge at Snider Lane at White Rock

During heavy rain events and when roadways are flooded, City staff from City of Lucas Fire-Rescue and City of Lucas Public Works barricade the roads to prevent vehicles from attempting to cross the flooded area. Access to the area is still available from other directions at both sites, however, direct access is temporarily disrupted. This temporary disruption could be averted if larger drainage structures could be built to manage storm water flow and retention. While the roadway is flooded, vehicles must drive three or four miles more in another direction to access the other roads into the area, therefore increasing the distance for emergency access into the area.

There are five other roadways that are seldom affected by flooding, but are still considered a concern by the City when flooding does occur. Those locations are:

- Winningkoff Road, ¼ mile south of Snider Lane
- Winningkoff Road, ¼ mile north of FM 3286
- Rock Ridge Road, ¼ mile north of FM 2170
- Rock Ridge Road, ¼ mile south of FM 1378
- The intersection of FM 1378 and FM 3286

Hail – All geographic areas of the City of Lucas are potentially vulnerable to hail. Based on the PRI, however, hail is considered a low risk in Lucas. Exposed populations, manufactured homes, and older properties are most vulnerable to hail.

High Winds – All geographic areas of the City of Lucas have the potential to be vulnerable to high winds. Based on the PRI, however, this hazard is rated as negligible to no risk in the City. Manufactured homes and exposed populations are most vulnerable.

Lightning – All geographic areas of the City of Lucas have the potential to be vulnerable to lightning. Based on the PRI, this hazard is rated as moderate risk in the City. Property without lightning protection and exposed populations are most vulnerable. A majority of the recent building fires in the City have been caused by lightning strikes, increasing the risk that lightning poses to the City.

Tornado – All geographic areas and populations of the City of Lucas have the potential to be vulnerable to tornadoes. Based on the PRI, tornadoes are rated as moderate risk in the City. Exposed populations, manufactured homes, and older properties are most vulnerable to damage from the high winds.

Wildfire – The City of Lucas is a diverse area of 12.6 square miles that is comprised of many small farms, ranch estates, and subdivisions. This creates a localized wildland fire issue. With so many existing farmhouses, ranch estates, and housing subdivisions intermixed and near each other, there are large open areas with a large number of houses and barns that are exposed to wildland fires. U.S. Army Corps of Engineers' property runs adjacent to parts of the City of Lucas. This puts the city within the Wildland Urban Interface. This area is an additional concern to the City as drought impacts Lake Lavon and the surrounding Corps property. There is currently no fuel management program or agreement with the Corps to manage fuel and this issue has been addressed in Chapter 4. However, the City of Lucas Fire-Rescue department is only responsible for response if wildfire were to occur in this area. There are no identified City of Lucas improved property, critical facilities, or critical infrastructure on the property. Lucas sits on the West side of Lake Lavon where there are vast areas of open spaces where campers and boaters use campfires for outdoor enjoyment and recreation. This has been the cause of a great majority of the wildland fires within the Lucas Fire District. There is a significant risk of wildland fire during the hot dry summers and dry winter conditions in Texas. Wildland fire is considered a moderate risk in the City according to the PRI.

Lucas Fire-Rescue currently has one (1) Type III Wildland Engine, funded by a cost-share from the Texas A&M Forest Service Emergency Services Grant. Lucas Fire-Rescue also has one (1) Type VI Wildland Engine. The long range plan for Lucas Fire-Rescue is to sustain Wildland Urban Interface (WUI) firefighting capability equipment, training, and response. This plan also provides for Lucas to answer on first alarms for any wildland fires in the southern part of Collin County. This project will support all other fire departments in Collin County through Collin County Mutual Aid. Lucas Fire-Rescue will also continue to be a part of the Texas Infrastructure Fire Mutual Aid System (TIFMAS), thus offering resources for the entire State of Texas.

Lucas is an NFPA Recognized Firewise USA Community and has been since 2012. Lucas holds an annual Firewise Educational Outreach program. Lucas, in cooperation with the Texas A&M Forest Service, will be conducting a Firewise Home Assessment training in the future to teach City residents how to do home assessments. To maintain Firewise status, residents of Lucas are encouraged to submit their volunteer hours for mitigation work they do around their homes and properties.

Additionally, in order to mitigate wildland fire affecting structures, updated building codes have been enacted requiring all new residential and new commercial structures to have fire suppression systems in the structures.

Lucas Fire-Rescue currently has 18 (out of 28 total) firefighters that have completed National Wildfire Coordinating Group (NWCG) training S130 and 190.

Lucas Fire-Rescue actively reports fires on the TFS Fire Reporting website and TXFIRS/NFIRS.

Winter Storms – Winter storms are considered a moderate risk threat to the City of Lucas according to the PRI. These winter storms have the potential to make roads impassable for days. Residents may be confined to their homes due to the storm and may be without basic utility services, such as water and electricity, for an extended period of time. The most vulnerable populations to this hazard are the homeless, the elderly, and those without access to heat. Structures at risk include critical facilities and emergency facilities.

Identification of Assets and Vulnerability Assessment

An inventory of Lucas geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population**: Includes the number of people residing in Collin County jurisdictions as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property**: Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities**: Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities**: Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure**: Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the 2020 NCTCOG Population Estimates and the US Census Bureau, the total population of Lucas in 2020 was 8,553 people, with 2,227 households. The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4. Lucas Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total	Population Density (Sq. Mile)	Household	% of County Total	Household Density (Sq. Mile)
<i>City of Lucas</i>	8,553	0.61%	509.10	2,855	0.74%	179.26

Source: US Census Bureau, Collin County Appraisal District, NCTCOG Regional Data Center

**Includes totals from incorporated jurisdictions not participating in the plan

Table 3.5 summarizes population counts and population change (absolute and percent predications for City of Lucas).

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2019 Estimate	Population 2020 Estimate	Absolute Change 2019-2020	Percent (%) Change 2019-2020
<i>City of Lucas</i>	5,166	7,960	8,110	150	1.88%

Source: NCTCOG Regional Data Center

Improved Property

There are an estimated 3,446 parcels in Collin County, with an estimated \$1,172,028,807 in total assessed value of building improvements. *Table 3.6* lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
<i>City of Lucas</i>	3,446	0.96%	\$1,172,028,807

Source: Collin County Appraisal District

¹ Includes public buildings (residential, commercial, industrial, agricultural, religious, government, education)

Emergency Facilities

There are three identified emergency facilities in the City of Lucas: City of Lucas Fire-Rescue station, City of Lucas City Hall, and City of Lucas Public Works building. *Table 3.7* presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals	Government Buildings
<i>City of Lucas</i>	1	0	0	2

Source: County Data and Regional Hazard Assessment Tool

Critical Facilities

There are eight critical facilities, which are considered non-emergency in the City of Lucas. The critical facilities include six schools, two water pump stations, two water towers, and one sewer lift station. (*Table 3.8*). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Water Pump Station	Water Tower	Sewer Lift Station
City of Lucas	6	2	2	1

Source: City of Lucas

Critical Infrastructure

There are two identified critical infrastructure facilities in City of Lucas. Two bridges are used for access to residential areas. The bridges are especially important should residents ever need to make a hasty evacuation of the area. There are no other critical infrastructure facilities in the City. There are no airports, no natural gas facilities, no water treatment facilities, zero wastewater treatment facilities, and zero dams. (*Table 3.9*).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
City of Lucas	0	0	0	0	0	2

Source: City of Lucas

Methodology

Based on the type of information available for analysis, the City of Lucas' vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for the City of Lucas, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.10* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X

Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail	X		
High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to the National Centers for Environmental Information (NCEI), zero (0) recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lucas are expected, but financially unknown due to the lack of accurate reporting. Historical data indicates that crop losses in the City of Lucas are expected mostly during water shortages, but this is financially unknown due to the lack of accurate reporting.
Emergency Facilities	Foundation issues could occur to emergency facilities due to drought events.
Critical Facilities	Foundation issues could occur to critical facilities due to drought events.
Critical Infrastructure	Foundation issues and road degradation could occur to critical infrastructure due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to the National Centers for Environmental Information (NCEI), there are no fatalities recorded due to extreme heat in the City of Lucas. The City of Lucas and its population are vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas. The improved property in the City of Lucas is not vulnerable to this hazard.
Emergency Facilities	According to the National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings. The emergency facilities in the City of Lucas are not vulnerable to this hazard.
Critical Facilities	According to the National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings. The critical facilities in the City of Lucas are not vulnerable to this hazard.
Critical Infrastructure	According to the National Centers for Environmental Information (NCEI), there is no impact of extreme heat to critical infrastructure. Vulnerability to this hazard is considered minimal in the City of Lucas.

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. Approximately 335 residential parcels in the City of Lucas are located within the 100-year (1% annual chance) floodplain.
Improved Property	There have been zero (0) recorded flood events in the City of Lucas. Property losses are expected but unknown due to inaccurate reporting. No crop losses are expected or recorded county-wide. Approximately \$521,154,047 of the total assessed value is at risk from a 100-year (1% annual chance) storm event. As the City utilizes culverts instead of storm drains, multiple days of heavy rain can overwhelm the culverts and result in flooding in residential areas.
Emergency Facilities	Emergency facilities are potentially at risk during a 100-year (1% annual chance) storm event.
Critical Facilities	Critical facilities are potentially at risk during a 100-year (1% annual chance) storm event.
Critical Infrastructure	Critical infrastructure are potentially at risk during a 100-year (1% annual chance) storm event.

Summary Table 3.14

Hail	
Population	According to the National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lucas are expected to be \$9,428.57 per year from hail, however, these values are potentially underestimated due to the lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops can be damaged by hail events, available historical data for the City of Lucas indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictable geographical nature of hailstorms, all emergency facilities in the City of Lucas are vulnerable to this hazard.
Critical Facilities	Because of the unpredictable geographical nature of hailstorms, all critical facilities in the City of Lucas are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictable geographical nature of hailstorms, all critical infrastructure in the City of Lucas are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to the National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events. The entire population of the City of Lucas is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lucas are expected at \$14.28 per year due to high wind events, however, these values are potentially underestimated due to the lack of accurate reporting. No crop losses have resulted from this hazard in Collin County.
Emergency Facilities	Because of the extensive geographical nature of high wind events, all emergency facilities in the City of Lucas are vulnerable to this hazard.
Critical Facilities	Because of the extensive geographical nature of high wind events, all critical facilities in the City of Lucas are vulnerable to this hazard.
Critical Infrastructure	Because of the extensive geographical nature of high wind events, all critical infrastructure in the City of Lucas are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to the National Centers for Environmental Information (NCEI), lightning events are not expected to cause any deaths or injuries in Collin County. However, the entire population of the City of Lucas is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lucas are expected at \$16,875 per year however these values are underestimated due to lack of accurate reporting. A majority of recent building fires in the City have been started by lightning. This has elevated the risk that lightning poses to the City.
Emergency Facilities	Because of the extensive geographical nature of lightning, all emergency facilities in the City of Lucas are vulnerable to this hazard.
Critical Facilities	Because of the extensive geographical nature of lightning, all critical facilities in the City of Lucas are vulnerable to this hazard.
Critical Infrastructure	Because of the extensive geographical nature of lightning, all critical infrastructures in the City of Lucas are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in the City of Lucas. The entire population of the City of Lucas is exposed and vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), property losses in the City of Lucas are expected but unknown due to the lack of accurate reporting. No crop losses are expected from this hazard in the City of Lucas.
Emergency Facilities	Because of the unpredictable geographical impact of tornados, all emergency facilities in the City of Lucas are exposed and vulnerable to this hazard.
Critical Facilities	Because of the unpredictable geographical impact of tornados, all critical facilities in the City of Lucas are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of unpredictable geographical impact of tornados, all critical infrastructure in the City of Lucas are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 75.27% of the City of Lucas is vulnerable to wildfires. This includes both the City proper as well as the unincorporated areas that the City of Lucas Fire-Rescue services. There are no recorded injuries or fatalities due to wildfires in the City.
Improved Property	Annual financial losses expected from property loss due to wildfires are unknown due to lack of accurate reporting. Because of this, the percentage of the overall property improvement values impacted by wildfire across the City of Lucas are also unknown.
Emergency Facilities	Based on geographic location, there is one (1) fire station at risk from wildfire events.
Critical Facilities	Based on geographic location, there are four (4) schools at risk from wildfire events.
Critical Infrastructure	Based on geographic location, there are two (2) bridges, zero (0) dams, zero (0) wastewater treatment facilities, and zero (0) water treatment facilities at risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to the National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms. It was not from the City of Lucas. The entire population of the City of Lucas is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Lucas are expected but unknown due to the lack of reporting. However, data indicates that county-wide property loss is expected to be \$116,250 per year from this hazard. No crop losses are expected from this hazard in the City of Lucas.
Emergency Facilities	Because of the extensive geographical nature of winter storms, all emergency facilities in the City of Lucas are exposed and vulnerable to this hazard.
Critical Facilities	Because of the extensive geographical nature of winter storms, all critical facilities in the City of Lucas are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of extensive geographical nature of winter storms, all critical infrastructure in the City of Lucas are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serve as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the City of Lucas considered the level of hazard risk as well as the City's existing capabilities that can be used to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
<i>City of Lucas</i>	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	?	?	64.3%
Average % Yes Capabilities – 64.29%															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes
City of Lucas	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	90%
Average % Yes Capabilities – 90%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes
City of Lucas	N	Y	Y	Y	Y	Y	Y	?	N	?	60%
Average % Yes Capabilities – 22.2%											
Y- Yes N- No ?- Don't Know											

To quantify Collin County's legal and regulatory capabilities, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%),

and strong (70-100%). Questionnaire responses indicated that on average, Lucas has 62.49% of identified legal and regulatory capabilities, 90% of identified administrative and technical capabilities, and 60% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
City of Lucas	City Manager	The city council, including the mayor, mayor pro-tem, and council members, along with the city manager, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. As the governing body, the ability to implement and approve mitigation actions, expand, and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, the Collin County Hazard Mitigation Planning Team developed a mitigation strategy for the Plan update, utilizing the results of both assessments as well as reviewing the goals and objectives that were included in the 2009 HazMAP. These strategies were similar to the goals identified in Section 6 by the Collin County Hazard Mitigation Action Plan Working Group.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones within Lucas.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of the new and deferred action items identified for the HazMAP update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic, and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Lucas: Action Items Deferred from 2016 Plan

City of Lucas Action Item	Develop a Community Wildfire Protection Plan (CWPP).
Hazard(s) Addressed	Wildfire
Goal/Objective	2-A
Priority	Medium
Estimated Cost	\$20,000
Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, donations, in-kind, and/or grants
Lead Department	Fire-Rescue and Emergency Management with assistance from Collin County and the Texas A&M Forest Service.
Implementation Schedule	18-36 Months
Effect on Old Buildings	Will reduce vulnerability of existing structures to damages or loss from wildfire.
Effect on New Buildings	Will reduce vulnerability of new structures to damages or loss from wildfire.
Cost Effectiveness	CWPPs show officials where to focus their efforts in preventing wildfire. Saving lives and protecting property is cost effective in the long-run.
Discussion	This project will become needed as the population in the Wildland Urban Interface area increases. This plan will protect life and property.
Status	Not yet started.

City of Lucas Action Item	Develop a wildfire and drought education program for residents.
Hazard(s) Addressed	Wildfire, Drought

Collin County Hazard Mitigation

Goal/Objective	4-A, 4-B
Priority	Medium
Estimated Cost	\$5,000.00
Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, in-kind, and/or grants
Lead Department	Fire-Rescue and Emergency Management with assistance from the Texas A&M Forest Service
Implementation Schedule	0-12 months
Effect on Old Buildings	Will reduce vulnerability of existing buildings to wildfire and drought through resident education and behavior.
Effect on New Buildings	Will reduce vulnerability of new buildings to wildfire and drought through resident education and behavior.
Cost Effectiveness	Public education is extremely effective with a low cost.
Discussion	Residents will be educated on mitigation actions to protect their lives and property from wildfire and drought. Residents will be provided with supplies and materials from the NCTCOG KnowWhat2Do Program.
Status	Not yet started. The City will request supplies and materials from the NCTCOG when a plan for education and distribution has been determined.

City of Lucas Action Item	Develop an extreme heat education program for residents.
Hazard(s) Addressed	Extreme Heat
Goal/Objective	4-A, 4-B
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, in-kind, and/or grants
Lead Department	Fire-Rescue and Emergency Management
Implementation Schedule	2 years
Effect on Old Buildings	Will reduce vulnerability of existing buildings to extreme heat through resident education and behavior.
Effect on New Buildings	Will reduce vulnerability of new buildings to extreme heat through resident education and behavior.
Cost Effectiveness	Public education is extremely effective with a low cost.
Discussion	Residents will be educated on mitigation actions to protect their lives and property from extreme heat. Residents will be provided with supplies and materials from the NCTCOG KnowWhat2Do Program.
Status	Not yet started. The City will request supplies and materials from the NCTCOG when a plan for education and distribution has been determined.

Collin County Hazard Mitigation

City of Lucas Action Item	Develop a winter weather/storm education program for residents.
Hazard(s) Addressed	Winter Storms
Goal/Objective	4-A, 4-B
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HGMP, PDM, and/or General Fund
Potential Matching Sources	Local funds, in-kind, and/or grants
Lead Department	Fire-Rescue and Emergency Management
Implementation Schedule	2 years
Effect on Old Buildings	Will reduce vulnerability of existing buildings to winter weather/storms through resident education and behavior.
Effect on New Buildings	Will reduce vulnerability of new buildings to winter weather/storms through resident education and behavior.
Cost Effectiveness	Public education is extremely effective with a low cost.
Discussion	Residents will be educated on mitigation actions to protect their lives and property from winter weather/storms. Residents will be provided with supplies and materials from the NCTCOG KnowWhat2Do Program
Status	Not yet started. The City will request supplies and materials from the NCTCOG when a plan for education and distribution has been determined.

City of Lucas Action Item	Develop a Large Animal Rescue Plan and educate residents on actions to mitigate impact to large animals from severe weather and natural disasters.
Hazard(s) Addressed	Flood, Tornado, Winter Storm, Wildfire
Goal/Objective	4-B
Priority	Medium
Estimated Cost	\$25,000
Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, in-kind, and/or grants
Lead Department	Fire-Rescue
Implementation Schedule	18-36 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Public education is extremely effective with a low cost.
Discussion	This project will help Lucas Fire-Rescue educate owners of large animals about how to mitigate impact to their large animals from severe weather and natural disasters. This plan will also give Lucas Fire-Rescue the

Collin County Hazard Mitigation

	plans and directions on rescuing large animals around the City during disaster.
Status	Not yet started.

City of Lucas Action Item	Implement stricter building codes and standards to mitigate the impacts of hazards to buildings around the City.
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, High Winds, Lightning, Tornado, Wildfire, Winter Storm
Goal/Objective	2-C
Priority	Medium
Estimated Cost	\$10,000 - \$15,000
Potential Funding Sources	Local
Potential Matching Sources	None
Lead Department	Planning and Zoning, Code Enforcement, Engineering
Implementation Schedule	1-2 years
Effect on Old Buildings	Old buildings would be retrofitted to meet current or updated building code standards.
Effect on New Buildings	New buildings would be constructed to meet current or updated building code standards.
Cost Effectiveness	This is cost effective because it will protect life and property from future disasters.
Discussion	Updated and current building code standards will be continuously implemented in the City through retrofits to old buildings and initial construction to new buildings.
Status	The City of Lucas has adopted current building code and will continue to adopt the most current building codes. This action item will be included in future HazMAP updates.

City of Lucas Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	Earthquake
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local funds
Lead Department	Public Works, Planning Zoning
Implementation Schedule	1-2 years

Collin County Hazard Mitigation

Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce the vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low.
Discussion	Study results will identify information to determine mitigation projects
Status	No longer a relevant action item to the City of Lucas. This item will not be included as a 2021 Action Item.

City of Lucas Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils.
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants and/or state grants
Potential Matching Sources	Local funds
Lead Department	Emergency Management, Public Works, Planning and Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	This study would lead to targeted mitigation projects to lower vulnerability to expansive soils. This soil analysis will protect life and property.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Not yet started.

City of Lucas Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Emergency Management, Planning and Zoning

Collin County Hazard Mitigation

Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	No longer a relevant action item to the City of Lucas. This item will not be included as a 2021 Action Item.

City of Lucas: 2021 Action Items

City of Lucas Action Item	Develop a Community Wildfire Protection Plan (CWPP).
Hazard(s) Addressed	Wildfire
Goal/Objective	2-A
Priority	Medium
Estimated Cost	\$20,000
Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, donations, in-kind, and/or grants
Lead Department	Fire-Rescue and Emergency Management with assistance from Collin County and the Texas A&M Forest Service.
Implementation Schedule	18-36 Months
Effect on Old Buildings	Will reduce vulnerability of existing structures to damages or loss from wildfire.
Effect on New Buildings	Will reduce vulnerability of new structures to damages or loss from wildfire.
Cost Effectiveness	CWPPs show officials where to focus their efforts in preventing wildfire. Saving lives and protecting property is cost effective in the long-run.
Discussion	This project will become needed as the population in the Wildland Urban Interface area increases. This plan will protect life and property.

City of Lucas Action Item	Develop a wildfire and drought education program for residents.
Hazard(s) Addressed	Wildfire, Drought, Expansive Soils
Goal/Objective	4-A, \$-B
Priority	Medium
Estimated Cost	\$5,000.00
Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, in-kind, and/or grants

Collin County Hazard Mitigation

Lead Department	Fire-Rescue and Emergency Management with assistance from the Texas A&M Forest Service
Implementation Schedule	2 years
Effect on Old Buildings	Will reduce vulnerability of existing buildings to wildfire and drought through resident education and behavior.
Effect on New Buildings	Will reduce vulnerability of new buildings to wildfire and drought through resident education and behavior.
Cost Effectiveness	Public education is extremely effective with a low cost.
Discussion	Residents will be educated on mitigation actions to protect their lives and property from wildfire and drought. Residents will be provided with supplies and materials from the NCTCOG KnowWhat2Do Program. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

City of Lucas Action Item	Develop an extreme heat education program for residents.
Hazard(s) Addressed	Extreme Heat
Goal/Objective	4-A, 4-B
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, in-kind, and/or grants
Lead Department	Fire-Rescue and Emergency Management
Implementation Schedule	2 years
Effect on Old Buildings	Will reduce vulnerability of existing buildings to extreme heat through resident education and behavior.
Effect on New Buildings	Will reduce vulnerability of new buildings to extreme heat through resident education and behavior.
Cost Effectiveness	Public education is extremely effective with a low cost.
Discussion	Residents will be educated on mitigation actions to protect their lives and property from extreme heat. Residents will be provided with supplies and materials from the NCTCOG KnowWhat2Do Program.

City of Lucas Action Item	Develop a winter weather/storm education program for residents.
Hazard(s) Addressed	Winter Storms
Goal/Objective	4-A, 4-B
Priority	Medium
Estimated Cost	\$5,000

Collin County Hazard Mitigation

Potential Funding Sources	HGMP, PDM, and/or General Fund
Potential Matching Sources	Local funds, in-kind, and/or grants
Lead Department	Fire-Rescue and Emergency Management
Implementation Schedule	2 years
Effect on Old Buildings	Will reduce vulnerability of existing buildings to winter weather/storms through resident education and behavior.
Effect on New Buildings	Will reduce vulnerability of new buildings to winter weather/storms through resident education and behavior.
Cost Effectiveness	Public education is extremely effective with a low cost.
Discussion	Residents will be educated on mitigation actions to protect their lives and property from winter weather/storms. Residents will be provided with supplies and materials from the NCTCOG KnowWhat2Do Program

City of Lucas Action Item	Develop a Large Animal Rescue Plan and educate residents on actions to mitigate impact to large animals from severe weather and natural disasters.
Hazard(s) Addressed	Flood, Tornado, Winter Storm, Wildfire
Goal/Objective	4-B
Priority	Medium
Estimated Cost	\$25,000
Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, in-kind, and/or grants
Lead Department	Fire-Rescue
Implementation Schedule	18-36 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Public education is extremely effective with a low cost.
Discussion	This project will help Lucas Fire-Rescue educate owners of large animals about how to mitigate impact to their large animals from severe weather and natural disasters. This plan will also give Lucas Fire-Rescue the plans and directions on rescuing large animals around the City during disaster.

City of Lucas Action Item	Implement stricter building codes and standards to mitigate the impacts of hazards to buildings around the City.
Hazard(s) Addressed	Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, High Winds, Lightning, Tornado, Wildfire, Winter Storm
Goal/Objective	2-C
Priority	Medium

Collin County Hazard Mitigation

Estimated Cost	\$10,000 - \$15,000
Potential Funding Sources	Local
Potential Matching Sources	None
Lead Department	Planning and Zoning, Code Enforcement, Engineering
Implementation Schedule	1-2 years
Effect on Old Buildings	Old buildings would be retrofitted to meet current or updated building code standards.
Effect on New Buildings	New buildings would be constructed to meet current or updated building code standards.
Cost Effectiveness	This is cost effective because it will protect life and property from future disasters.
Discussion	Updated and current building code standards will be continuously implemented in the City through retrofits to old buildings and initial construction to new buildings.

City of Lucas Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils.
Hazard(s) Addressed	Expansive Soils, Drought
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants and/or state grants
Potential Matching Sources	Local funds
Lead Department	Emergency Management, Public Works, Planning and Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	This study would lead to targeted mitigation projects to lower vulnerability to expansive soils. This soil analysis will protect life and property.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

City of Lucas Action Item	Develop a tornado education program for residents.
Hazard(s) Addressed	Tornado
Goal/Objective	4-A, 4-B
Priority	Medium
Estimated Cost	\$5,000

Collin County Hazard Mitigation

Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, in-kind, and/or grants
Lead Department	Fire-Rescue and Emergency Management
Implementation Schedule	2 years
Effect on Old Buildings	Will reduce vulnerability of existing buildings to tornados through resident education and behavior.
Effect on New Buildings	Will reduce vulnerability of new buildings to tornados through resident education and behavior.
Cost Effectiveness	Public education is extremely effective with a low cost.
Discussion	Residents will be educated on mitigation actions to protect their lives and property from tornados. Residents will be provided with supplies and materials from the NCTCOG KnowWhat2Do Program.

City of Lucas Action Item	Develop a Debris Management Plan
Hazard(s) Addressed	High Winds, Tornado, Wildfire, Flooding
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$20,000
Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, donations, in-kind, and/or grants
Lead Department	Fire-Rescue and Emergency Management with assistance from Collin County, the Texas A&M Forest Service, and a private consulting firm.
Implementation Schedule	18-36 Months
Effect on Old Buildings	Will ensure that debris from older buildings and neighborhoods is properly managed and cleared before and after disaster.
Effect on New Buildings	Will ensure that debris from newer buildings and neighborhoods is properly managed and cleared before and after disaster.
Cost Effectiveness	Debris management is cost effective if done right. A Debris Management Plan will guide the City's debris management before and after disaster.
Discussion	This project is needed to ensure that the City has a clear plan for keeping debris minimal before disaster and cleaning/clearing debris effectively after disaster.

City of Lucas Action Item	Develop a flood education program for residents.
Hazard(s) Addressed	Flooding
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	HMGP, PDM, and/or General Fund

Collin County Hazard Mitigation

Potential Matching Sources	Local funds, in-kind, and/or grants
Lead Department	Fire-Rescue and Emergency Management
Implementation Schedule	2 years
Effect on Old Buildings	Will reduce vulnerability of existing buildings to floods through resident education and behavior.
Effect on New Buildings	Will reduce vulnerability of new buildings to floods through resident education and behavior.
Cost Effectiveness	Public education is extremely effective with a low cost.
Discussion	Residents will be educated on mitigation actions to protect their lives and property from floods. Residents will be provided with supplies and materials from the NCTCOG KnowWhat2Do Program.

City of Lucas Action Item	Build three carports: one at Fire-Rescue station for personal vehicles and two at City Hall, one for personal vehicles and one for City vehicles.
Hazard(s) Addressed	Hail
Goal/Objective	2-D
Priority	Medium
Estimated Cost	\$35,000
Potential Funding Sources	HMGP, PDM, and/or General Fund
Potential Matching Sources	Local funds, in-kind, and/or grants
Lead Department	Engineering and Development Services
Implementation Schedule	2 years
Effect on Old Buildings	No effect on existing buildings.
Effect on New Buildings	No effect on new buildings.
Cost Effectiveness	Protecting both employee and City vehicles from hail damage will save the City money in the long run.
Discussion	Carports will protect both City employees' personal vehicles as well as City vehicles from hail damage.

City of Lucas Action Item	Develop and implement a comprehensive public education program to educate on the actions to help mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Drought, Earthquakes, Hail, Winds, Expansive Soils, and Lightning
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind

Lead Department	EMC
Implementation Schedule	9-12 months
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation to be taken to reduce impacts on people and property.

National Flood Insurance Program (NFIP) Compliance

The City of Lucas is participating in the National Flood Insurance Program and has identified areas vulnerable to flooding. This is incorporated into all current and future planning for flood mitigation measures.

Table 6.1 NFIP Compliance

CID	Community Name	County	Initial FHB Identified	Initial FIRM Identified	Current Effective Map Date	Reg-Emer Date	Tribal
481545#	LUCAS, CITY OF	COLLIN COUNTY	07/25/75	04/02/91	06/02/09	07/03/79	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Compliance

Once the community applies for the NFIP, FEMA arranges for a study of the community to determine base flood elevations and flood risk zones. Consultation with the community occurs at the start of and during the study, and those communities with minimal flood risk are converted to the Regular Program without a study.

FEMA provides the studied community with a Flood Insurance Rate Map delineating base flood elevations and flood risk zones. The community is then given 6 months to adopt base flood elevations in its local zoning and building code ordinances. Once the community adopts more stringent ordinances, FEMA converts the community to the NFIP's Regular Program. FEMA then authorizes the sale of additional flood insurance in the community up to the Regular Program limits. The community must implement and enforce the adopted floodplain management measures. FEMA provides periodic community assistance visits with local officials to provide technical assistance regarding complying with NFIP floodplain management requirements.

The purchase of flood insurance is mandatory as a condition of receipt of federal or federally-related financial assistance for acquisition and/or construction of buildings in SFHAs of any participating community. Those communities notified as flood-prone which do not apply for participation in the NFIP within 1 year of notification are ineligible for federal or federally-related financial assistance for acquisition, construction, or reconstruction of insurable buildings in the SFHA.

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to create and maintain a list of properties that hold a policy with NFIP along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

<i>Jurisdiction</i>	Community Floodplain Administrator	NFIP Activity	Enforcement
City of Lucas	City Manager	Restrict or prohibit uses that are dangerous to health, safety or property in times of flooding, or cause excessive increases in flooding heights or velocities	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval.
		Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction	
		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	
		Prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.	

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In compliance with requirement § 201.6(c)(4)(i), Collin County has developed a plan maintenance process which is described in the following paragraphs. Collin County, along with participating jurisdictions, are responsible for monitoring implementation of their plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the City of Lucas, the county, and the city council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) will be implemented by participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, Lucas will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	Activity	Schedule
Emergency Management Coordinator, Emergency Management Intern	Monitoring Plan: Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations.	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval and then presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising, and updating their respective plans and submitting them for approval. The plans will be updated every five (5) years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

2016 Plan Incorporation: The vulnerability and capabilities assessments for each jurisdiction were carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into existing local planning strategies and mechanisms, as appropriate. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
City of Lucas	City Council	Budget	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Fire Chief, Emergency Management Coordinator	Emergency Action Plan	Every Five Year	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain Ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council, Planning Director	Capital Improvement Plan	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, City Council	Drought Contingency Plan	Assessed annually and updated as needed.	Integrate drought actions such as xeriscaping, water restrictions, and public education
	Planning Director, City Council	Natural Resource Conservation Plan	Assessed annually and updated as needed.	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Lucas Hazard Mitigation Planning Committee considers this HazMAP, including development and maintenance, to be the primary vehicle to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committee will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex M: City of Melissa



1. Introduction

This annex was prepared in 2020 as part of an update to the City of Melissa County Multi-Jurisdictional Hazard Mitigation Action Plan. The City of Melissa participated on the Collin County Hazard Mitigation Planning Team (HMPT). This is a new hazard mitigation plan and the first to be

submitted to FEMA for the City of Melissa. In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete hazard mitigation planning tool for the City of Melissa. It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While the City of Melissa has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped City of Melissa officials to recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. City of Melissa's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and online.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 the City of Melissa developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten the City of Melissa and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. The table below outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Centers for Environmental Information (NCEI)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Wildland/Urban Interface
National Inventory of Dams	Dam Information

Planning Committee

This Hazard Mitigation Action Plan was developed by the City of Melissa Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the Collin County HMPT. The efforts of the planning committee were led by the City of Melissa Emergency Management Coordinator.

The Collin County HMPT was assembled in November 2020 with representatives from participating jurisdiction planning committees, including mayors, police chiefs, fire chiefs, and the general public. The City of Melissa acted as the plan development consultant providing hazard mitigation planning services. The table below provides a list of the primary representatives on the Melissa planning committee.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
Fire Department	Fire Chief	Plan Development
Police Department	Police Chief	Plan Development
City Administration	City Manager	Plan Development
City Council	Councilmember	Plan Development
City Council	Mayor	Plan Development

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the county's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

Subsequent to the State of Texas and FEMA approval of the plan, each organization is committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

External stakeholders involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Collin County	Assistant EMC	Review of plan

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by City of Melissa and included all jurisdiction's participation:

- Melissa was provided with the Plan on August 12, 2020
- Meeting with Melissa and Collin County 8/24/2021
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022 at 9AM

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.
- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee for the City of Melissa identified several natural and man-made hazards that could affect the city. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for Melissa and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Melissa jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Melissa HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Melissa based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Melissa, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
			Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
		Minor	Very few injuries, if at all none	0

Collin County Hazard Mitigation

35%	Life Impact	Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for City of Melissa

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	0	1	0	0.25
Drought	1	2	1	0	1.25
Earthquake	0	1	0	1	0.45
Expansive Soils	2	0	0	1	0.7
Extreme Heat	1	1	0	2	0.85
Flooding	1	1	0	0	0.65
Hail	2	0	0	1	0.7

Collin County Hazard Mitigation

High Winds	1	0	0	1	0.4
Lightning	1	0	0	0	0.3
Tornado	2	1	1	1	1.3
Wildfire	1	2	0	1	1.1
Winter Storms	2	0	2	3	1.4

The conclusions drawn from the hazard profiling process for Collin County Jurisdictions, resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in Melissa.

Table 3.3 Hazard Rankings for the City of Melissa

High Risk (PRI 2 - 3)	
Moderate Risk (PRI 1.01 -1.9)	Tornado Winter Storms Wildfire Drought
Low Risk (PRI 0.50 – 1)	Extreme Heat Expansive Soils Hail Flooding
Negligible to No Risk (PRI 0 – 0.49)	Earthquake High Winds Lightning Dam Failure

Changes in Development and Priorities (Requirement §201.6(d) (3))

Our jurisdiction is in one of the fastest growing areas of the nation, hence development has increased and will continue to increase our vulnerability to hazards that may impact us.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the City of Melissa faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation.

Dam and Levee Failure At this time City of Melissa does not appear to be vulnerable to a dam failure, but as a participant in the county plan inundation studies will be considered.

Drought Drought has the potential to impact the entire planning area equally; all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of Melissa are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma, Lake Tawakoni, Lake Fork and the Lake Chapman-Cooper reservoir system are water sources for City of Melissa and are vulnerable to drought. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations. Likewise the extent to how and when water is used from water sources does have a potential effect on revenues for the City of Melissa.

Earthquake Although the City of Melissa does not sit directly on a fault zone it located near the Balcones Fault. Should an earthquake of medium/high magnitude occur along this fault, the City of Melissa would see damage to roadways, water/sewer lines, gas lines, buildings, and critical infrastructure. All properties and populations have the potential to be vulnerable to earthquakes.

Expansive Soils The City of Melissa has expansive soils in its jurisdiction. While great care is and has been taken to prevent the effects of soil expansion, should drought occur or periods of low rainfall occur residents, commercial, and industrial properties could see adverse effects to the structural integrity of their respective buildings. Expansive soils also have an effect on infrastructure causing pipes to crack and break. All properties and populations have the potential to be vulnerable to expansive soils.

Extreme Heat The City of Melissa can be subject to high or extreme heat from late April to early October. The highest recorded temperature in the Dallas/Ft. Worth area was 113 F. While most of the time city is not exposed to temperatures above 110 it is still possible. Temperatures of 95 F or above coupled with high humidity can have detrimental effects to not only the residential population, but also commercial and industrial operations. High heat can cause roving black outs, drying out of vegetation in undeveloped areas (increasing fire risk), and the need for cooling centers for residents. High heat also has an effect on public works and public safety due to working in these temperatures and the damage to infrastructure.

Equipment in the water pump house often malfunctions during times of extreme heat. Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air conditioning are most vulnerable.

Flooding The City of Melissa could be subject to flooding due to the various infrastructure and development projects which are currently taking place. Highways and roadways are currently under development which could cause water to be inadvertently channeled to an unanticipated location. These same effects could occur as areas of the city are developed

Hail Severe thunderstorms are frequent in the Metroplex area, of which the City of Melissa is included. Severe thunderstorms have the potential to spawn tornados, high winds, hail, flooding, and lightning. All of these can result in damage to residential, commercial, and industrial properties. Damage to power lines and vegetation can occur as well. Roadways can be blocked due to low visibility and debris. Public Works and Public Safety departments are often taxed due to the calls for service. All properties and populations have the potential to be vulnerable to hail

High Winds Severe thunderstorms are frequent in the Metroplex area, of which the City of Melissa is included. Severe thunderstorms have the potential to spawn tornados, high winds, hail, flooding, and lightning. All of these can result in damage to residential, commercial, and industrial properties. Damage to power lines and vegetation can occur as well. Power outages are frequent and it may take anywhere from 30 minutes to 30 days to restore power. Roadways can be blocked due to low visibility and debris.

Public Works and Public Safety departments are often taxed due to the calls for service. All properties and populations have the potential to be vulnerable to high winds.

Lightning Severe thunderstorms are frequent in the Metroplex area, of which the City of Melissa is included. Severe thunderstorms have the potential to spawn tornados, high winds, hail, flooding, and lightning. All of these can result in damage to residential, commercial, and industrial properties. Damage to power lines and vegetation can occur as well. Power outages are frequent and it may take anywhere from 30 minutes to 30 days to restore power. Roadways can be blocked due to low visibility and debris. Public Works and Public Safety departments are often taxed due to the calls for service. Lightning also has the potential to start fires in structures as well as in open pastures. All properties and populations have the potential to be vulnerable to lightning.

Tornado Severe thunderstorms are frequent in the Metroplex area, of which the City of Melissa is included. Severe thunderstorms have the potential to spawn tornados. These can result in damage to residential, commercial, and industrial properties. Damage to power lines and vegetation can occur as well. Power outages are frequent and it may take anywhere from 30 minutes to 30 days to restore power. Roadways can be blocked due to low visibility and debris. Public Works and Public Safety departments are often taxed due to the calls for service. Tornados also have the capacity to leave many homeless and injured. It may take days, weeks, months, or even years to return to normal operations should a tornado occur in the City of Melissa. All properties and populations have the potential to be vulnerable.

Wildland Fire The City of Melissa is in the middle of the Wildland Urban Interface (WUI). The WUI has the potential to not only effect crops but also residential structures as fire swiftly burns across vegetation. Large wildfires have the potential to restrict traffic through roadways due to low visibility and the need to use all lanes for evacuation. At greatest risk are structures and populations located within the WUI. According to the Texas Forest Service, 60.25% of the population of Melissa lives within in the Wildland/Urban Interface.

Winter Storms The City of Melissa is subject to winter storms. Ice and snow can accumulate on roadways trapping drivers on the road and increasing the likelihood of accidents. Residents can be ill prepared for storms and may even be in their homes without electricity, heat, or running water.

Commercial and industrial business see adverse effects as potential customers remain in doors and workers are unable to report for their jobs. All of which negative impacts on the City of Melissa economy. All properties and populations have the potential to be vulnerable to winter storms.

Identification of Assets and Vulnerability Assessment

An inventory of Melissa geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population:** Includes the number of people residing in Collin County jurisdictions as delineated by the 2020 NCTCOG population estimates.
- **Improved property:** Includes all developed properties according to local parcel data from the Melissa. The information has been expressed in terms of the total assessed value of improvements

that may be exposed to the identified hazards.

- **Emergency facilities:** Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Melissa Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities:** Includes schools and historic places provided by Regional Hazard Assessment Tool, and Melissa. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure:** Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Melissa Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the 2020 NCTCOG Population Estimates and the US Census Bureau, the total population of Melissa in 2020 was 12,381 people, with 4,589 households. The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4. Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total	Population Density (Sq. Mile)	Household	% of County Total	Household Density (Sq. Mile)
Melissa	19,161	1.13%	1,044.81	5,813	1.13%	367.89

Source: US Census Bureau & Collin County Appraisal District

Table 3.5 summarizes population counts and population change (absolute and percent predications for Melissa).

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
Melissa	4,695	11,927	13,980	2,053	12.94%

Source: 2020 NCTCOG Population Estimate

Property

There are an estimated 6,466 parcels in Melissa, with an estimated \$1,014,828,346 in total assessed value of, *Table 3.6* lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
Melissa	6,466	1.34%	\$1,014,828,346

Source: Collin County Appraisal District

Emergency Facilities

There are 2 identified emergency facilities in the City of Melissa, including 1 fire station and 1 police station, and zero hospitals. *Table 3.7* presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
Melissa	1	1	0

Source: County Data and Regional Hazard Assessment Tool

Critical Facilities

There are 5 critical facilities, which are considered non-emergency in Melissa. The critical facilities include five schools and zero historical property sites. *Table 3.8*. Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
Melissa	6	3

Source: Local jurisdictions

Critical Infrastructure

There are 30 identified critical infrastructure facilities in Melissa, including 0 airports, 2 natural gas facilities, no water treatment facilities, 0 wastewater treatment facilities, 0 dams, and 28 railway/highway bridges. (*Table 3.9*).

Table 3.8 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
Melissa	0	2	0	0	1	28

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, the City of Melissa vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for the City of Melissa, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.10* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail	X		
High Winds		X	

Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) no recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Melissa are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the City of Melissa are expected mostly during water shortages, financially unknown due to lack of accurate reporting.
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were one (1) fatality recorded due to extreme heat from the City of Melissa. All of the City of Melissa and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas and the improved property in the City of Melissa is not vulnerable to this hazard.

Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings and the emergency facilities in the City of Melissa are not vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the critical facilities in the City of Melissa are not vulnerable to this hazard.
Critical Infrastructure	Extreme heat has had an impact on equipment at the water pump house causing it to malfunction and become inoperable. However, overall vulnerability to this hazard is considered minimal in the City of Melissa.

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. Approximately 54 residential parcels in the City of Melissa are located within the 100-year floodplain.
Improved Property	There have been five (5) recorded flood events in the City of Melissa. Property losses are expected at \$7,400 per year however these values are underestimated due to lack of accurate reporting. No crop losses are expected or recorded county-wide. Approximately \$6,742,366 of the total assessed value is at risk from the 100-year storm event.
Emergency Facilities	Emergency facilities have the potential to be as risk in the 100-year storm event.
Critical Facilities	Critical facilities have the potential to be as risk in the 100-year storm event.
Critical Infrastructure	Critical Infrastructure have the potential to be as risk in the 100-year storm event.

Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Melissa are expected at \$342.86 per year however these values are underestimated due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data for the City of Melissa indicates that there are no expected crop losses from this event.

Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in the City of Melissa are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the City of Melissa are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in the City of Melissa are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events. All the population of the City of Melissa is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Melissa are expected at \$3,514.29 per year however these values are underestimated due to lack of accurate reporting. No crop losses resulted from this hazard in the City of Melissa.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in the City of Melissa are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the City of Melissa are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in the City of Melissa are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), lightning events can be expected to cause no deaths or injuries in the City of Melissa. All the population of the City of Melissa is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Melissa are expected but unknown due to lack of accurate reporting

Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in the City of Melissa are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the City of Melissa are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in the City of Melissa are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in the City of Melissa. All the population of the City of Melissa is exposed and vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), property losses in the City of Melissa are expected but unknown due to lack of accurate reporting. No crop losses are expected from this hazard in the City of Melissa.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in the City of Melissa are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the City of Melissa are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the City of Melissa are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 60.25% of Melissa is vulnerable to wildfires. There have been no recorded injuries or fatalities due to wildfires.
Improved Property	Based on historical data, annual financial losses expected from property loss due to wildfires are unknown due to lack of accurate reporting; therefore, percentage of the overall property improvement values across the City of Melissa are also unknown.
Emergency Facilities	Based on geographic information there is 1 fire station and 1 police station at risk from wildfire events.
Critical Facilities	Based on geographic information there are 6 schools at risk from wildfire events.

Critical Infrastructure	Based on geographic information there are 4 natural gas facilities and 28 railway/highway bridges at risk from wildfire events.
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Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the City of Melissa. All the population of the City of Melissa are exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Melissa are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the City of Melissa.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in the City of Melissa are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in the City of Melissa are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in the City of Melissa are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serves as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, Melissa considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
City of Melissa	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	?	92%
Average % Yes Capabilities – 92.86%															
Y- Yes N- No ?- Don't Know															

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes
City of Melissar	Y	Y	Y	Y	Y	Y	N	N	Y	N	70%
Average % Yes Capabilities – 70%											
Y- Yes N- No ?- Don't Know											

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes per Jurisdiction
City of Melissa	Y	Y	Y	Y	Y	Y	Y	N	Y	?	70%
Average % Yes Capabilities – 70%											
Y- Yes N- No ?- Don't Know											

To quantify Melissa's legal and regulatory capabilities, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire response indicated that Melissa has 92.86% of identified legal and regulatory capabilities, 70% of identified administrative and technical capabilities, and 70% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
City of Melissa	City Manager	The city council, including the mayor, mayor pro-tem, and council members, along with the city manager, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. Ability to implement and approve mitigation actions and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2016 HazMAP, the City of Melissa Hazard Mitigation Planning Committee developed mitigation strategies for the Plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severeweather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones within the City of Melissa.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigatepotential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis, economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Melissa Action Items: Deferred from 2016 Plan

City of Melissa Action Item	Adopt and promote public education program to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning, Dam Failure
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	9-12 months
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages

Collin County Hazard Mitigation

Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	Program will include information on hazard mitigation and what actions can be taken to reduce impacts on people and property.
Status	Receive supplies and materials from the NCTCOG KnoWhat2do Program and provide to residents. Continue – will be included in 2021

City of Melissa Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Tornado, Wildfire, High Winds, Flooding, Hail, Lightning, Dam Failure
Goal/Objective	1-A
Priority	High
Estimated Cost	\$25,000
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	9-12 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in the safety of citizens who are outdoors
Discussion	Outdoor warning sirens help prevent loss of life during severe storms.
Status	Deferred – will be included in 2021 Plan

City of Melissa Action Item	Develop and implement an extreme temperature program that identifies both safe locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-A
Priority	Medium
Estimated Cost	Current staffing project time/resources
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind

Collin County Hazard Mitigation

Lead Department	H.R. Dept.
Implementation Schedule	12 months
Effect on Old Buildings	May require retrofit
Effect on New Buildings	None
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
Status	Deferred – will be included in 2021 Plan

City of Melissa Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	12 to 24 months
Effect on Old Buildings	Retrofit will increase life safety
Effect on New Buildings	Will add additional protection to reduce injury and loss of life
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	Residential safe room programs help prevent loss of life during tornado or severe storm.
Status	Deferred – Residents did received funding through the NCTCOG Saferoom Rebate Program. The NCTCOG Program has been suspended

City of Melissa Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms

Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information
Status	Deferred – will be included in 2021 Plan

City of Melissa Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning
Implementation Schedule	12 - 18 months
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones

Collin County Hazard Mitigation

Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

City of Melissa Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	18 – 36 months
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify all structures and infrastructures that would be impacted by a potential wildfire.
Status	Deferred – will be included in 2021 Plan

City of Melissa Action Item	Develop and implement mandatory water conservation measures
Hazard(s) Addressed	Drought
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works

Implementation Schedule	12 - 18 months
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Promote water conservation throughout the county and work with local water supplies to increase public education on drought. Develop and implement mandatory water restrictions for water conservation.
Status	Deferred – will be included in 2021 Plan

City of Melissa Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Melissa Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low

Collin County Hazard Mitigation

Estimated Cost	TBD
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	

City of Melissa Action Items: New

City of Melissa Action Item	Develop and implement a comprehensive public education program to educate on the actions to help mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Dam Failure, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	9-12 months
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety

Collin County Hazard Mitigation

Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.be taken to reduce impacts on people and property.
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City of Melissa Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Tornado, Wildfire, High Winds, Flooding, Hail, Lightning, Dam Failure
Goal/Objective	1-A
Priority	High
Estimated Cost	\$25,000
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	9-12 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in the safety of citizens who are outdoors
Discussion	Outdoor warning sirens help prevent loss of life during severe storms. This action item would be specific to installation/placement of new OWS sirens in the jurisdiction.

City of Melissa Action Item	Develop and implement an extreme temperature program that identifies both safe locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-A
Priority	Medium
Estimated Cost	Current staffing project time/resources
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	H.R. Dept.
Implementation Schedule	12 months
Effect on Old Buildings	May require retrofit

Collin County Hazard Mitigation

Effect on New Buildings	None
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold

City of Melissa Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	12 to 24 months
Effect on Old Buildings	Retrofit will increase life safety
Effect on New Buildings	Will add additional protection to reduce injury and loss of life
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	Residential safe room programs help prevent loss of life during tornado or severe storm.

City of Melissa Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management

Collin County Hazard Mitigation

Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information

City of Melissa Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning
Implementation Schedule	12 - 18 months
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.

City of Melissa Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	3-A
Priority	Medium

Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	18 – 36 months
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify all structures and infrastructures that would be impacted by a potential wildfire.

City of Melissa Action Item	Develop and implement mandatory water conservation measures
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	12 - 18 months
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Promote water conservation throughout the county and work with local water supplies to increase public education on drought. Develop and implement mandatory water restrictions for water conservation. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

City of Melissa Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.

City of Melissa Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	TBD
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.

Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

National Flood Insurance Program (NFIP) Compliance

Melissa is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

CID	Community Name	County	Initial FHB Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
481626#	MELISSA, CITY OF	COLLIN COUNTY	-	4/2/1991	06/02/09(M)	4/9/2009	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions

Table 6.2 NIFP Activity

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
City of Melissa	City Engineer	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the City Engineer. The City of Melissa requires 2 feet of freeboard above the base flood elevation for the top of bottom floor on residential structures and non-residential structures that will be built on properties created or platted after the effective date of the Flood Damage Prevention Order	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval.
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Future Mitigation Projects	The City of Melissa will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), Collin County has developed a plan maintenance process which is described in the following paragraphs. Collin County, along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the City of Melissa, the county, and the city council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) will be implemented by participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, the City of Melissa will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	Activity	Schedule
Fire Chief	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective

councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting them for approval. The plans will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms (*In compliance with 201.6(c)(4)(ii)*)

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives and actions outlined in this plan will be integrated into these existing mechanisms as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
City of Melissa	City Council	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Fire Chief	Emergency Action Plan updates	Every Five Year	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council, Director of Planning	Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, City Council	Drought Contingency plans	Assessed annually and updated as needed.	Integrate drought actions such as xeriscaping, water restrictions, and public education

	Planning Director, City Council	Natural Resource Conservation Plan	Assessed annually and updated as needed.	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.
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Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Melissa Hazard Mitigation Planning Team considers this HazMAP, including development and maintenance, to be the primary vehicles to ensure implementation of local hazard mitigation actions.

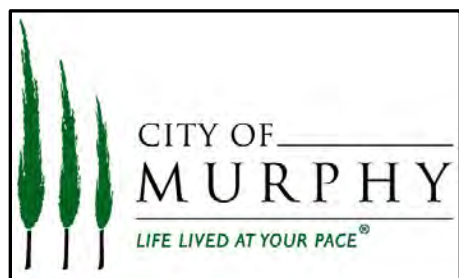
The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committees will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex N: City of Murphy



1. Introduction

This annex was prepared in 2020 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan. The City of Murphy participated on the Collin County Hazard Mitigation Planning Team (HMPT). This is a new hazard mitigation plan and the first to be submitted to FEMA for the City of Murphy. In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete

hazard mitigation planning tool for the City of Murphy. It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While the City of Murphy has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Murphy officials recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and online.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. The table below outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Climatic Data Center (NCDC)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Wildland/Urban Interface
National Resource Conservation Services	Dam information
National Inventory of Dams	Dam information

Planning Committee

This Hazard Mitigation Action Plan was developed by the City of Murphy Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the HMPT.

The Collin County HMPT was assembled in November 2020 with representatives from participating jurisdiction planning committees, including mayors, police chiefs, fire chiefs, and the general public. The City of Murphy acted as the plan development consultant providing hazard mitigation planning services; the efforts of the planning committees and the HMPT were led by the Collin County Assistant Emergency Management Coordinator. The table below provides a list of the primary representatives on the Murphy planning committee.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
Murphy Fire Rescue	Fire Chief/Emergency Management Coordinator	Facilitator/Plan Development
Murphy Fire Rescue	Fire Marshal/Emergency Management Specialist	Plan Development/Data Research
Murphy City Management	City Manager	Provided Data/Mapping
Murphy Public Works	Public Works Director	Provide Data/Flood Plain
Murphy Police Department	Police Chief	Plan Development
Murphy Community Development	Building Official	Plan Development

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.

- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Community ISD	School Board Member	Review of plan
North Texas Municipal Water District	Board Member	Review of plan

Subsequent to the State of Texas and FEMA approval of the plan, each jurisdiction also is committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Collin County and included all jurisdiction's participation:

- Collin County HazMAP Kickoff Meeting – August 12, 2020
- Collin County Planning Meeting – November 5, 2020
- Collin County Planning Meeting – June 12, 2021
- Murphy and Collin Planning Meeting/Discussion – July 21, 2021
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022 at 9AM

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committees provided opportunities, announced through public communication means, for public

participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.
- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Team Committee for the City of Murphy identified several natural hazards and man-made hazards that could affect the city. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for the City of Murphy and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
			Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for the City of Murphy

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	0	0	0	0
Drought	2	0	1	3	1.15
Earthquake	0	1	0	1	0.45
Expansive Soils	2	0	0	1	0.7
Extreme Heat	2	1	0	2	1.15
Flooding	1	1	0	2	0.85
Hail	1	0	0	2	0.5
High Winds	1	0	1	2	0.75
Lightning	2	0	2	1	1.2
Tornado	1	0	0	1	0.4
Wildfire	1	0	0	1	0.4
Winter Storms	2	0	1.5	3	1.28

The conclusions drawn from the hazard profiling process for the City of Murphy, resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in the City of Murphy.

Table 3.3 Hazard Ranking for the City of Murphy

High Risk (PRI 2 - 3)	
Moderate Risk (PRI 1.01 -1.9)	Extreme Heat Drought Winter Storms Lightning
Low Risk (PRI 0.50 – 1)	Expansive Soils Flooding Hail High Winds
Negligible to No Risk (PRI 0 – 0.49)	Wildfire Earthquake Dam Failure Tornado

Changes in Development and Priorities (Requirement §201.6(d) (3))

Our jurisdiction is in one of the fastest growing areas of the nation, hence development has increased and will continue to increase our vulnerability to hazards that may impact us.

Vulnerability Narratives

The natural hazards identified that were rated of negligible to no risk were not included in this plan. This annex therefore focuses on specific areas of vulnerability the City of Murphy faces with each hazard. The hazards identified earlier in the plan are all addressed in this annex.

Dam and Levee Failure A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams typically are constructed of earth, rock, concrete, or mine tailings. A dam failure is an accidental or unintentional collapse, breach, or other failure of an impoundment structure that results in downstream flooding. Because dams are man-made structures, dam failures are usually considered technological hazards. However, since most dam failures result from prolonged periods of rainfall, they are often cited as secondary or cascading effects of natural flooding disasters and are not named as the primary hazard that causes disaster declarations. The City of Murphy is not subject to dam failure because no Dams are located inside the city limits and the city is not vulnerable to a dam failure that might occur outside the city limits. As a participant in the county plan inundation studies will be considered.

Drought The City of Murphy is a moderate risk for drought Drought has the potential to impact the entire planning area equally; all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of Murphy are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. The City of Murphy receives its water supply from the North Texas Municipal Water District (NTMWD). Restrictions sanctioned on the City of Murphy by the NTMWD caused by a drought affect local revenues significantly. The lack of water can also impact emergency responder capabilities in the form of firefighting efforts (not facilities). Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake An earthquake is a sudden motion or trembling caused by an abrupt release of accumulated strain on the tectonic plates that comprise the Earth's crust. The theory of plate tectonics holds that the Earth's crust is broken into several major plates. These rigid, 50- to 60- mile thick plates move slowly and continuously over the interior of the earth, meeting in some areas and separating in others. As the tectonic plates move together they bump, slide, catch, and hold. Eventually, faults along or near plate boundaries slip abruptly when the stress exceeds the elastic limit of the rock, and an earthquake occurs. The ensuing seismic activity and ground motion provoke secondary hazards: surface faulting, ground failure, and tsunamis. The vibration or shaking of the ground during an earthquake is referred to as ground motion. In general, the severity of ground motion increases with the amount of energy released and decreases with distance from the causative fault or epicenter. When a fault ruptures, seismic waves are propagated in all directions, causing the ground to vibrate at frequencies ranging from 0.1 to 30 Hz. Seismic waves are referred to as P waves, S waves, and surface waves. Due to the risk being associated to a distant quake, earthquakes may affect the entire planning area equally. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

There is no history of earthquakes occurring within the City of Murphy; however, there have been six (6) earthquake activity events between 1997 – 2008. Those ranged from 27.3 miles to 96.7 miles away from the city center. There have also been hundreds of small earthquakes recently in North Texas possibly from the gas and oil industry drilling and disposal known as fracking. Venture companies continue to look for new drill sites in this general area.

The City of Murphy is a low risk for an earthquake. The most likely risk to a significant earthquake event is associated to either a distant larger quake which might occur in Missouri, Tennessee, or Oklahoma, though these earthquakes are probable to occur only once every 500 years.

Expansive Soils Expansive soils contain minerals such as “smectite” clays that are capable of absorbing water. When they absorb water they increase in volume. The more water they absorb the more their volume increases. Expansions of ten percent or more are not uncommon. This change in volume can exert enough force on a building or other structure to cause damage. Expansive soils will also shrink when they dry out. This shrinkage can remove support from buildings or other structures and result in damaging foundations. Fissures in the soil can also develop. These fissures can facilitate the deep penetration of water when moist conditions or runoff occurs. This produces a cycle of shrinkage and swelling that places repetitive stress on structures, especially those constructed under older building codes. The City of Murphy is a low risk for expansive soils.

Extreme Heat Extreme heat is characterized by a combination of a very high temperatures and exceptionally humid conditions. When persisting over a period of time, it is called a heat wave. Extreme heat can also be a factor that drastically impacts drought conditions as high temperatures lead to an increased rate of evaporation. Extreme heat can also lead to heat stroke and even death in vulnerable populations such as the homeless, elderly, very young, and populations without air conditioning if exposed to the high temperatures for an extended period of time. Extreme heat may affect the entire population equally.

The City of Murphy is a moderate risk of extreme heat. The City of Murphy has the potential during heat emergencies to exceed capabilities of our local hospitals and Emergency Medical System. Extreme heat happens regularly and often for extended periods of time during the June through September timeframe.

Flooding Flooding is defined as the accumulation of water within a water body and the overflow of excess water onto adjacent floodplain lands. 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. The statistical meaning of terms like “25-year storm” and “100-year flood” can be confusing. Simply stated, a floodplain can be located anywhere; it just depends on how large and how often a flood event occurs. Floodplains are those areas that are subject to inundation from flooding. Floods and the floodplains associated with them are often described in terms of the percent chance of a flood event happening in any given year. As a community management or planning term, “floodplain” most often refers to an area that is subject to inundation by a flood that has a one percent chance of occurring in any given year (commonly and incorrectly referred to as the 100-year floodplain). Common flooding hazards within the planning area include flood hazards from flash flooding and from new development.

A flash flood is a rapid flood that inundates low-lying areas in less than six hours. This is caused by intense rainfall from a thunderstorm or several thunderstorms. Flash floods can also occur from the

collapse of a man-made structure or ice dam. Construction and development can change the natural drainage and create brand new flood risks as new buildings, parking lots, and roads create less land that can absorb excess precipitation from heavy rains, hurricanes, and tropical storms. Flash floods are a high risk hazard since they can roll boulders, tear out trees, and destroy buildings and bridges.

The City of Murphy is a low risk for flooding. There are a few homes currently lying within a flood plain within the City of Murphy. A large creek system dissects the city basically in half and abuts approximately 30% of all neighborhood subdivisions. The city only houses one fire station. Emergency responses may be severely impacted when attempting to respond to the other side of the creek with flooding present.

Hail Hail occurs when, at the outgrowth of a severe thunderstorm, balls or irregularly shaped lumps of ice greater than 0.75 inches in diameter fall with rain. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to warm air rising rapidly into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until, having developed sufficient weight, they fall as precipitation. Hail may affect the entire planning area equally. Exposed populations, manufactured homes, and older properties are most vulnerable.

The City of Murphy is a low risk for hail. The City of Murphy covers a small area with a higher population ratio than the more rural areas in Collin County. All areas of the city are susceptible to hail damage. Damage in the city due to hail could result in a much higher loss due to density.

High Winds Wind is defined as the motion of air relative to the earth's surface. The horizontal component of the three-dimensional flow and the near-surface wind phenomenon are the most significant aspects of the hazard. Straight-line winds are often responsible for the wind damage associated with a thunderstorm. These winds are often confused with tornadoes because of similar damage and wind speeds. However, the strong and gusty winds associated with straight-line winds blow roughly in a straight line unlike the rotating winds of a tornado. Downbursts or micro-bursts are examples of damaging straight-line winds. A downburst is a small area of rapidly descending rain and rain-cooled air beneath a thunderstorm that produces a violent, localized downdraft covering 2.5 miles or less. Wind speeds in some of the stronger downbursts can reach 100 to 150 miles per hour, which is similar to that of a strong tornado. The winds produced from a downburst often occur in one direction, and the worst damage is usually on the forward side of the downburst. High winds may affect the entire planning area equally.

The City of Murphy typically has power outages, fires, damage to roofs, cars, out buildings, and electrical utilities due to high winds. These events create significant planning and recovery issues. The City of Murphy is a low risk for high winds. The City of Murphy has and encourages a high density of trees with the city limits. High winds create a lot of power outages due to tree limbs compromising such power lines and also creates a Significant vegetative debris is generated during high wind events that requires removal to keep roads passable.

Lightning Lightning results from the buildup and discharge of electrical energy between positively and negatively charged areas within thunderstorms. A "bolt" or brilliant flash of light is created when the buildup becomes strong enough. These bolts of lightning can be seen in cloud-to-cloud or cloud-to-ground strikes.

Bolts of lightning can reach temperatures approaching 50,000° Fahrenheit. While lightning is mostly affiliated with thunderstorms, lightning often strikes outside of these storms, as far as 10 miles away from any rainfall. Federal Emergency Management Agency states that an average of 300 people are injured

and 80 people are killed in the United States each year by lightning. Direct strikes have the power to cause significant damage to buildings, critical facilities, infrastructure, and ignition of wildfires which can result in widespread damages to property. Property without lightning protection and exposed populations are most vulnerable. The City of Murphy is a low risk for lightning.

Tornado A tornado is a violently rotating column of air, in contact with the ground, both pendant from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a condensation funnel. Tornadoes may affect the entire planning area equally, manufactured homes and exposed populations are most vulnerable.

The City of Murphy is a low risk for tornado activity. Tornadoes are likely to occur within the City of Murphy as they are within any other area in Collin County. Special issues concerning a tornado incident within the City are due to a population density of 3,596 per square mile. An additional concern is the vast numbers of large trees in the residential areas that could impact power lines and the restriction into areas needing assistance due to trees and limbs blocking roadways.

Wildland Fire Wildland fire is any fire occurring on grassland, forest, or prairie, regardless of ignition source, damages or benefits. Wildland fires are fueled almost exclusively by natural vegetation. They typically occur in national forests and parks, where federal agencies are responsible for fire management and suppression. Interface or intermix fires are urban/wildland fires in which vegetation and the built-environment provide fuel. Firestorms are events of such extreme intensity that effective suppression is virtually impossible. Firestorms occur during extreme weather and generally burn until conditions change or the available fuel is exhausted. Wildland fires affect the entire planning area equally. For the purposes of this hazard analysis, wildland fires are assessed under what is known as the Wildland Urban Interface (WUI). The WUI is an area of development that is susceptible to wildland fires due to the amount of structures located in an area with vegetation that can act a fuel for a wildland fire.

The City of Murphy is a low to moderate risk for wildland fire. 47.54% of Murphy's population lives in the Wildland Urban Interface which is predominately in the north and east sides of the city, according to the Texas Forest Service Wildfire Risk Assessment Summary.

Winter Storms Winter storms originate as mid-latitude depressions or cyclonic weather systems, sometimes following the path of the jet stream. A winter storm or blizzard combines heavy snowfall, high winds, extreme cold and ice storms. Many winter depressions give rise to exceptionally heavy rain and widespread flooding and conditions worsen if the precipitation falls in the form of snow. The winter storm season varies widely, depending on latitude, altitude and proximity to moderating influences. Winter storms affect the entire planning area equally. Cold snaps in which temperatures fall below the freezing point of 32° Fahrenheit do happen on an annual basis in the planning area and can lead to issues with infrastructure, especially frozen roads and bridges.

Winter storms affect the entire City of Murphy when they occur and have multiple impacts including, but not limited to travel, power, and exposure for the homeless, elderly, and populations without access to heat. With the potential for freezing precipitation, icing of roadways are of an utmost concern. These winter storms have the potential to make roads impassable for days. Residents may be confined to their homes due to the storm and may be without basic services, such as water and electricity, for an extended period of time. The city has two state highways, FM 544 and FM 2551 that can be impacted during winter storms. Areas impacted include local commerce, exceeding the capabilities of our local hospital, over

extending local capabilities to shelter stranded motorist. The City of Murphy serves as a cross connection point between IH 30 and US Highway 75 and is a major thoroughfare. The vehicle count for FM 544 alone is approximately 50,000 cars per day. With a very high tree population within the city; public works, fire and police departments are overwhelmed with the impacts caused by the loss of limbs associated with severe weather.

Identification of Assets and Vulnerability Assessment

An inventory of the City of Murphy geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population**: Includes the number of people residing in Collin County jurisdictions as delineated by the 2020 NCTCOG Population Estimates.
- **Improved property**: Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities**: Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities**: Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure**: Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the 2020 NCTCOG Population Estimates, the total population of the City of Murphy in 2020 was 20,500 people, with 6,179 households. The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4 Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total	Population Density (Sq. Mile)	Household	% of County Total	Household Density (Sq. Mile)
City of Murphy	20,500	1.98%	3,605.63	7,211	1.88%	1,269.59

Source: US Census Bureau & Collin County Appraisal District

Table 3.5 summarizes population counts and population change (absolute and percent predications for the City of Murphy).

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2013-2014	Percent (%) Change 2013-2014
City of Murphy	17,708	20,060	20,080	20	0.09%

Source: 2020 North Central Texas Council of Governments Population Estimate

Property

There are an estimated 7,077 parcels in the City of Murphy, with an estimated \$2,065,761,767 in total assessed value of, Table 3.6 lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
City of Murphy	7,077	1.68%	\$2,065,761,767

Source: Collin County Appraisal District

Emergency Facilities

There are three identified emergency facilities in the City of Murphy, including one fire station, one police station, and no hospitals. Table 3.7 presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
City of Murphy	1	1	1

Source: County Data and Regional Hazard Assessment Tool

Critical Facilities

There are five critical facilities, which are considered non-emergency in the City of Murphy. The critical facilities include five schools and zero historical property sites (Table 3.8). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
City of Murphy	5	0

Source: Local jurisdictions

Critical Infrastructure

There are five identified critical infrastructure facilities in the City of Murphy, including no airports, no natural gas facilities, no water treatment facilities, no wastewater treatment facilities, no dams, and five railway/highway bridges (*Table 3.9*).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
City of Murphy	0	0	0	0	0	5

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, the City of Murphy's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for the City of Murphy, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.10* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	

Flooding	X		
Hail	X		
High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) zero (0) recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Murphy are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the City of Murphy are expected mostly during water shortages, financially unknown due to lack of accurate reporting.
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the City of Murphy. The City of Murphy and its population are vulnerable to this hazard.

Improved Property	According to National Centers for Environmental Information (NCEI), there is zero (0) impact of extreme heat to developed areas and the improved property in the City of Murphy; predominantly a residential community, is vulnerable to this hazard.
Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is zero (0) impact of extreme heat to emergency facilities; however, there are two standalone emergency room facilities, one fire station, one police station and one animal shelter in the City of Murphy which are vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there are zero (0) critical facilities; however, there are five school facilities in the City of Murphy which are vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI) there is zero (0) impact of extreme heat to critical infrastructure, and exposure; however, there are four bridges within the City of Murphy and the risk is considered minimal..

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. Approximately 185 residential parcels in the City of Murphy are located within the 100-year floodplain.
Improved Property	There have been six (6) recorded flood events in the City of Murphy. Property losses are expected at \$23,573.70 per year however these values are underestimated due to lack of accurate reporting. No crop losses are expected or recorded county-wide. Approximately \$65,866,390 of the total assessed value is at risk from the 100-year storm event.
Emergency Facilities	Emergency facilities have the potential to be as risk in the 100-year storm event.
Critical Facilities	Critical facilities have the potential to be as risk in the 100-year storm event.
Critical Infrastructure	Critical Infrastructure have the potential to be as risk in the 100-year storm event.

Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Murphy are expected at \$2,028.57 per year however these values are underestimated due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although

	some crops are susceptible to hail hazards, available historical data for the City of Murphy indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in the City of Murphy are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the City of Murphy are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in the City of Murphy are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events. All the population of the City of Murphy is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Murphy are expected at \$785.71 per year however these values are underestimated due to lack of accurate reporting. No crop losses resulted from this hazard in the City of Murphy.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in the City of Murphy are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the City of Murphy are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in the City of Murphy are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), lightning events can be expected to cause no fatalities or injuries in City of Murphy. All the population of the City of Murphy is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Murphy are expected at \$14,791.67 per year

	however these values are underestimated due to lack of accurate reporting. Murphy is exposed to this hazard.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in the City of Murphy are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the City of Murphy are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in the City of Murphy are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in the City of Murphy. All the population of the City of Murphy is exposed and vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), property losses in the City of Murphy are expected but unknown due to lack of accurate reporting. No crop losses are expected from this hazard in the City of Murphy.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in the City of Murphy are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the City of Murphy are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the City of Murphy are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 47.54% of the City of Murphy is vulnerable to wildfires. There have been no recorded injuries or fatalities due to wildfires.
Improved Property	Based on historical data, annual financial losses expected from property loss due to wildfires are unknown due to lack of accurate reporting; therefore, percentage of the overall property improvement values across the City of Murphy are also unknown.

Emergency Facilities	Based on geographic information there are 0 fire stations at risk from wildfire events.
Critical Facilities	Based on geographic information there are no schools at risk from wildfire events.
Critical Infrastructure	Based on geographic information there are 0 bridges, 0 dams, 0 wastewater treatment facility, and 0 water treatment facility at risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the City of Murphy. All the population of the City of Murphy is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Allen are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the City of Murphy. With significant ice storms for this area the City of Murphy is exposed and vulnerable to this hazard.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in the City of Murphy are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in the City of Murphy are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in the City of Murphy are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serves as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the City of Murphy considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
City of Murphy	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	N	N	64%
Average % Yes Capabilities – 64%															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes
City of Murphy	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	90%
Average % Yes Capabilities – 90%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes
City of Murphy	N	Y	Y	Y	Y	Y	Y	N	N	N	60%
Average % Yes Capabilities – 60%											
Y- Yes N- No ?- Don't Know											

To quantify Collin County's legal and regulatory capabilities, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, the City of Murphy has 64% of identified legal and regulatory capabilities, 90% of identified administrative and technical capabilities, and 60% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
City of Murphy	City Manager	The city council, including the mayor, mayor pro-tem, and council members, along with the city manager, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. Ability to implement and approve mitigation actions and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2021 HazMAP, the City of Murphy Hazard Mitigation Planning Committee developed mitigation strategies for the plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in [use](#).

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Objective 1-D Reduce or eliminate loss of life and property damage from tornado, ice events, power outages and high winds through tree pruning practices.

Objective 1-E Reduce or eliminate loss of life and property damage from drought through urban interface practice due to wildfires.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Objective 2-F Provide ample supply of fuel for all city vehicles and public safety vehicles for emergency responses.

Goal 3 Reduce losses and repetitive damages for chronic hazard events.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones within the City of Murphy.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis, economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Murphy Deferred Items from 2016 Plan

City of Murphy Action Item	Increase the percentage of population covered by Outdoor Warning Sirens by relocating one siren and purchasing and installing an additional siren.
Hazard(s) Addressed	Tornado, High Winds, Hail
Goal/Objective	1-B
Priority	High
Estimated Cost	\$38,000
Potential Funding Sources	HGMP, PDM, General Fund
Potential Matching Sources	Local funds, in-kind
Lead Department	Fire/OEM
Implementation Schedule	6-18 months
Effect on Old Buildings	N/A
Effect on New Buildings	N/A
Cost Effectiveness	Very cost effective. Quantifying the value of a human life is extremely difficult at best.
Discussion	The city has four tower sites currently, but has a gap in coverage in some areas. Relocating an existing site and adding one site would allow full coverage for the city and its residents.

Status	100% Complete
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City of Murphy Action Item	Obtain portable generators to ensure continuity of operations at critical facilities.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Hail, Earthquake, Lightning, Dam Failure
Goal/Objective	1-E
Priority	High
Estimated Cost	\$7,500 each
Potential Funding Sources	HGMP, HMA, General Fund
Potential Matching Sources	Local, In-kind
Lead Department	Fire
Implementation Schedule	3-6 Months
Effect on Old Buildings	Would require retrofit for generator hookups
Effect on New Buildings	N/A
Cost Effectiveness	Very cost effective
Discussion	Natural hazards can create power outages for extended periods of time.
Status	Not started and no longer a viable action item. Will be removed from Plan

City of Murphy Action Item	Purchase and Install CASA-WX Weather Radar
Hazard(s) Addressed	Tornado, High Winds, Hail
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$2.5 Million
Potential Funding Sources	HGMP, PDM, General Fund
Potential Matching Sources	Local funds, in-kind
Lead Department	Fire/OEM
Implementation Schedule	3-6 months
Effect on Old Buildings	N/A
Effect on New Buildings	N/A
Cost Effectiveness	Very cost effective. Quantifying the value of a human life is extremely difficult at best.
Discussion	The Collaborative Adaptive Sensing of the Atmosphere (CASA WX) project is a multi-sector partnership dedicated to engineering revolutionary weather-sensing networks. The more accurate data will

	also provide a better means to analyze severe weather post event which can also help in the assessment of damage after a severe weather event.
Status	No longer a viable project for Murphy, will be removed from Plan in 2021

City of Murphy Action Item	Implement the Residential Safe Room Rebate Program locally
Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1-C
Priority	Medium
Estimated Cost	\$3,000 per safe room
Potential Funding Sources	HGMP, PDM, General Fund
Potential Matching Sources	Local funds, in-kind
Lead Department	City Council – City Manager
Implementation Schedule	1-3 years
Effect on Old Buildings	Some buildings may be modified for shelter retrofit
Effect on New Buildings	New home construction would result in safer houses
Cost Effectiveness	Moderate: Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornados or high winds events.
Discussion	Support the existing active FEMA 320 safe room rebate program for North Central Texas by helping offset the cost to the resident.
Status	With the ending of the NCTCOG Saferoom Rebate Program this program is no longer a viable action item. Will be removed from Plan.

City of Murphy Action Item	Develop and implement seasonal program for identifying and removing tree limbs that threaten infrastructure.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, High Winds, Lightning
Goal/Objective	1-D
Priority	Medium
Estimated Cost	\$25,000
Potential Funding Sources	HGMP, General Fund
Potential Matching Sources	Local funds, in-kind
Lead Department	Parks
Implementation Schedule	3-6 Months

Effect on Old Buildings	Reduce potential for power line/debris/limb damage to existing buildings during extreme weather
Effect on New Buildings	Reduce potential for power line/debris/limb damage to new construction during extreme weather
Cost Effectiveness	Very cost effective in mitigating tree limbs prior to severe weather events.
Discussion	Severe storms, winter storms, and wildfires damage tree limbs and power lines that damage homes, buildings, vehicles and create power outages when they fall. Roads become impassable due to the obstructions created by the falling limbs and charged power lines as well. The ability to mitigate these overgrowth items and strategically located limbs will lessen the effects of the hazards.
Status	Completed

City of Murphy Action Item	Retrofit the existing Emergency Operations Center to harden it against multiple hazards
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning, Dam Failure
Goal/Objective	2-B
Priority	High
Estimated Cost	\$30,000-\$150,000
Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local, In-kind, Bond
Lead Department	Public Works
Implementation Schedule	12 – 24 months
Effect on Old Buildings	Existing building would be retrofitted to mitigate against structure-impacting hazards.
Effect on New Buildings	N/A
Cost Effectiveness	Low cost effectiveness for construction, but very cost effective for 'command structure' to remain intact to operate through emergency events
Discussion	Dry floodproofing ground floor; reinforcing doors and windows; installing flame-retardant, hail and wind resistant external materials (window coatings, roofing); roof bracing; higher grade insulation; foundations stabilizers; lightning rods; soil stabilizing plants, and low-flow plumbing.
Status	Partially completed and will continue to perform enhancements. Will be included in 2021 Plan.

City of Murphy Action Item	Replace undersized culverts at five locations.
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Hazard(s) Addressed	Flooding
Goal/Objective	2-A, 2-E
Priority	Moderate
Estimated Cost	\$620,000
Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local, in-kind, Bonds
Lead Department	Engineering
Implementation Schedule	1-2 years
Effect on Old Buildings	Reduce flooding for existing structures in area
Effect on New Buildings	Reduce flooding for planned construction in area
Cost Effectiveness	Very effective for the long term results gained
Discussion	Providing proper water flow and drainage during times of excessive rains is imperative. Improper water flow results in damage to roads, bridges and property; which may lead to injuries and deaths. These replacements will be for 5 separate projects that have been identified as insufficient.
Status	Mostly completed and will be included in 2021 Update

City of Murphy Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages

Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information
Status	No longer a viable project for Murphy, will be removed from Plan in 2021

City of Murphy Action Item	Drainage channel improvements and additions.
Hazard(s) Addressed	Flooding
Goal/Objective	2-A, 2-E
Priority	Moderate
Estimated Cost	\$3.11 Million
Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local, in-kind, Bonds
Lead Department	Engineering
Implementation Schedule	12 – 18 Months
Effect on Old Buildings	Reduce flooding for existing structures in area
Effect on New Buildings	Reduce flooding for planned construction in area
Cost Effectiveness	Very effective for the long term results gained
Discussion	Providing proper water flow and drainage during times of excessive rains is imperative. Improper water flow results in damage to roads, bridges and property; which may lead to injuries and deaths. These replacements will be for 4 separate projects that have been identified as insufficient.
Status	Mostly completed and will be included in 2021 Update

City of Murphy Action Item	Purchase and install lightning detection equipment for city parks
Hazard(s) Addressed	Lightning
Goal/Objective	1-A
Priority	Moderate
Estimated Cost	\$10,000
Potential Funding Sources	HGMP, PDM, General Fund
Potential Matching Sources	Local, in-kind
Lead Department	Public works
Implementation Schedule	12 months

Effect on Old Buildings	N/A
Effect on New Buildings	N/A
Cost Effectiveness	Very cost effective. Quantifying the value of a human life is extremely difficult at best.
Discussion	The city has two major parks with outdoor sporting event capabilities, pavilions and an amphitheater where multiple events are held throughout the year. Providing a secondary source of severe weather information such as lightning indication could prevent injury or death to one or more of our citizens or guests
Status	No longer a viable project. Will not be included in the 2021 Plan

City of Murphy Action Item	Develop and implement a water conservation plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	12 - 18 months
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and protection of foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Promote water conservation and work with local water supplies to increase mitigation measures for drought. Develop and implement mandatory water restrictions/codes for water conservation measures that address soil stabilization.
Status	100% Completed

City of Murphy New 2021 Action Items

City of Murphy Action Item	Retrofit the existing Emergency Operations Center to harden it against multiple hazards
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning
Goal/Objective	2-B
Priority	High

Estimated Cost	\$30,000-\$150,000
Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local, In-kind, Bond
Lead Department	Public Works
Implementation Schedule	12 – 24 months
Effect on Old Buildings	Existing building would be retrofitted to mitigate against structure-impacting hazards.
Effect on New Buildings	N/A
Cost Effectiveness	Low cost effectiveness for construction, but very cost effective for 'command structure' to remain intact to operate through emergency events
Discussion	Dry floodproofing ground floor; reinforcing doors and windows; installing flame-retardant, hail and wind resistant external materials (window coatings, roofing); roof bracing; higher grade insulation; foundations stabilizers; lightning rods; soil stabilizing plants, and low-flow plumbing.

City of Murphy Action Item	Replace undersized culverts at five locations.
Hazard(s) Addressed	Flooding
Goal/Objective	2-A, 2-E
Priority	Moderate
Estimated Cost	\$620,000
Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local, in-kind, Bonds
Lead Department	Engineering
Implementation Schedule	1-2 years
Effect on Old Buildings	Reduce flooding for existing structures in area
Effect on New Buildings	Reduce flooding for planned construction in area
Cost Effectiveness	Very effective for the long term results gained
Discussion	Providing proper water flow and drainage during times of excessive rains is imperative. Improper water flow results in damage to roads, bridges and property; which may lead to injuries and deaths. These replacements will be for 5 separate projects that have been identified as insufficient.

City of Murphy Action Item	Drainage channel improvements and additions.
Hazard(s) Addressed	Flooding
Goal/Objective	2-A, 2-E
Priority	Moderate
Estimated Cost	\$2.91 Million
Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local, in-kind, Bonds
Lead Department	Engineering
Implementation Schedule	12 – 18 Months
Effect on Old Buildings	Reduce flooding for existing structures in area
Effect on New Buildings	Reduce flooding for planned construction in area
Cost Effectiveness	Very effective for the long term results gained
Discussion	Providing proper water flow and drainage during times of excessive rains is imperative. Improper water flow results in damage to roads, bridges and property; which may lead to injuries and deaths. These replacements will be for 4 separate projects that have been identified as insufficient.
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Promote water conservation and work with local water supplies to increase mitigation measures for drought. Develop and implement mandatory water restrictions/codes for water conservation measures that address soil stabilization.

City of Murphy Action Item	Obtain fixed emergency building generators and complete the electrical wiring to retrofit the existing buildings for critical infrastructure buildings
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning
Goal/Objective	2-B, 2-D
Priority	High
Estimated Cost	\$20,000
Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local, in-kind
Lead Department	Public Works
Implementation Schedule	12-18 months
Effect on Old Buildings	Existing building would be retrofitted to prevent shutdown of building
Effect on New Buildings	N/A
Cost Effectiveness	Moderate
Discussion	Tornados, High winds, extreme heat and ice (winter storm) create power outages for extended periods of time. People become trapped in their

	homes without power for heating and cooling needs and other necessities for extended periods of time. These elements will provide electricity to the buildings and it will allow the critical components of the building to still operate. These structures would allow for them to serve as warming and cooling shelters
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City of Murphy Action Item	Install fuel tanks, fuel pumps, roadway, and all appurtenances for city vehicle refueling needs during emergency responses.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Hail, Drought, Earthquake, Lightning
Goal/Objective	2-F
Priority	Moderate
Estimated Cost	\$1.75 Million
Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local, In-kind, Bond
Lead Department	Public Works
Implementation Schedule	12 – 24 months
Effect on Old Buildings	N/A
Effect on New Buildings	N/A
Cost Effectiveness	Very effective for the long-term results gained
Discussion	When fuel shortages result from local, state, or national events, we lose our may lose our ability to quickly respond to events. This would include not just traditional first responders, but also Public Works and others. Ensuring we maintain our own fuel and ability to fill up vehicles will help ensure we can mitigation events here in Murphy due to us having the ability to respond at all times.

City of Murphy Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	TBD
Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local funds, in-kind, citizen cost share
Lead Department	Economic Development, Public Works
Implementation Schedule	2-4 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage

Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage
Cost Effectiveness	Moderate. This study could lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout the jurisdiction.

City of Murphy Action Item	Research and develop an urban interface wildfire program for residents
Hazard(s) Addressed	Drought
Goal/Objective	1-E
Priority	Moderate
Estimated Cost	\$1000 - \$5000
Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local funds, in-kind, citizen cost share
Lead Department	Parks & Fire Department
Implementation Schedule	1-2 years
Effect on Old Buildings	Reduce property damage due to increased wildfire risk
Effect on New Buildings	Reduce property damage due to increased wildfire risk
Cost Effectiveness	Low-moderate cost for effective means to reduce wildfire risk
Discussion	Drought in general leads to an increased chance of wildfire. With most wildfire loss occurring in open undeveloped wildlands there is still a moderate chance of wildfire in smaller areas of developed urban areas of high population. Specific clearing of underbrush and debris near homes and businesses will reduce the property damages due to wildfire.

City of Murphy Action Item	Implement all-hazards community education program, including information on mitigation activities.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning
Goal/Objective	4A- 4B
Priority	High
Estimated Cost	\$1000 - \$5000
Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local funds, in-kind
Lead Department	Emergency Management
Implementation Schedule	2-4 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing buildings safer, stronger, and less vulnerable to damages by providing a qualitative understanding of hazards and how to mitigate them.
Effect on New Buildings	Depending on mitigation actions taken for structures, can make existing buildings safer, stronger, and less vulnerable to damages by

	providing a qualitative understanding of hazards and how to mitigate them.
Cost Effectiveness	Low-cost effectiveness for providing information to citizens to make good sound decisions based on current practices for mitigation.
Discussion	Community education is important for reducing loss of life and property.

City of Murphy Action Item	Continue to enhance mandatory water conservation measures
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-A
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	12 - 18 months
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Promote water conservation throughout the county and work with local water supplies to increase public education on drought. Develop and implement mandatory water restrictions for water conservation. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

National Flood Insurance Program (NFIP) Compliance

The City of Murphy is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
480137#	MURPHY, CITY OF	COLLIN COUNTY	12/7/1973	4/1/1980	6/2/2009	4/1/1980	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Compliance

Once the community applies for the NFIP, FEMA arranges for a study of the community to determine base flood elevations and flood risk zones. Consultation with the community occurs at the start of and during the study, and those communities with minimal flood risk are converted to the Regular Program without a study.

FEMA provides the studied community with a Flood Insurance Rate Map delineating base flood elevations and flood risk zones. The community is then given 6 months to adopt base flood elevations in its local zoning and building code ordinances. Once the community adopts more stringent ordinances, FEMA converts the community to the NFIP's Regular Program. FEMA then authorizes the sale of additional flood insurance in the community up to the Regular Program limits. The community must implement and enforce the adopted floodplain management measures. FEMA provides periodic community assistance visits with local officials to provide technical assistance regarding complying with NFIP floodplain management requirements.

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
City of Murphy	City Manager	Maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the City Manager's Office. City of Murphy requires 2 feet of freeboard above the base flood elevation for the top of bottom floor on residential structures and non-residential structures that will be built on properties created or platted after the effective date of the Flood Damage Prevention Order	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood damage prevention order shall result in fines up to \$500 per violation plus court costs.
		Floodplain development permits	Permits are required for any construction in a floodplain.	
		Take action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning	City of Murphy Street Department distributes barricades during times of flooding events.	
		Future Mitigation Projects	City of Murphy will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), Collin County has developed a plan maintenance process which is described in the following paragraphs. Collin County, along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the City of Murphy, the county, and the city council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) will be implemented by participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, The City of Murphy will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Jurisdiction	Personnel	Activity	Time
City of Murphy	Fire Marshal	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
		Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
		Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will

undertake the same process for reviewing, revising and updating their respective plans and submitting them for approval. The plans will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms (*In compliance with 201.6(c)(4)(ii)*)

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and planning committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives and actions outlined in this plan will be integrated into these existing mechanisms as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
City of Murphy	City Council	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Emergency Management Specialist	Emergency Action Plan updates	Every Five Year	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council, Director of Planning	Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, City Council	Drought Contingency plans	Assessed annually and updated as needed.	Integrate drought actions such as xeriscaping, water restrictions, and public education
	Planning Director, City Council	Natural Resource Conservation Plan	Assessed annually and updated as needed.	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Murphy Hazard Mitigation Planning Team considers this HazMAP, including development and maintenance, to be the primary vehicles to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committee will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex O: Town of New Hope

1. Introduction

This annex was prepared in 2020-2021 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan. The Town of New Hope participated on the Collin County Hazard Mitigation Planning Team (HMPT). The New Hope annex contains information specific to the town, including capability assessment information, vulnerability assessments, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While the Town of New Hope has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped New Hope officials recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and the local newspaper.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), the Town of New Hope developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. The table below outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Climatic Data Center (NCDC)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Urban Interface

National Inventory of Dams	Dam Information
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Planning Committee

This Hazard Mitigation Action Plan was developed by the Town of New Hope Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the Collin County HMPT. The efforts of the Planning Committee were led by the Mayor.

The Collin County HMPT was assembled in June 2020 with representatives from participating jurisdiction planning committees, including mayors, police chiefs, fire chiefs, and the general public. Collin County acted as the plan development consultant providing hazard mitigation planning services. The efforts of the planning committee were led by the mayor of New Hope. The table below provides a list of the primary representatives on the New Hope planning committee.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
Town Council	Mayor	Plan Development
Town Council	Council Members	Plan Development

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.

- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Collin County	Assistant Emergency Management Coordinator	General Assistance

Subsequent to the State of Texas and FEMA approval of the plan, each jurisdiction also is committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Collin County:

- Collin County HazMAP Kickoff Meeting – November 5, 2020
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022 at 9AM

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.
- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption. This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee for the Town of New Hope identified several hazards that could affect the town. The committee decided to focus on the natural hazards identified on pages O-9 through O-10 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for the Town of New Hope and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
			Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for the Town of New Hope

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	1	0	0	0.35
Drought	1	0	0	0	0.3
Earthquake	0	0	0	2	0.2
Expansive Soils	1	0	0	1	0.4
Extreme Heat	2	1	0	2	1.15
Flooding	1	0	0	1	0.4
Hail	2	1	0	2	1.15
High Winds	2	0	0	1	0.7
Lightning	2	0	0	0	0.6
Tornado	2	2	2	1	1.9
Wildfire	1	1	1	1	1
Winter Storms	2	1	2	3	1.75

The conclusions drawn from the hazard profiling process for Collin County jurisdictions, resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in Collin County.

Table 3.3 Hazard Rankings for the Town of New Hope

High Risk (PRI 2 - 3)	
Moderate Risk (PRI 1.01 -1.9)	Tornado Winter Storms Extreme Heat Hail
Low Risk (PRI 0.50 – 1)	High Winds Lightning Wildfire
Negligible to No Risk (PRI 0 – 0.49)	Earthquake Dam Failure Drought Expansive Soils Flooding

Changes in Development and Priorities (Requirement §201.6(d) (3))

Our jurisdiction is in one of the fastest growing areas of the nation, hence development has increased and will continue to increase our vulnerability to hazards that may impact us.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the Town of New Hope faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation.

Dam and Levee Failure As a participant in the county plan inundation studies will be considered. There are currently no dams in or immediately surrounding New Hope.

Drought Droughts have the potential to impact the entire planning area equally: all improved property and the entire population of New Hope are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. North Texas Municipal Water District (NTMWD) is the source of water for the Town of New Hope, and NTMWD's water sources and reservoirs are vulnerable to drought. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake Earthquakes have the potential to occur anywhere in the geographic planning area, therefore all geographic areas are potentially vulnerable. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

Expansive Soils All the geographic areas and properties in the Town of New Hope have the potential to be vulnerable to expansive soils, especially properties constructed under older building codes. Expansive soils are not a prevalent hazard in New Hope.

Extreme Heat Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air conditioning are most vulnerable.

Flooding Geographic areas, properties, and populations in the Town of New Hope have the potential to be vulnerable to flooding. Areas around Big Branch Creek are vulnerable to flooding and roadways with poor drainage are vulnerable to flash flooding.

Hail All the geographic areas, properties, and populations in the Town of New Hope have the potential to be vulnerable to hail. Exposed populations, manufactured homes, and older properties are most vulnerable.

High Winds High winds have the potential to damage trees in the Town of New Hope. Because roads and houses in New Hope are surrounded by large trees, high winds have the potential to block roads and damage houses. Manufactured homes and exposed populations are most vulnerable.

Lightning All the geographic areas, properties, and populations in the Town of New Hope have the potential to be vulnerable to lightning. Buildings without lightning protection and exposed populations are most vulnerable.

Tornado All the geographic areas, properties, and populations in the Town of New Hope have the potential to be vulnerable to tornados. Manufactured homes and exposed populations are most vulnerable.

Wildland Fire 91.43% of the population of the Town of New Hope lives in the Wildland/Urban Interface. Both the east and west side of New Hope are vulnerable to wildland fires because of their WUI and because of their distance from a main highway (Hwy 380).

Winter Storms Winter storms are a significant threat to the Town of New Hope. These winter storms have the potential to make roads impassable for days. Residents may be confined to their homes due to the storm and may be without basic services, such as water and electricity, for an extended period of time. New Hope residents live a distance from major stores and may be unable to buy supplies in the event of a prolonged storm or power outage.

Identification of Assets and Vulnerability Assessment

An inventory of unincorporated Collin County geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population**: Includes the number of people residing in Collin County jurisdictions as delineated by U.S. Census Bureau Annual Estimates of the Resident Population for Incorporated Places: April 1, 2010 to July 1, 2019.
- **Improved property**: Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities**: Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities**: Includes schools, Town Halls, and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population. The New Hope Town Hall could act as an Emergency Operations Center (EOC) in the event of a major emergency or disaster.
- **Critical infrastructure**: Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical infrastructure was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the *US Census Bureau Annual Estimates of the Resident Population for Incorporated Places: April 1, 2010 to July 1, 2019*, the total population of the Town of New Hope in 2019 was 628 people, with 276 households. The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4. New Hope Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total	Population Density (Sq. Mile)	Household	% of County Total	Household Density (Sq. Mile)
Town of New Hope	628	0.06	436.11	276	0.09	191.67

Source: 2020 NCTCOG Population Estimate and US Census Bureau Annual Estimates of the Resident Population for Incorporated Places: April 1, 2010 to July 1, 2019 & Collin County Appraisal District

Table 3.5 summarizes population counts and population change (absolute and percent predictions for the Town of New Hope).

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
Town of New Hope	614	633	628	-5	-0.79%

Source: 2010 Census Data & US Census Bureau Annual Estimates of the Resident Population for Incorporated Places: April 1, 2010 to July 1, 2019

Property

There are an estimated 380 parcels in the Town of New Hope, with an estimated \$55,290,291 in total assessed value of, *Table 3.6* lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
Town of New Hope	380	0.10%	\$55,290,291

Source: Collin County Appraisal District

Emergency Facilities

There are zero identified emergency facilities in the Town of New Hope (Table 3.7).

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
Town of New Hope	0	0	0

Source: FEMA Resilience and Planning Tool

Critical Facilities

There is one identified critical facility in the Town of New Hope (Table 3.8).

Table 3.8 Critical Facilities

Jurisdiction	Schools	Town Hall	Historical Property
Town of New Hope	0	1	0

Source: FEMA Resilience and Planning Tool & Local jurisdictions

Critical Infrastructure

There are zero identified critical infrastructure facilities in the Town of New Hope (Table 3.9).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
Town of New Hope	0	0	0	0	0	0

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, the Town of New Hope's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for the Town of New Hope, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. Table 3.10 summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail	X		
High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) no recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of New Hope are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the Town of New Hope are expected mostly during water shortages, financially unknown due to lack of accurate reporting.
Emergency Facilities	There are no emergency facilities located within the Town of New Hope. Therefore, no emergency facilities are at risk.

Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities, but foundation issues could occur due to drought events.
Critical Infrastructure	There is no critical infrastructure located within the Town of New Hope. Therefore, no critical infrastructure is at risk.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the Town of New Hope. The Town of New Hope and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas and the improved property in the Town of New Hope is not vulnerable to this hazard.
Emergency Facilities	There are no emergency facilities located within the Town of New Hope. Therefore, no emergency facilities are at risk.
Critical Facilities	According to the National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the critical facilities in the Town of New Hope are not vulnerable to this hazard.
Critical Infrastructure	There is no critical infrastructure located within the Town of New Hope. Therefore, no critical infrastructure is at risk.

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. Portions of two (2) residential parcels in the Town of New Hope are located within the 100-year floodplain.
Improved Property	Property losses in the Town of New Hope are expected but financially unknown due to lack of accurate reporting. No crop losses are expected or recorded county-wide. Approximately \$194,858 of the total assessed value is at risk from the 100-year storm event
Emergency Facilities	There are no emergency facilities located within the Town of New Hope. Therefore, no emergency facilities are at risk.
Critical Facilities	Critical facilities have the potential to be at risk in a 100 year storm event.

Critical Infrastructure	There is no critical infrastructure located within the Town of New Hope. Therefore, no critical infrastructure is at risk.
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Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of New Hope are expected but unknown due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data indicates that there are no expected crop losses from this event.
Emergency Facilities	There are no emergency facilities located within the Town of New Hope. Therefore, no emergency facilities are at risk.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the Town of New Hope are vulnerable to this hazard.
Critical Infrastructure	There is no critical infrastructure located within the Town of New Hope. Therefore, no critical infrastructure is at risk.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events county-wide. All the population of the Town of New Hope is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of New Hope are expected but unknown due to lack of accurate reporting. Minimal crop losses resulted from this hazard county-wide with none reported from the Town of New Hope.
Emergency Facilities	There are no emergency facilities located within the Town of New Hope. Therefore, no emergency facilities are at risk.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the Town of New Hope are vulnerable to this hazard.
Critical Infrastructure	There is no critical infrastructure located within the Town of New Hope. Therefore, no critical infrastructure is at risk.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), lightning events can be expected to cause no fatalities or injuries. All the population of the Town of New Hope is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of New Hope are expected but unknown due to lack of reporting. No crop losses resulted from this hazard county-wide with none reported from the Town of New Hope.
Emergency Facilities	There are no emergency facilities located within the Town of New Hope. Therefore, no emergency facilities are at risk.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the Town of New Hope are vulnerable to this hazard.
Critical Infrastructure	There is no critical infrastructure located within the Town of New Hope. Therefore, no critical infrastructure is at risk.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in the Town of New Hope. All the population of the Town of New Hope is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of New Hope are expected but financially unknown due to lack of reporting. No crop losses resulted from this hazard county-wide with none reported from the Town of New Hope.
Emergency Facilities	There are no emergency facilities located within the Town of New Hope. Therefore, no emergency facilities are at risk.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornadoes, all critical facilities in the Town of New Hope are exposed and vulnerable to this hazard.
Critical Infrastructure	There is no critical infrastructure located within the Town of New Hope. Therefore, no critical infrastructure is at risk.

Summary Table 3.18

Wildfire	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from wildfires in the Town of New Hope. Based on geographical data, approximately 91.43% of New Hope is vulnerable to wildfires.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of New Hope are expected but financially unknown due to lack of reporting. No crop loss reported from the Town of New Hope. Therefore, percentage of the overall property improvement values across the Town of New Hope are also unknown.
Emergency Facilities	There are no emergency facilities located within the Town of New Hope. Therefore, no emergency facilities are at risk.
Critical Facilities	Based on geographic information, there is one critical facility at risk from wildfire events.
Critical Infrastructure	There is no critical infrastructure located within the Town of New Hope. Therefore, no critical infrastructure is at risk.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the Town of New Hope. All the population of the Town of New Hope are exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of New Hope are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the Town of New Hope.
Emergency Facilities	There are no emergency facilities located within the Town of New Hope. Therefore, no emergency facilities are at risk
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in the Town of New Hope are exposed and vulnerable to this hazard.
Critical Infrastructure	There is no critical infrastructure located within the Town of New Hope. Therefore, no critical infrastructure is at risk.

4. Capability Assessment

The risk assessment and capabilities assessment serves as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, New Hope considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl ordinances)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
<i>Town of New Hope</i>	Y	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N	?	50%
Average % Yes Capabilities – 50%															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes
<i>Town of New Hope</i>	N	N	N	N	N	N	N	N	N	Y	10%
Average % Yes Capabilities – 20%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes
<i>Town of New Hope</i>	N	N	Y	N	N	N	N	N	N	?	10%
Average % Yes Capabilities – 10%											
Y- Yes N- No ?- Don't Know											

To quantify New Hope's legal and regulatory capabilities, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, New Hope's and its jurisdictions have 50% of identified legal and regulatory capabilities, 10% of identified administrative and technical capabilities, and 10% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
Town of New Hope	Mayor	The Town Council, including the Mayor, Mayor Pro-Tem, and Town Council members, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the overall direction of the Town.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2011 HazMAP, the Town of New Hope Hazard Mitigation Planning Committee developed mitigation strategies for the Plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones within New Hope.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis, economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

Town of New Hope Deferred Items from 2016 Plan

Town of New Hope Action Item	Adopt and promote public education program to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning, Dam Failure
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local funds General fund
Lead Department	Town Council
Implementation Schedule	Yearly effort
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	The utilization of social media will be key in this program. Program will include educational information about hazard awareness and mitigation.

Status	Receive supplies and materials from the NCTCOG KnoWhat2do Program and provide to residents. Continue – will be included in 2021 Plan
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Town of New Hope Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	Tornado/High Winds
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Residents receiving grant
Lead Department	N/A
Implementation Schedule	1-3 Years
Effect on Old Buildings	Enhance Safety of existing residential structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelter potentially decrease personal injuries and death during severe weather, tornados, or high wind events
Discussion	
Status	Will be included in 2021, however, come residents were able to obtain funds through the NCTCOG Saferoom Rebate Program

Town of New Hope Action Item	Develop and Implement an extreme temperature program that identifies both locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-A, 2D
Priority	Medium
Estimated Cost	\$5,000-\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local funds, General fund
Lead Department	Town Council
Implementation Schedule	12 months
Effect on Old Buildings	Could require retrofit to accommodate required space and resources, including but not limited to emergency generators.
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.

Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	Low
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Partial payment by receiving party
Potential Matching Sources	Local funds, General Fund, citizen cost-share
Lead Department	Town Council
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios could be especially useful to provide information about severe weather as well as provide other emergency and hazard information to residents without use of their cell phones or access to Internet.
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Tornado, Wildfire, High Winds, Flooding, Hail, Lightning, Dam Failure
Goal/Objective	1-A
Priority	Medium
Estimated Cost	\$25,000 per siren
Potential Funding Sources	HMGP
Potential Matching Sources	Local funds, General Fund, Developer cost
Lead Department	Town Council

Implementation Schedule	9-12 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in keeping citizens notified of hazards.
Discussion	Obtaining grants will be key to implementation of outdoor warning siren coverage due to high costs and New Hope's ow fiscal capability assessment scores.
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the County.
Hazard(s) Addressed	Dam Failure, Flooding
Goal/Objective	2-A, 3-A
Priority	Low
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, General Fund
Lead Department	Town Council
Implementation Schedule	12 - 18 months
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Identify all structures and infrastructures that would be impacted by a potential dam failure. There are currently no dams located in or immediately surrounding New Hope.
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	1-A, 3-C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	HMGP, PDM

Potential Matching Sources	Local, General Fund
Lead Department	Town Council
Implementation Schedule	18 – 36 months
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show town officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	With assistance from Collin County Fire Marshall, identify mitigation strategies for all structures and infrastructures that would be impacted by a potential wildfire.
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Develop a drought contingency plan
Hazard(s) Addressed	Drought
Goal/Objective	3-C, 4-B
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local, General Fund
Lead Department	Town Council
Implementation Schedule	12 - 18 months
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and preservation of foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on North Collin Special Utility District recommendations. Use of social media will be key in implementing this plan.
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	4-B
Goal/Objective	Earthquake

Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	6 – 18 months
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils.
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2A,
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local, General Funds
Lead Department	Town Council
Implementation Schedule	12-18 months
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction. Expansive soils are not prevalent in New Hope.
Status	Deferred – will be included in 2021 Plan

Town of New Hope Action Item	Develop and implement a comprehensive public education program to educate on the actions to help mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Dam Failure, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local funds General fund
Lead Department	Town Council
Implementation Schedule	Yearly effort
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	The utilization of social media will be key in this program. Program will include educational information about hazard awareness and mitigation.

Town of New Hope New 2021 Action Items

Town of New Hope Action Item	Develop and implement storm water management
Hazard(s) Addressed	Flooding
Goal/Objective	2-D, 2-E,3-C
Priority	Low
Estimated Cost	\$75,000
Potential Funding Sources	HMGP PDM
Potential Matching Sources	Local Grants, General Fund
Lead Department	Town Council
Implementation Schedule	1-3 years
Effect on Old Buildings	May prevent flooding of existing structures
Effect on New Buildings	May prevent flooding of new development.
Cost Effectiveness	Low compared to life safety events.
Discussion	Project would prevent erosion

Town of New Hope Action Item	Develop and Implement an extreme temperature program that identifies both locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-A, 2D
Priority	Medium
Estimated Cost	\$5,000-\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local funds, General fund
Lead Department	Town Council
Implementation Schedule	12 months
Effect on Old Buildings	Could require retrofit to accommodate required space and resources, including but not limited to emergency generators.
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold

Town of New Hope Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	HMPG, Partial payment by receiving party
Potential Matching Sources	Local funds, General Fund, citizen cost-share
Lead Department	Town Council
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.

Discussion	Weather Alert Radios could be especially useful to provide information about severe weather as well as provide other emergency and hazard information to residents without use of their cell phones or access to Internet.
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Town of New Hope Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Tornado, Wildfire, High Winds, Flooding, Hail, Lightning, Dam Failure
Goal/Objective	1-A
Priority	Medium
Estimated Cost	\$25,000 per siren
Potential Funding Sources	HMGP
Potential Matching Sources	Local funds, General Fund, Developer cost
Lead Department	Town Council
Implementation Schedule	9-12 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in keeping citizens notified of hazards. This action item would be specific to installation/placement of new OWS sirens in the jurisdiction.
Discussion	Obtaining grants will be key to implementation of outdoor warning siren coverage due to high costs and New Hope's ow fiscal capability assessment scores.

Town of New Hope Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the County.
Hazard(s) Addressed	Dam Failure, Flooding
Goal/Objective	2-A, 3-A
Priority	Low
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, General Fund
Lead Department	Town Council
Implementation Schedule	12 - 18 months
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones

Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Identify all structures and infrastructures that would be impacted by a potential dam failure. There are currently no dams located in or immediately surrounding New Hope.

Town of New Hope Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	1-A, 3-C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local, General Fund
Lead Department	Town Council
Implementation Schedule	18 – 36 months
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show town officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	With assistance from Collin County Fire Marshall, identify mitigation strategies for all structures and infrastructures that would be impacted by a potential wildfire.

Town of New Hope Action Item	Develop a drought contingency plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C, 4-B
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local, General Fund
Lead Department	Town Council
Implementation Schedule	12 - 18 months

Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and preservation of foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on North Collin Special Utility District recommendations. Use of social media will be key in implementing this plan. Ensuring residents have sufficient water to keep their foundations at a consistent saturation rate will mitigate droughts and drying soils which is a result of expansive soils of our region.

Town of New Hope Action Item	Develop and implement debris management program targeting buildup of debris and materials at bridges built over metal culverts that could result in flooding and damage to roadways.
Hazard(s) Addressed	2-E, 3-C
Goal/Objective	Flooding
Priority	Low
Estimated Cost	\$500,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local, General Fund
Lead Department	Town Council
Implementation Schedule	12 months – 18 months
Effect on Old Buildings	Could prevent flooding and disruption to transportation
Effect on New Buildings	Could prevent flooding and disruption to transportation
Cost Effectiveness	Low compared to benefits
Discussion	The Town of New Hope needs to ensure clear pathways for the flow of stormwater to prevent buildup of debris and materials that could cause flooding and possible damage to roadways and bridges.

Town of New Hope Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils.
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2A,
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	HMGP

Potential Matching Sources	Local, General Funds
Lead Department	Town Council
Implementation Schedule	12-18 months
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction. Expansive soils are not prevalent in New Hope.

Town of New Hope Action Item	Implement all-hazards community education program, including information on mitigation activities.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning, Dam Failure
Goal/Objective	4A- 4B
Priority	High
Estimated Cost	\$1000 - \$5000
Potential Funding Sources	HGMP, PDM, HMA, General Fund
Potential Matching Sources	Local funds, in-kind
Lead Department	Emergency Management
Implementation Schedule	2-4 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing buildings safer, stronger, and less vulnerable to damages by providing a qualitative understanding of hazards and how to mitigate them.
Effect on New Buildings	Depending on mitigation actions taken for structures, can make existing buildings safer, stronger, and less vulnerable to damages by providing a qualitative understanding of hazards and how to mitigate them.
Cost Effectiveness	Low-cost effectiveness for providing information to citizens to make good sound decisions based on current practices for mitigation.
Discussion	Community education is important for reducing loss of life and property.

National Flood Insurance Program (NFIP) Compliance

New Hope is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
480138#	NEW HOPE, TOWN OF	COLLIN COUNTY	-	1/19/1996	06/02/09(M)	4/19/1996	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
Town of New Hope	Town Secretary	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the Town Hall. New Hope requires 2 feet of freeboard above the base flood elevation for the top of bottom floor on residential structures and non-residential structures that will be built on properties created or platted after the effective date of the Flood Damage Prevention Ordinance	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with Town's flood damage prevention order shall result in fines up to \$500 per violation plus court costs.
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Participate with FEMA in identifying Special Flood Hazard Areas for future FIRM maps	New Hope participates in Risk Assessment, Mapping and Planning Partners (RAMPP) meetings held by FEMA and/or their contractors to better identify areas that are flood prone that are not shown on current Flood Insurance Rate Maps.	
		Future Mitigation Projects	New Hope will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), the Collin County HMPT has developed a plan maintenance process which is described in the following paragraphs. Collin County, along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the Town of New Hope, the county, and the city/town council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) will be implemented by participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, the Town of New Hope will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Jurisdiction	Personnel	Activity	Schedule
New Hope	Mayor	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
		Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
		Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information and analyses and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented to the Collin County Commissioner's Court and councils for the incorporated municipalities included in the Collin County plan for approval. Likewise, each participating jurisdiction will undergo the same process for reviewing, revising and updating their respective plans and submitting same for state, federal and each jurisdiction's local governing body approval. The plan will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and planning committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives and actions outlined in this plan will be integrated into these existing mechanisms as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
Town of New Hope	Town Council	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
		Emergency Action Plan updates	Every Five Year	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
		Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
		Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the New Hope Hazard Mitigation Planning Committee considers this HazMAP, including development and maintenance, to be the primary vehicles to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committee will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex P: City of Parker



This annex was prepared in 2021 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan. The City of Parker participated on the Collin County Hazard Mitigation Planning Team (HMPT). In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete hazard

mitigation planning tool for the City of Parker. It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

1. Introduction

The City of Parker is a residential community generally located at the northeast area of Dallas; we pride ourselves on large lots and open spaces. Parker is located at latitude 33°03'17N and longitude 96°37'17"W, and sits in the southern end of Collin County, with Allen to its North, Plano to the West, Murphy to the south, and Wylie to the east. The City of Parker was incorporated in 1969, and the home of the infamous Southfork Ranch. According to the North Central Texas Council of Governments (NCTCOG), the population of Parker is estimated to be about 5,000. The city has a total area of 10.1 square miles of land area. Parker is a "Type A" general law city which operates under a system of local government called Council - Manager, wherein all powers of the city are vested in the city council.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 (DMA 2000) implemented in the Federal Code of Regulations 44 CFR Part 201.6. While the City of Parker has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped City of Parker officials to recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and jurisdictional websites.

In accordance with Part 201.6(c)(5) of the DMA 2000, Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. Data was gathered through numerous sources, and includes GIS, statistical and qualitative data. The table below outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Centers for Environmental Information (NCEI)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Wildland/Urban Interface analysis
National Inventory of Dams	Dam Information

Planning Committee

This Hazard Mitigation Action Plan was developed by the City of Parker Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the Collin County HMPT.

The Collin County HMPT was assembled in November 2020 with representatives from participating jurisdiction planning committees, including mayors, police chiefs, fire chiefs, and the general public. Collin County acted as the plan development consultant providing hazard mitigation planning services; the efforts of the planning committee were led by the City of Parker Emergency Management Specialist. The table below provides a list of the primary representatives on the Parker planning committee.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
City of Parker	Mayor	Plan Development
City of Parker	Mayor Pro-Tem	Plan Development
City of Parker	City Administrator	Plan Development
City of Parker	Police Chief	Plan Development
City of Parker	Fire Chief	Plan Development
City of Parker	Councilmember	Plan Development
City of Parker	City Attorney	Plan Development

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of

the plan and provided technical writing assistance for review, editing and formatting.

- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

Subsequent to the State of Texas and FEMA approval of the plan, each organization above is committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

External stakeholders involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
NCTCOG	Emergency Preparedness Prog. Asst.	Review of plan
Collin County	Homeland Security Dept. Coordinator	Review of plan

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Collin County and included all jurisdictions' participation:

- Collin County HazMAP Kickoff Meeting – August 12, 2020
- Collin County Planning Meeting – November 2, 2020

- Collin County Planning Meeting – November 5, 2020
- Collin County Kickoff Meeting – August 12, 2020
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022 at 9AM

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.
- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Assessment and Risk Assessment

The Hazard Mitigation Planning Team Committee for the City of Parker identified several natural and man-made hazards that could affect the city. The committee decided to focus on the natural hazards identified in Section 5 of this Update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards identified are provided in the City of Parker Hazard Identification and Risk Assessment (HIRA) as provided in Appendix A-1 of this annex.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for Collin County and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

PRI Value = (Probability x .30) + (Life Impact x .35) + (Property Impact x .25) + (Spatial Extent x .10)

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
			Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for the City of Parker

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	0	0	0	0
Drought	3	0	1	3	1.45
Earthquake	0	0	0	0	0
Expansive Soils	2	0	1	1	0.95
Extreme Heat	2	0	0	0	0.6
Flooding	2	0	1	1	0.95
Hail	2	0	0	3	0.9
High Winds	3	0	1	1	1.25
Lightning	3	0	1	1	1.25
Tornado	3	1	1	1	1.6
Wildfire	1	0	1	1	0.65
Winter Storms	1	1	0	1	0.75

The conclusions drawn from the hazard profiling process for the City of Parker resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in the City of Parker.

Table 3.3 Hazard Rankings for the City of Parker

High Risk (PRI 2 - 3)	
Moderate Risk (PRI 1.01 -1.9)	Drought
Low Risk (PRI 0.50 – 1)	Hail Expansive Soils High Winds Tornado Lightning Flooding Extreme Heat Wildfire
Negligible to No Risk (PRI 0 – 0.49)	Dam Failure Winter Storms Earthquake

Changes in Development and Priorities (Requirement §201.6(d) (3))

Our jurisdiction is in one of the fastest growing areas of the nation, hence development has increased and will continue to increase our vulnerability to hazards that may impact us.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the City of Parker faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation.

Dam and Levee Failure This hazard was identified as having negligible to no risk to the City of Parker. As a participant in the county plan inundation studies will be considered.

Drought Drought can have a significant impact on the City of Parker because of the large farming community. Drought has the potential to impact the entire planning area equally; all improved property, emergency facilities, critical facilities, critical infrastructure, agricultural community and the entire population of Parker are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma, Lake Tawakoni, Lake Fork and the Lake Chapman-Cooper reservoir system are water sources for City of Parker and are vulnerable to drought. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake Earthquakes have the potential to occur anywhere in the geographic planning area, therefore all geographic areas are potentially vulnerable. This hazard was identified as having negligible to no risk to the City of Parker. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

Expansive Soils All geographic areas and properties have the potential to be vulnerable to expansive soils, especially facilities constructed under older building codes.

Extreme Heat Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air conditioning are most vulnerable.

Flooding The City of Parker can be affected by two types of floods though in limited areas. These include:

- Riverine Flood
 - o Occurs in the floodplain of a river or stream when the amount of water and the rate at which the moving increases. This type generally can be forecast in advance, and proper precautions taken to save lives.
- Flash Flood
 - o A type of Riverine flood that occurs after a heavy storm, when the ground cannot absorb the high amount of precipitation. This can occur when heavy precipitation falls on already-saturated soils. Flash Floods occur rapidly with little warning.
- Locations: Below are the descriptions of the areas in the City of Parker that are affected by flooding:

- o The City of Parker has two major tributaries that run through or along the city and drains to Lake Ray Hubbard.
- o The two are Maxwell Creek and Cottonwood Creek. Major flash floods may occur during heavy rains when the ground is saturated which would affect creeks and roadways.

Hail All geographic areas, properties and populations have the potential to be vulnerable to hail. Exposed populations, manufactured homes, and older properties are most vulnerable.

High Winds All geographic areas, properties and populations have the potential to be vulnerable to high winds, manufactured homes and exposed populations are most vulnerable.

Lightning All geographic areas, properties and populations have the potential to be vulnerable to lightning. Property without lightning protection and exposed populations are most vulnerable.

Tornado All geographic areas, properties and populations have the potential to be vulnerable to tornadoes. Exposed populations, manufactured homes, and older properties are most vulnerable.

Wildland Fire According to the Texas A&M Forest Service, 64.66% of the population of the City of Parker live in the Wildland/Urban Interface. Additionally, due to the large amounts of farmland, the city is at elevated risk of wildfires.

Winter Storms All geographic areas, properties, and populations have the potential to be vulnerable to winter storms. Winter storms have the potential to make roads impassable for days. Residents may be confined to their homes due to the storm and may be without basic services, such as water and electricity, for an extended period of time. The homeless, elderly, and populations without access to heat are most vulnerable.

Identification of Assets and Vulnerability Assessment

An inventory of Parker's geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population**: Includes the number of people residing in the Collin County jurisdictions as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property**: Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities**: Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities**: Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.

- **Critical infrastructure:** Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the US Census Bureau, the total population of the City of Parker in 2020 was 5,177 people, with 1,665 households. The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4. Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total**	Population Density (Sq. Mile)	Household	% of County Total**	Household Density (Sq. Mile)
City of Parker	5,177	0.43%	557.01	1,665	0.43%	196.13

Source: US Census Bureau & Collin County Appraisal District

Table 3.5 summarizes population counts and population change (absolute and percent predications for City of Parker).

Table 3.5 Population Predictions

County	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
City of Parker	3,811	4,600	4,840	240	5.21%

Source: 2020 NCTCOG Population Estimate

Property

There are an estimated 2,111 parcels in the City of Parker, with an estimated \$465,566,442 in total assessed value of, *Table 3.6* lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
City of Parker	2,111	0.96%	\$839,789,857

Source: Collin County Appraisal District

Emergency Facilities

There are two identified emergency facilities in the City of Parker, including one fire station, and one police station. (Figure 3.18). Table 3.7 presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
City of Parker	1	1	0

Source: County Data and Regional Hazard Assessment Tool

Critical Facilities

There are one critical facilities, which are considered non-emergency in the City of Parker, (Figure 3.19). The critical facilities include no schools and one historical property sites (Table 3.8). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
City of Parker	1	1

Source: Local jurisdictions

Critical Infrastructure

There are one identified critical infrastructure facilities in the City of Parker, including no airports, no natural gas facilities, no water treatment facilities, no wastewater treatment facilities, no dams, and one railway/highway bridge (Table 3.9).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
City of Parker	0	0	0	0	0	1

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, the City of Parker's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for the City of Parker, four were analyzed using a Geographic Information System-based analysis, five using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. Table 3.10 summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail	X		
High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) no recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Parker are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the City of Parker are expected mostly during water shortages, financially unknown due to lack of accurate reporting.

Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the City of Parker. The City of Parker and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas and the improved property in the City of Parker is not vulnerable to this hazard.
Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is minimal impact of extreme heat to buildings and the emergency facilities in the City of Parker. The City of Parker is somewhat vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the critical facilities in the City of Parker are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI) there is minimal impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in the City of Parker.

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. About 230 residential parcels in the City of Parker are located within the 100-year floodplain.
Improved Property	There have been thirteen (13) recorded flood events in the City of Parker. Property losses are expected annually however these reported values are underestimated due to lack of accurate reporting. No crop losses are expected or recorded county-wide.
Emergency Facilities	There are no emergency facilities at imminent risk from the 100-year storm event.

Critical Facilities	There are no critical facilities located within the 100-year storm event.
Critical Infrastructure	No % of railways/highways and bridges, no % of dams, no % of water treatment works, and no % waste water treatment facilities are at risk from the 100-year storm event. Many of these structures are designed to traverse or be located within the floodplain due to unavoidable circumstances. Additionally, treated wastewater is typically discharged towards streams, which makes portions of wastewater treatment facilities likely to be located within the floodplain.

Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Parker are expected at \$2,887,157.14 per year however these values are underestimated due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data for the City of Parker indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in the City of Parker are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the City of Parker are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in the City of Parker are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events. All populations in the City of Parker are vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Parker are expected but unknown due to lack of accurate reporting. Unknown crop losses resulted from this hazard in the City of Parker.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in the City of Parker are vulnerable to this hazard.

Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the City of Parker are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in the City of Parker are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from lightning events. All populations in the City of Parker are vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Parker are expected at \$20,833.33 however these values are underestimated due to lack of accurate reporting.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in the City of Parker are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the City of Parker are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in the City of Parker are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in City of Parker. All populations in the City of Parker are exposed and vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), property losses in the City of Parker are expected but unknown due to lack of accurate reporting. No crop losses are expected from this hazard in City of Parker.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in the City of Parker are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the City of Parker are exposed and vulnerable to this hazard.

Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the City of Parker are exposed and vulnerable to this hazard.
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Summary Table 3.18

Wildfire	
Population	Based on geographical data from Texas A&M Forest Service, a majority of the City of Parker is vulnerable to wildfires. There have been no recorded injuries or fatalities due to wildfires.
Improved Property	Based on historical data, annual financial losses expected from property loss due to wildfires are unknown due to lack of accurate reporting.
Emergency Facilities	Based on geographic information there is one fire station at risk from wildfire events.
Critical Facilities	Based on geographic information there are no schools at risk from wildfire events.
Critical Infrastructure	Based on geographic information there are no bridges, no dams, no wastewater treatment facility, and no water treatment facility at risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the City of Parker. All populations in the City of Parker are exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Parker are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the City of Parker.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in the City of Parker are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in the City of Parker are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in the City of Parker are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serves as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the City of Parker considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
<i>City of Parker</i>	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	?	85.7%
Average % Yes Capabilities – 85.7%															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes
City of Parker	Y	Y	Y	Y	N	Y	Y	?	Y	N	70%
Average % Yes Capabilities – 70%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes per Jurisdiction
City of Parker	N	Y	Y	Y	N	Y	N	N	N	N	40%
Average % Yes Capabilities – 40%											
Y- Yes N- No ?- Don't Know											

To quantify the City of Parker's legal and regulatory, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, the City of Parker has strong identified legal and regulatory capabilities, strong identified administrative and technical capabilities, and moderate identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
City of Parker	City Administrator	The city council, including the mayor, mayor pro-tem, and council members, along with the city administrator, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. Ability to implement and approve mitigation actions and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2016 HazMAP, the Parker Hazard Mitigation Planning Committee developed mitigation strategies for the plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate communication.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events.

Objective 3-A Conduct a hazard/vulnerability assessment of properties and structures located in flood zones.

Objective 3-B Develop a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis, economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Parker Action Items: Deferred from 2016 Plan

City of Parker Action Item	Develop and implement a comprehensive public education program to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning, Dam Failure
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	-
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	This public education program would be based on the hazards that the City of Parker identified as being vulnerable to. The program would use a combination of distributed literature, social media, and

Collin County Hazard Mitigation Action Plan

	civic presentations to educate residents on natural hazards and promote hazard mitigation.
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

City of Parker Action Item	Establish centers for vulnerable residents to mitigate the effects of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D
Priority	Medium
Estimated Cost	\$5,000-\$15,000
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling and heating shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
Status	Discontinued – Shelters will be opened in existing infrastructure as needed during incidents of extreme temperature,

City of Parker Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per shelter
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	Enhance safety of existing residential structures through retrofit

Collin County Hazard Mitigation Action Plan

Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	This program gives rebates to residents who purchase and install safe rooms in their homes or on their properties to protect against severe weather.
Status	Discontinued – Residents did not receive funding through the NCTCOG Saferoom Rebate Program. The NCTCOG Program has been suspended

City of Parker Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Tornado, Wildfire, High Winds, Flooding, Hail, Lightning, Dam Failure
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$25,000 per siren, number of sirens TBD
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	9-12 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in keeping citizens that are outdoors notified of hazards.
Discussion	This project will expand Parker's siren coverage to new areas of development not currently protected by sirens.
Status	Deferred – will be included in 2021 Plan

City of Parker Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flooding
Goal/Objective	2-A, 3-A
Priority	Medium
Estimated Cost	\$50,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Planning

Collin County Hazard Mitigation Action Plan

Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Discontinued – Dam Failure of Extremely low risk to City as none are present within city limits.

City of Parker Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	2-A
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	2-3 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify and mitigate all structures and infrastructures that would be impacted by a potential wildfire.
Status	Deferred – will be included in 2021 Plan

City of Parker Action Item	Develop a drought contingency plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind

Collin County Hazard Mitigation Action Plan

Lead Department	Public Works
Implementation Schedule	12 - 18 months
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing, soil conditioning around foundations
Effect on New Buildings	May require new codes for low-flow plumbing and preservation of foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on the stages of drought. Plan would include strategies for soil movement abatement depending on drought stage.
Status	Deferred – will be included in 2021 Plan

City of Parker Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Discontinued – Relevant studies for the region were conducted by reputable research institutions,

City of Parker Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000

Collin County Hazard Mitigation Action Plan

Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Discontinued

City of Parker Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information
Status	Deferred – will be modified and included in 2021 Plan

City of Parker Action Items: New

City of Parker Action Item	Establish outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Tornado, Wildfire, High Winds, Flooding, Hail, Lightning
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$35,000 per siren, number of sirens TBD
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	36-48 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Early warning is a key element in keeping citizens that are outdoors notified of hazards.
Discussion	This project will expand siren coverage to areas of development not currently protected by sirens. This action item would be specific to installation/placement of new OWS sirens in the jurisdiction.

City of Parker Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	2-A
Priority	Medium
Estimated Cost	-
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	2-3 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Coordinate with TFS to Identify and mitigate all structures and infrastructures that would be impacted by a potential wildfire.

City of Parker Action Item	Develop a drought contingency plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2-C
Priority	Medium
Estimated Cost	-
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	12 - 18 months
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing, soil conditioning around foundations
Effect on New Buildings	May require new codes for low-flow plumbing and preservation of foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Coordinate with Parker Public Works to Develop a plan for conserving water based on the stages of drought. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

City of Parker Action Item	Develop and Implement an Emergency Notification System
Hazard(s) Addressed	Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	-
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of program Infrastructure.

Collin County Hazard Mitigation Action Plan

Discussion	Utilize local Emergency alerting to warn citizens and provide information about severe weather as well as provide other emergency and hazard information
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City of Parker Action Item	Develop and Implement a NIMS Training Program
Hazard(s) Addressed	Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	-
Potential Funding Sources	NIMS Grants, General Fund
Potential Matching Sources	None
Lead Department	Fire Department
Implementation Schedule	12-24 months
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Low cost – Training is provided by National, State and Local Government Programs
Discussion	Utilize existing free training programs to bring training of city employees and volunteers that may respond to an emergency scene or EOC with the occurrence of an emergency or disaster affecting the City of Parker.

City of Parker Action Item	Implement all-hazards community education program, including information on mitigation activities.
Hazard(s) Addressed	Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	-
Potential Funding Sources	Local Funding
Potential Matching Sources	Local Grants, FEMA
Lead Department	Fire Department
Implementation Schedule	12-24 months

Collin County Hazard Mitigation Action Plan

Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Educating public on mitigation against loss of life and property will save government resources in the event of a disaster event
Discussion	Community education is important for reducing loss of life and property.

City of Parker Item	Develop and implement a comprehensive public education program to educate on the actions to help mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local funds General fund
Lead Department	Town Council
Implementation Schedule	Yearly effort
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	The utilization of social media will be key in this program. Program will include educational information about hazard awareness and mitigation.

City of Parker Action Item	Develop and Implement an extreme temperature program that identifies both locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-A, 2D
Priority	Medium
Estimated Cost	\$5,000-\$20,000
Potential Funding Sources	HMGP

Collin County Hazard Mitigation Action Plan

Potential Matching Sources	Local funds, General fund
Lead Department	Town Council
Implementation Schedule	12 months
Effect on Old Buildings	Could require retrofit to accommodate required space and resources, including but not limited to emergency generators.
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold

National Flood Insurance Program (NFIP) Compliance

The City of Parker is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
480139#	PARKER, CITY OF	COLLIN COUNTY	12/27/1977	08/15/1979	06/02/2009	08/15/1979	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Compliance

Once the community applies for the NFIP, FEMA arranges for a study of the community to determine base flood elevations and flood risk zones. Consultation with the community occurs at the start of and during the study, and those communities with minimal flood risk are converted to the Regular Program without a study.

FEMA provides the studied community with a Flood Insurance Rate Map delineating base flood elevations and flood risk zones. The community is then given 6 months to adopt base flood elevations in its local zoning and building code ordinances. Once the community adopts more stringent ordinances, FEMA converts the community to the NFIP's Regular Program. FEMA then authorizes the sale of additional flood insurance in the community up to the Regular Program limits. The community must implement and enforce the adopted floodplain management measures. FEMA provides periodic community assistance visits with local officials to provide technical assistance regarding complying with NFIP floodplain management requirements.

The purchase of flood insurance is mandatory as a condition of receipt of federal or federally-related financial assistance for acquisition and/or construction of buildings in SFHAs of any participating community. Those communities notified as flood-prone which do not apply for participation in the NFIP within 1 year of notification are ineligible for federal or federally-related financial assistance for acquisition, construction, or reconstruction of insurable buildings in the SFHA.

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
City of Parker	City Administrator	Completing and maintaining FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	City Hall is responsible for issuing floodplain permits.	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood damage prevention order shall result in fines up to \$500 per violation plus court costs.
		Requiring and maintaining FEMA elevation certificates for all new and improved buildings located in floodplains		
		Implementing damage reduction measures for existing buildings such as acquisition, relocation, retrofitting, and maintenance of drainage ways and retention basins	Maintenance of drainage ways and retention basins. Installation of retention basins on new construction.	
		Taking action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning	Implementing newly developed Storm-water Management Program which includes public education, new development standards, and other programs and policies.	

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), the City of Parker has developed a plan maintenance process which is described in the following paragraphs. The City of Parker, along with participating jurisdictions are responsible for monitoring the implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by the City of Parker, the county, and the city council of each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Action Plan (HazMAP) would be implemented by participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the Hazard Mitigation Planning Team (HMPT), whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, Collin County will provide information on the implementation status of each action included in the plan. As part of the annual monitoring, review and evaluation process, Collin County will provide reports regarding implementation actions and action completion dates for the plan. Also, as part of the evaluation, the HMPT will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	What	Time
Emergency Management Coordinator	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting them for approval. The plans will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and planning committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives and actions outlined in this plan will be integrated into these existing mechanisms as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
City of Parker	City Council, City Administrator	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	City Administrator , Police Chief, Fire Chief, Emergency Management Coordinator	Emergency Action Plan updates	Every Five Year	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain Ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council, City Administrator	Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, City Council	Drought Contingency plans	Assessed annually and updated as needed.	Integrate drought actions such as xeriscaping, water restrictions, and public education
	Public Works Director, City Council	Natural Resource Conservation Plan	Assessed annually and updated as needed.	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Parker Hazard Mitigation Planning Committee considers this HazMAP, including development and maintenance, to be the primary vehicles to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website.

The planning team and committee will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex Q: City of Princeton



1. Introduction

This annex was prepared in 2021 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan. The City of Princeton participated on the Collin County Hazard Mitigation Planning Team (HMPT) by representing the City of Princeton within the areas of the county. In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete hazard mitigation planning tool for the City of Princeton. It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, the City of Princeton along with local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While Collin County has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Collin County and City officials recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

The City of Princeton participated in the comprehensive county wide approach that was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and o.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. The table below outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Climatic Data Center (NCDC)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Wildland/Urban Interface
National Inventory of Dams	Dam information

Source	Data
City of Princeton Ordinance	Flood Plain Ordinance Ch. 34 Flood Prevention

Planning Committee

This Hazard Mitigation Action Plan was developed by the City of Princeton Hazard Mitigation Planning Committee, with support from the North Central Texas Council of Governments, Collin County and the HMPT.

The Collin County HMPT was assembled in November 2020 with representatives from participating jurisdiction planning committees, including mayors, police chiefs, fire chiefs, and the general public. The Collin County Department of Homeland Security acted as the plan development consultant providing hazard mitigation planning services; the efforts of the Princeton planning committee were led by the City of Princeton Emergency Management Coordinator. The table below provides a list of the primary representatives on the Princeton planning committee.

Table 2.2 Planning Committee - Primary Representatives

Representing	Position	Role
Department of Emergency Management	Emergency Management Coordinator	Plan Development
Department of Engineering	City Engineer	Plan Development
Fire Department	Fire Chief	Plan Development
Police Department	Police Chief	Plan Development
Public Works Department	Public Works Director	Plan Development

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.

- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
City of Princeton Community Development Corporation	Board Member	Plan Review

Subsequent to the State of Texas and FEMA approval of the plan, these organizations are also committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the H met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Collin County:

- Collin County HazMAP Kickoff Meeting – August 12, 2020
- Collin County Planning Meeting – November 11, 2020
- Collin County Planning Meeting – June 12, 2021
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022 at 9AM

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring

communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.

- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee for the City of Princeton identified several natural hazards and man-made hazards that could affect the incorporated areas of the city. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for Princeton and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Princeton to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
			Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%		Minor	Very few injuries, if at all none	0

Collin County Hazard Mitigation Action Plan

	Life Impact	Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for Princeton

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	0	0	0	0
Drought	2	0	1	3	1.15
Earthquake	0	1	0	1	0.45
Expansive Soils	2	0	1	1	0.95
Extreme Heat	2	1	0	2	1.15
Flooding	3	1	2	1	1.85
Hail	2	0	1	1	0.95
High Winds	2	0	1	2	1.05
Lightning	1	0	1	1	0.65
Tornado	2	1	2	2	1.65
Wildfire	1	1	1	1	1
Winter Storms	2	0	2	3	1.4

The conclusions drawn from the hazard profiling process for the City of Princeton, resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in Princeton.

Table 3.3 Hazard Rankings for City of Princeton

High Risk (PRI 2 - 3)	
Moderate Risk (PRI 1.01 -1.9)	Extreme Heat Drought Tornado Flooding High Winds Winter Storm
Low Risk (PRI 0.50 – 1)	Expansive Soils Lightning Wildfire Hail
Negligible to No Risk (PRI 0 – 0.49)	Dam Failure Earthquake

Changes in Development and Priorities (Requirement §201.6(d) (3))

Our jurisdiction is in one of the fastest growing areas of the nation, hence development has increased and will continue to increase our vulnerability to hazards that may impact us.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the City of Princeton faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation.

Dam and Levee Failure A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams typically are constructed of earth, rock, concrete, or mine tailings. A dam failure is an accidental or unintentional collapse, breach, or other failure of an impoundment structure that results in downstream flooding. Because dams are man-made structures, dam failures are usually considered technological hazards. However, since most dam failures result from prolonged periods of rainfall, they are often cited as secondary or cascading effects of natural flooding disasters and are not named as the primary hazard that causes disaster declarations.

The City of Princeton has not identified any dams that present a hazard at this time, but as a participant in the county plan inundation studies will be considered.

Drought has the potential to impact the entire planning area equally; all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of Princeton are vulnerable to

this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma, Lake Tawakoni, Lake Fork and the Lake Chapman-Cooper reservoir system are water sources for the City of Princeton and are vulnerable to drought. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake An earthquake is a sudden motion or trembling caused by an abrupt release of accumulated strain on the tectonic plates that comprise the Earth's crust. The theory of plate tectonics holds that the Earth's crust is broken into several major plates. These rigid, 50- to 60- mile thick plates move slowly and continuously over the interior of the earth, meeting in some areas and separating in others. As the tectonic plates move together they bump, slide, catch, and hold. Eventually, faults along or near plate boundaries slip abruptly when the stress exceeds the elastic limit of the rock, and an earthquake occurs. The ensuing seismic activity and ground motion provoke secondary hazards: surface faulting, ground failure, and tsunamis. The vibration or shaking of the ground during an earthquake is referred to as ground motion. In general, the severity of ground motion increases with the amount of energy released and decreases with distance from the causative fault or epicenter. When a fault ruptures, seismic waves are propagated in all directions, causing the ground to vibrate at frequencies ranging from 0.1 to 30 Hz. Seismic waves are referred to as P waves, S waves, and surface waves. Even though rated negligible risk, the entire geographic planning area, properties, and populations have the potential to be vulnerable to earthquakes. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

Expansive Soils Expansive soils, also referred as swelling soils, are those soils which have tendency to increase in the volume whenever the moisture content (i.e. water content) in it is increased. Foundation with swelling soil will heave and can cause lifting of a building or structure laid on it whenever the moisture content rises. This can ultimately lead to the failure of foundation and structure laid on it. They swell when water is added to them and shrink when they dry out. The entire geographic planning area, properties, and populations have the potential to be vulnerable to expansive soils, especially buildings constructed under older building codes.

Extreme Heat Severe summer heat is characterized by a combination of a very high temperatures and exceptionally humid conditions. When persisting over a period of time, it is called a heat wave. Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air conditioning are most vulnerable.

Flooding The City of Princeton has identified several low water crossings that are subject to periodic flash flooding. Affected areas differ with each storm as there are several different branches and tributaries of rivers and creeks subject to overflow, and also are dependent upon which area receives the rain. These areas are low water crossings mainly on older city streets and roads that have drainage ditches adjacent to the road or street. The drainage system gets impeded with material like (sedimentary rock which cements together other materials, including gravel, sand, clay, and silt). When flash flooding occurs these areas need to be barricaded, and the location of the storm determines which areas require barricading. Typical road closures due to flooding occur on West College Street at the bridge crossing and streets in the older part of the city.

Hail is an outgrowth of a severe thunderstorm in which balls or irregularly shaped lumps of ice greater than 0.75 inches in diameter fall with rain. Early in the developmental stages of a hailstorm, ice crystals

form within a low-pressure front due to warm air rising rapidly into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until, having developed sufficient weight, they fall as precipitation. The entire geographic planning area, properties, and populations have the potential to be vulnerable to hail. Exposed populations, manufactured homes, and older properties are most vulnerable.

High Winds Straight-line winds are often responsible for the wind damage associated with a thunderstorm. These winds are often confused with tornadoes because of similar damage and wind speeds. However, the strong and gusty winds associated with straight-line winds blow roughly in a straight line unlike the rotating winds of a tornado. Downbursts or micro-bursts are examples of damaging straight-line winds. A downburst is a small area of rapidly descending rain and rain-cooled air beneath a thunderstorm that produces a violent, localized downdraft covering 2.5 miles or less. Wind speeds in some of the stronger downbursts can reach 100 to 150 miles per hour, which is similar to that of a strong tornado. The winds produced from a downburst often occur in one direction, and the worst damage is usually on the forward side of the downburst. High winds have the potential to affect the entire planning area.

High winds are a frequent occurrence with severe thunderstorms and they can affect all areas of the City of Princeton. These winds can occur suddenly and without warning during severe weather and may pose access challenges due to fallen trees on roadways. Manufactured homes and exposed populations are most vulnerable.

Lightning results from the buildup and discharge of electrical energy between positively and negatively charged areas within thunderstorms. A “bolt” or brilliant flash of light is created when the buildup becomes strong enough. These bolts of lightning can be seen in cloud-to-cloud or cloud-to-ground strikes. Bolts of lightning can reach temperatures approaching 50,000° Fahrenheit. While lightning is mostly affiliated with thunderstorms, lightning often strikes outside of these storms, as far as 10 miles away from any rainfall. Federal Emergency Management Agency states that an average of 300 people are injured and 80 people are killed in the United States each year by lightning. Direct strikes have the power to cause significant damage to buildings, critical facilities, infrastructure, and ignition of wildfires which can result in widespread damages to property. The entire geographic planning area, properties, and populations have the potential to be vulnerable to lightning. Property without lightning protection and exposed populations are most vulnerable.

Tornado A violently rotating column of air, in contact with the ground, either pendant from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a condensation funnel cloud. The entire geographic planning area, properties, and populations have the potential to be vulnerable to tornados. Manufactured homes and exposed populations are most vulnerable.

Wildfire in the City of Princeton is a low to moderate risk due to the well managed and readily available resources for response and 43.54% of the population lives in the WUI; the moderate threat area is location on the eastern side of the city and the low threat areas are located in the western side of the city. The City of Princeton gets mutual aid from surrounding agencies in Collin County that respond to fires within the City of Princeton during times of drought, burn bans, and high fire threat, this is part of the automatic mutual aid between the cities.

Winter Storms Winter storms originate as mid-latitude depressions or cyclonic weather systems, sometimes following the path of the jet stream. A winter storm or blizzard, combines heavy snowfall, high winds, extreme cold and ice storms. Many winter depressions give rise to exceptionally heavy rain and widespread flooding and conditions worsen if the precipitation falls in the form of snow. The winter storm season varies widely, depending on latitude, altitude and proximity to moderating influences. The entire geographic planning area, properties, and populations have the potential to be vulnerable to winter storms. Winter storms have the potential to make roads impassable for days. Residents may be confined to their homes due to the storm and may be without basic services, such as water and electricity, for an extended period of time. The homeless, elderly, and populations without access to heat are most vulnerable.

Identification of Assets and Vulnerability Assessment

An inventory of Princeton geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population**: Includes the number of people residing in Collin County jurisdictions as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property**: Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities**: Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, and the City of Princeton Emergency Management Coordinator.
- **Critical facilities**: Includes schools and historic places provided by Regional Hazard Assessment Tool, City of Princeton Emergency Management Coordinator. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure**: Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, and the City of Princeton Emergency Management Coordinator.

The following tables provide a breakdown of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to city municipal information of residential water meters and 3.5 persons per households, the estimated total population of City of Princeton in 2020 was 15,330 people, with 7,163 households . The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4. Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total	Population Density (Sq. Mile)	Household	% of County Total	Household Density (Sq. Mile)
City of Princeton	15,330	1.4%	1,444.86	5,397	1.4%	508.75

Source: Local Jurisdiction, US Census Bureau & Collin County Appraisal District

Table 3.5 summarizes population counts and population change (absolute and percent predictions for the City of Princeton.

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
City of Princeton	6,807	10,560	12,680	2,120	20.08%

Source: 2020 NCTCOG Population Estimate

Property

There are an estimated 7,603 parcels in Princeton, with an estimated \$1,003,526,396 in total assessed value of improvements. Table 3.6 lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
City of Princeton	7,603	0.82%	\$1,003,526,396

Source: Collin County Appraisal District

Emergency Facilities

There are three identified emergency facilities in Princeton, including two fire stations, one police station. Table 3.7 presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
City of Princeton	2	1	0

Source: County Data and Regional Hazard Assessment Tool

Critical Facilities

There are 12 critical facilities, which are considered non-emergency in Princeton, including twelve schools and two historical properties. Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
	12	2

Source: Local jurisdictions

Critical Infrastructure

There are 22 identified critical infrastructure facilities, including nine lift stations, three natural gas facilities, two water treatment facilities, zero wastewater treatment facilities, zero dams, and eight railway/highway bridges (Table 3.9).

Table 3.9 Critical Infrastructure

Jurisdiction	Lift Stations	Natural Gas and liquid Petroleum Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
City of Princeton	9	3	0	2	0	8

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, Princeton's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 13 hazards evaluated for Princeton, four were analyzed using a Geographic Information System-based analysis, 5 using a statistical risk assessment methodology, and the remaining 4 hazards using qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these 4 hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. Table 3.10 summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
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Collin County Hazard Mitigation Action Plan

Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail	X		
High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) no recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Princeton are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the City of Princeton are expected mostly during water shortages, financially unknown due to lack of accurate reporting.
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the City of Princeton. The City of Princeton and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas and the improved property in the City of Princeton is not vulnerable to this hazard.
Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings and the emergency facilities in are not vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the critical facilities in the City of Princeton are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI) there is no impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in the City of Princeton.

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. Approximately 1.43% of the population of City of Princeton is located within the 100-year floodplain.
Improved Property	There have been two (2) recorded flood events in the City of Princeton. Property losses are expected but unknown due to inaccurate reporting No crop losses are expected. Approximately \$3,240,000 of the total assessed value is at risk from the 100-year storm event.
Emergency Facilities	Emergency facilities have the potential to be as risk in the 100-year storm event.
Critical Facilities	Critical facilities have the potential to be as risk in the 100-year storm event.
Critical Infrastructure	Critical Infrastructure have the potential to be as risk in the 100-year storm event.

Summary Table 3.14

Hail	
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Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Princeton are expected at \$228.57 per year however these values are underestimated due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data for the City of Princeton indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in the City of Princeton are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the City of Princeton are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in the City of Princeton are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries from high wind events. All the population of the City of Princeton are vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Princeton are expected at \$4,228.57 per year however these values are underestimated due to lack of accurate reporting. Crop losses expected at \$71.43 per year however these values are underestimated due to lack of accurate reporting.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in the City of Princeton are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the City of Princeton are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in the City of Princeton are vulnerable to this hazard.

Summary Table 3.16

Lightning

Population	According to National Centers for Environmental Information (NCEI), lightning events can be expected to cause no fatalities or injuries in the City of Princeton. All populations in the City of Princeton are vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Princeton are expected but unknown due to lack of accurate reporting.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in the City of Princeton are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the City of Princeton are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in the City of Princeton are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been 3 recorded injuries and no recorded fatalities from tornado events in the City of Princeton. All the population of the City of Princeton is exposed and vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), an average loss of \$10,000 per year in property losses is expected to result from tornado events. No crop losses resulted from this hazard in the City of Princeton.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in the City of Princeton are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the City of Princeton are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the City of Princeton are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 43.54% of the City of Princeton is vulnerable to wildfires, with the City of Princeton and the unincorporated areas contributing with the majority of the exposed population.

Improved Property	Based on geographical data, property losses in the City of Princeton are expected but unknown due to lack of accurate reporting; therefore, percentage of the overall property improvement values across the City of Princeton are also unknown...
Emergency Facilities	Based on geographic information there are 0 fire stations and 0 police stations at risk from wildfire events.
Critical Facilities	Based on geographic information there are no schools at risk from wildfire events.
Critical Infrastructure	Based on geographic information there are 0 bridges, 0 dams, 0 wastewater treatment facilities, and 0 water treatment facilities at risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the City of Princeton. All the population of the City of Princeton is exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Princeton are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the City of Princeton.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in the City of Princeton are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in the City of Princeton are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in the City of Princeton are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serves as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, Collin County considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes
<i>Princeton</i>	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	?	71%
Average Yes Capabilities – 71%															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes
Princeton	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	90%
Average Yes Capabilities – 90%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes
Princeton	Y	Y	Y	Y	Y	Y	Y	N	N	?	70%
Average Yes Capabilities – 70%											
Y- Yes N- No ?- Don't Know											

To quantify Collin County's legal and regulatory, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, Princeton has 71% of identified legal and regulatory capabilities, 90% of identified administrative and technical capabilities, and 70% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
Princeton	City Manager	The city council, including the mayor, mayor pro-tem, and council members, along with the city manager, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the city overall. As the governing body, the ability to implement and approve mitigation actions and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2016 HazMAP, the Princeton Hazard Mitigation Planning Committee developed mitigation strategies for the plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis, economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Princeton Action Items: Deferred from 2016 Plan

City of Princeton Action Item	Adopt and promote a public education program to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Wildfire, Winter Storm, Extreme Heat, High Winds, Flooding, Expansive Soils, Hail, Drought, Earthquake, Lightning, Dam Failure
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	2-3 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	Program will include information on hazard mitigation and what actions can be taken.
Status	Utilize as able regional, state, and federal public education information. Will be included in 2021 Plan

Collin County Hazard Mitigation Action Plan

City of Princeton Action Item	Develop and implement an extreme temperature program that establishes centers for vulnerable residents
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D, 3-C
Priority	Medium
Estimated Cost	\$5,000-\$20,000
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Fire Department/EMC
Implementation Schedule	12 months
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
Status	Deferred – Will be included in 2021 Plan

City of Princeton Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per safe room
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	EMC
Implementation Schedule	2-5 years
Effect on Old Buildings	Enhance safety of existing residential structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	Implement Individual Tornado Safe Room Rebate Program.
Status	Will be included in 2021, however, some residents were able to obtain funds through the NCTCOG Saferoom Rebate Program

Collin County Hazard Mitigation Action Plan

City of Princeton Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Tornado, Wildfire, High Winds, Flooding, Hail, Lightning, Dam Failure
Goal/Objective	1-B
Priority	High
Estimated Cost	\$25,000 each
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	2-5 years
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Cost is low compared to lives saved and reduced injuries
Discussion	Early warning is a key element in keeping citizens that are outdoors notified of hazards.
Status	Deferred – will be included in 2021 Plan

City of Princeton Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	2A, 3C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	3-4 years
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify all structures and infrastructures that would be impacted by a potential wildfire.
Status	Deferred – will be included in 2021 Plan

Collin County Hazard Mitigation Action Plan

City of Princeton Action Item	Develop a drought contingency plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	2-3 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on the stages of drought. Plan would include strategies for soil movement abatement depending on drought stage.
Status	Deferred – Will be included in 2021 Plan

City of Princeton Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flooding
Goal/Objective	2A, 3A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

Collin County Hazard Mitigation Action Plan

City of Princeton Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Princeton Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

Collin County Hazard Mitigation Action Plan

Status	Deferred – will be included in 2021 Plan
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City of Princeton Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information
Status	Deferred – Will be included in 2021 Plan

City of Princeton Action Items: New

City of Princeton Action Item	Develop and implement a comprehensive public education program to educate on the actions to help mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	General Fund, HMGP
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC

Collin County Hazard Mitigation Action Plan

Implementation Schedule	2-3 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety.
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.

City of Princeton Action Item	Develop and implement an extreme temperature program that establishes centers for vulnerable residents
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D, 3-C
Priority	Medium
Estimated Cost	\$5,000-\$20,000
Potential Funding Sources	HMGP, PDM,
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Fire Department/EMC
Implementation Schedule	12 months
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold

City of Princeton Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	High Wind, Tornado
Goal/Objective	1-C
Priority	High
Estimated Cost	Up to \$3,000 per safe room
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA

Collin County Hazard Mitigation Action Plan

Lead Department	EMC
Implementation Schedule	2-5 years
Effect on Old Buildings	Enhance safety of existing residential structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	Implement Individual Tornado Safe Room Rebate Program.

City of Princeton Action Item	Increase outdoor warning siren coverage for new development areas.
Hazard(s) Addressed	Tornado, Wildfire, High Winds, Flooding, Hail, Lightning
Goal/Objective	1-B
Priority	High
Estimated Cost	\$25,000 each
Potential Funding Sources	General Fund, HMGP, Developer cost
Potential Matching Sources	Local funds, in-kind
Lead Department	EMC
Implementation Schedule	2-5 years
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Cost is low compared to lives saved and reduced injuries
Discussion	Early warning is a key element in keeping citizens that are outdoors notified of hazards. This action item would be specific to installation/placement of new OWS sirens in the jurisdiction.

City of Princeton Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	2A, 3C
Priority	Medium
Estimated Cost	\$5,000
Potential Funding Sources	TFS Grants,
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Fire Dept.
Implementation Schedule	3-4 years

Collin County Hazard Mitigation Action Plan

Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show city officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around new development properties.
Discussion	Identify all structures and infrastructures that would be impacted by a potential wildfire.

City of Princeton Action Item	Develop a drought contingency plan
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local sponsors, in-kind
Lead Department	Public Works
Implementation Schedule	2-3 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Develop a plan for conserving water based on the stages of drought. Plan would include strategies for soil movement abatement depending on drought stage. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

City of Princeton Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds

Collin County Hazard Mitigation Action Plan

Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.

City of Princeton Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

City of Princeton Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Drought, Earthquake, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party

Collin County Hazard Mitigation Action Plan

Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information

City of Princeton Action Item	Increase back-up generator capabilities of critical facilities
Hazard(s) Addressed	Flooding, tornado, earthquake, extreme heat, lightning, wildfire, winter storms, hail, high winds
Goal/Objective	2-d
Priority	High
Estimated Cost	\$100,000-\$20,000
Potential Funding Sources	Local funding, HMGP, PDM
Potential Matching Sources	Local Funding
Lead Department	Public Works, Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Some buildings will need to be retrofitted with the ability to connect to a generator
Effect on New Buildings	Buildings will need to be planned with the ability to connect to a generator
Cost Effectiveness	Very effective when taking into account the extended loss of power to critical facilities would negatively affect all the city and its citizens
Discussion	Back-up generator will allow the ongoing function of critical facilities as close to normal as possible during the event of a massive power outage

National Flood Insurance Program (NFIP) Compliance

Princeton is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

Collin County							
Communities Participating in the National Flood Program							
CID	Community Name	County	Initial FHB Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
480757#	PRINCETON, CITY OF	COLLIN COUNTY	7/25/1975	3/16/1988	06/02/09(M)	3/16/1988	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
City of Princeton	Chief Building Official	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the Development Department. Princeton requires new construction to be elevated to or above the base flood elevation for the top of bottom floor on residential structures and non-residential structures that will be built on properties created or platted after the effective date of the Flood Damage Prevention Order	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood damage prevention order shall result in fines up to \$2,000 per violation plus court costs.
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Participate with FEMA in identifying Special Flood Hazard Areas for future FIRM maps	Princeton participates in Risk Assessment, Mapping and Planning Partners (RAMPP) meetings held by FEMA and/or their contractors to better identify areas that are flood prone that are not shown on current Flood Insurance Rate Maps.	

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
		Future Mitigation Projects	Princeton will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), City of Princeton has developed a plan maintenance process which is described in the following paragraphs.

Following formal adoption by Collin County Commissioners Court, and formal adoption of the plan by City Council by each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Plan would be implemented by the county and participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, City of Princeton will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	What	Time
City Manager	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting them for approval. The plans will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and planning committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives and actions outlined in this plan will be integrated into these existing mechanisms as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
Princeton	City Council	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Emergency Management Coordinator	Emergency Action Plan updates	Every Five Year	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council, Director of Planning	Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, City Council	Drought Contingency plans	Assessed annually and updated as needed.	Integrate drought actions such as xeriscaping, water restrictions, and public education

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Princeton Hazard Mitigation Planning Committee considers this

HazMAP, including development and maintenance, to be the primary vehicles to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committee will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex R: Town of Prosper



1. Introduction

This annex was prepared in 2021 as part of an update to the Town of Prosper/County Multi-Jurisdictional Hazard Mitigation Action Plan. This is the second hazard mitigation plan to be submitted to FEMA for the Town of Prosper. In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete hazard mitigation planning tool for the Town of Prosper. It contains capability assessment information, a

specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While Prosper has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Prosper officials to recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. The Town of Prosper's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and online.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), the Town of Prosper developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten the Town of Prosper and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. The table below outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Climatic Data Center (NCDC)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Urban Interface
National Inventory of Dams	Dam information

Planning Committee

This Hazard Mitigation Action Plan was developed by the Town of Prosper Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the Collin County HMPT.

The Collin County HMPT was assembled in June 2020 with representatives from participating jurisdiction planning committees, including mayors, police chiefs, fire chiefs, and the general public. The Town of Prosper acted as the plan development consultant providing hazard mitigation planning services; the efforts of the planning committee were led by the Prosper Emergency Management Coordinator.

The table below provides a list of the primary representatives on the Prosper planning committee.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
Town of Prosper	Emergency Management Coordinator	Identify vulnerabilities, review plan, prioritize risks
Town of Prosper	Fire Chief	Review plan
Town of Prosper	Assistant Fire Chief	Review plan
Town of Prosper	Police Chief	Review plan
Town of Prosper	Finance Director	Review plan
Town of Prosper	Asst. Police Chief	Review plan
Town of Prosper	Building Official	Review plan
Town of Prosper	Director of Engineering	Identify mitigation strategies/NFIP manager
Town of Prosper	Director of Public Works	Review plan
Town of Prosper	Executive Director of Infrastructure	Identify Action Items and review plan
Citizen 1	CERT Team Member	Review plan
Citizen 2	CERT Team Member	Review plan
Prosper EDC	Director of Economic Development	Review plan
Prosper ISD	Director of Security	Review plan
Homeland Security	Asst. Director	Identify strategies and Review plan

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Prosper ISD	Director of Security	Review of plan
Town of Prosper	Prosper Citizens (2)	Review of plan
Town of Prosper	Director of Economic Development	Review plan

Subsequent to the State of Texas and FEMA approval of the plan, each organization is also committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.

- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by the Town of Prosper and or Collin County and included all jurisdiction's participation:

- Collin County HazMAP Kickoff Meeting – August 12, 2020
- Collin County HazMAP Committee Meeting – November 15th, 2020
- The Town of Prosper Hazard Mitigation Team Meeting – December 09, 2020
- The Town of Prosper Hazard Team Meeting – January 15th, 2021
- The Town of Prosper HazMAP Discussion/Update – February 15, 2021
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022 at 9AM

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Town of Prosper's Facebook page inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment.
- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee for the Town of Prosper identified several natural and man-made hazards that could affect the town. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for the Town of Prosper and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for the Town of Prosper, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
			Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%		Minor	Very few injuries, if at all none	0

	Life Impact	Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for the Town of Prosper

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	1	1	1	1	1
Drought	2	1	1	1	1.3
Earthquake	1	0	0	3	0.6
Expansive Soils	1	1	1	1	1
Extreme Heat	1	2	0	2	1.2
Flooding	2	1	2	1	1.55
Hail	3	1	2	1	1.85
High Winds	3	1	1	3	1.8
Lightning	3	2	2	3	2.4
Tornado	3	2	2	3	2.4
Wildfire	2	1	1	1	1.3
Winter Storms	2	1	1	1	1.3

The conclusions drawn from the hazard profiling process for the Town of Prosper, resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in the Town of Prosper.

Table 3.3 Hazard Rankings for the Town of Prosper

High Risk (PRI 2 - 3)	Lightning Tornado
Moderate Risk (PRI 1.01 -1.9)	Extreme Heat High Winds Wildfire Winter Storm Flooding Drought Hail
Low Risk (PRI 0.50 – 1)	Dam Failure Earthquake Expansive Soils
Negligible to No Risk (PRI 0 – 0.49)	

Changes in Development and Priorities (Requirement §201.6(d) (3))

Our jurisdiction is in one of the fastest growing areas of the nation, hence development has increased and will continue to increase our vulnerability to hazards that may impact us.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the Town of Prosper faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation.

Dam Failure There are three FWRS Dams located within the limits of the Town of Prosper. Due to a lack of data, inundation studies need to be completed to determine the vulnerabilities of the town.

Drought A prolonged drought can have a serious economic impact on a community. Increased demand for water and electricity may result in shortages of resources. Moreover, since 1996, droughts have caused crop damages in neighboring communities and the Town of Prosper amount to well over 2.7 million dollars along with over one million dollars in property damage. Price increases due to shortages and increased demand would impact Prosper's residents.

Drought has the potential to impact the entire planning area equally; all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of Prosper are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma, Lake Tawakoni, Lake Fork and the Lake Chapman-Cooper reservoir system are water sources for the Town of Prosper and are vulnerable to drought. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake Although no active fault lines exist in the North Texas region, there has been 33 tremors recorded in the past 50 years. There is a possibility that the Town of Prosper may experience an earthquake ranging from Modified Mercalli Intensity I to V, equating to 4.8 and under on the Richter Scale. All properties and populations have the potential to be vulnerable to earthquakes. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

Expansive Soils Soil capacity will heave and cause potential foundation movement when the ground experiences a moisture fluctuation. This expansive soil vulnerability can lift buildings or settle them into the ground. Increasing our town's irrigation system and improving current culverts will mitigate future expansive soil problems. All properties has the potential to be vulnerable to expansive soils, especially those constructed under older building codes.

Extreme Heat Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air conditioning are most vulnerable. What constitutes extreme heat can vary based on what the population is accustomed to in their respective climates. Temperatures that hover 10 degrees or more above the average high temperature for a region and last for several weeks are defined as extreme heat by the Centers for Disease Control and Prevention (CDC). Extreme heat is common in Texas. The Town of Prosper has experienced 10 extreme heat events in the past 23 years, resulting in a 100 percent probability of an extreme heat event occurring every year. The most severe extreme temperature event to impact the Town of Prosper occurred in August 2011, when Collin County experienced triple-digit temperatures nearly every day during the month of August. An excessive heat warning was in effect for most of Texas.

After the excessive heat warning ended on the morning of August 6, a heat advisory was in effect for several days during the month. A heat advisory was in effect for all or parts of North Texas for most of the remainder of the month, except for a few days in the middle of the month. The prolonged heat took its toll on North Texans, resulting in 27 heat-related deaths and many more heat-related illnesses. According to a Collin County medical examiner, one person died on August 12 as a result of the heat.

Flooding is the most prevalent and costly disaster in the United States. Floods have the ability to cause devastation to property, people, and agriculture. Floods occur any time and are typically the result of dam failures, heavy rains, or melting of snow. The Town of Prosper has low topography in several areas which is vulnerable to flooding. The area located on and near Dallas Parkway has experienced flash flooding more than once in the past 5 years. With no signage to warn citizens of the potential danger, this increases the town's vulnerability to loss of life, property, and agriculture, as a result of flooding.

Hail Since 1996, 168 incidents involving hail have occurred. This hazard has caused over one billion dollars in damage throughout our two counties and includes agriculture damage as well. The Town of Prosper, its buildings, and citizen's property are vulnerable to hail and extreme hail storms. Property such as automobiles, roofs, siding, and windows are most vulnerable to such events. Extensive power outages may also occur, leading to secondary and possibly tertiary effects. Mitigation efforts can be made to lessen the effect of such a hazard. These efforts include ample warning systems which cover our entire jurisdiction, public education to encourage action and precautionary measures during weather events which could produce hail, and stronger protection measures facilitated by town codes. Exposed populations, manufactured homes, and older properties are most vulnerable.

High Winds Windstorms can cause power outages, transportation and economic disruptions, and significant property damage and pose a high risk for injuries and loss of life. All critical facilities as well as all public, private, and commercial properties are vulnerable to severe thunderstorms. Risk/vulnerability includes the entire population of the Town of Prosper because there is no way to determine the impact/magnitude of a windstorm, and no way to predict where a storm will occur. People are vulnerable to severe windstorms through power outages, effects on transportation routes, establishment of shelters, roofs blown off structures, etc. Windstorms occur frequently within the Town of Prosper. Manufactured homes and exposed populations are most vulnerable.

Overall, severe thunderstorms and high winds pose one of the greatest threats to the Town of Prosper in terms of property damage, injuries, and loss of life. Severe thunderstorms and high winds are the most frequently occurring natural hazard in the Town of Prosper and have the greatest chance of affecting the Town of Prosper each year. Based on the frequency of this hazard (134 events since 1996) and its ability to negatively affect the Town of Prosper (7 deaths, 15 injuries, and \$5.975 million in property damage within our geographical area).

Lightning The Town of Prosper has significant exposure to lightning and thunderstorms. Overall, lightning is the most constant and widespread threat to our citizens. 38 damaging events have occurred since 1996, within our two counties, which has caused over \$7.88 million in damages to property. The probability that lightning will occur in the Town of Prosper is extremely high and mitigation actions, such as a lightning detection system, will help mitigate the risk of this hazard. Property without lightning protection and exposed populations are most vulnerable.

Tornado Tornadoes can strike anywhere and cause extensive damage. Since 1996, North Texas has experienced 17 tornado events causing near \$6 million in damages, two deaths, and eight injuries. According to NOAA data, the highest recorded magnitude was an EF-3, which occurred 20 miles from the Town of Prosper and caused \$1 million in damages. Currently, the Town of Prosper has implemented improved construction standards to strengthen new buildings which will withstand higher winds produced by tornadoes. Other mitigation measures that will help minimize tornado destruction in the Town of Prosper are: Increasing the number of safe rooms via FEMA grants, education programs concerning loose items, and increased capabilities on the town's current warning system. Manufactured homes and exposed populations are most vulnerable.

Wildland Fire Wildfires typically start in woodland or prairie areas. They can occur naturally or exacerbate by human activities. This hazard can be hard to control, and mitigation efforts are needed to prevent wildfires from occurring in the Town of Prosper. Since 1996, Collin and Denton counties have had five events involving wildfires totaling over \$100,000 in damages and a loss of life (1). The Town of Prosper and the surrounding counties are currently in a severe drought phase, thus increasing the town's

vulnerability to wildfires. Mitigation efforts which will help prevent or lessen the effect of wildfires in the Town of Prosper need to include education programs, zoning, burning restrictions, property maintenance, and increased capabilities of our local fire department.

According to the Texas A&M Forest Service 38.19% of the Town of Prosper's population live in the Wildfire Urban Interface (WUI). Wildfire low threat areas are predominately to the east and west areas of the city with the majority of the center of the city in the non-burnable area.

Winter Storms Generally, winter storm season in the Town of Prosper is between the months of November to mid-March. Residents who are disrupted more severely by severe winter storms include those without sufficient heating systems, and those impacted by extended power outages due to falling tree limbs or ice. Most residents do not have backup power sources. Since 1996, 27 winter storm events have occurred within 30 miles of the Town of Prosper, which has led to one death and \$891,000 in property damage. Mitigation efforts to prevent the effects of this hazard should include establishing a warming center for Prosper residents that experience insufficient heating during winter storms, tree management, burying power lines, and an outreach program (CRW-system) to identify isolated, vulnerable, and functional-needs populations.

Identification of Assets and Vulnerability Assessment

An inventory of the Town of Prosper geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population**: Includes the number of people residing in Collin County jurisdictions as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property**: Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities**: Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities**: Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure**: Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the US Census bureau, the total population of the Town of Prosper in 2020 was 28,380 people, with 7,313 households. The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4. Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total**	Population Density (Sq. Mile)	Household	% of County Total	Household Density (Sq. Mile)
Prosper	28,380	1.96%	1,555.07	9,992	2.60%	547.56

Source: US Census Bureau & Collin County Appraisal District

Table 3.5 summarizes population counts and population change (absolute and percent predictions for the Town of Prosper.

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2020 Estimate	Absolute Change 2019-20120	Percent (%) Change 2018-2010
Prosper	9,423	22,650	28,380	2750	10.7%

Source: 2020 NCTCOG Population Estimate

Property

There are an estimated 13,048 parcels in the Town of Prosper, with an estimated \$4,023,541,491 in total assessed value of, *Table 3.6* lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings)
Prosper	13,048	2.68%	\$4,023,541,491

Source: Collin County Appraisal District

This also includes properties from Denton County. The % of County only reflects the Collin County portion of Prosper and in relation to only Collin County.

Emergency Facilities

There are six identified emergency facilities in the Town of Prosper, including two fire stations, one police station, and three hospitals. *Table 3.7* presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
Prosper	2	1	3

Source: County Data and Regional Hazard Assessment Tool

Critical Facilities

There are 13 critical facilities, which are considered non-emergency in the Town of Prosper. The critical facilities include 11 schools and two historical property sites (*Table 3.8*). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
Prosper	11	2

Source: Local jurisdictions

Critical Infrastructure

There are 14 identified critical infrastructure facilities in the Town of Prosper, including six lift stations, one natural gas facility, no water treatment facilities, no potable water treatment facilities, no dams, one railroad, one highway, and four bridges (*Table 3.9*). In addition to the information in the table the Town of Prosper also has one water-pump facility, one elevated storage facility, and two water towers.

Table 3.9 Critical Infrastructure

Jurisdiction	Lift Stations	Natural Gas Facilities	Wastewater Treatment Facilities	Water Pump Facility	Dams	Railway/ Highway/ Bridges
Prosper	6	1	0	1	3	6

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, the Town of Prosper's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis, and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for the Town of Prosper, two were analyzed using a Geographic Information System-based analysis, seven using a statistical risk assessment methodology, and the remaining three hazards using a qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.10* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
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Dam Failure			X
Drought		X	
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail		X	
High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) zero (0) recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of Prosper are expected but financially unknown due to lack of accurate. Historical data indicates that crop losses in the Town of Prosper are expected mostly during water shortages, financially unknown due to lack of accurate reporting.
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the Town of Prosper. The Town of Prosper and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas and the improved property in the Town of Prosper is not vulnerable to this hazard.
Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings and the emergency facilities in the Town of Prosper are not vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the critical facilities in the Town of Prosper are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in the Town of Prosper.

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. Approximately 152 residential parcels in the Town of Prosper are located within the 100-year floodplain.
Improved Property	Though there have been three (3) recorded flood events in the Town of Prosper, property losses are expected but financially unknown due to lack of accurate reporting. No crop losses are expected or recorded county-wide. Approximately \$467,505,513 of the total assessed value is at risk from the 100-year storm event.
Emergency Facilities	Emergency facilities have the potential to be as risk in the 100-year storm event.
Critical Facilities	Critical facilities have the potential to be as risk in the 100-year storm event.
Critical Infrastructure	Critical Infrastructure have the potential to be as risk in the 100-year storm event.

Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.

Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of Prosper are expected at \$9,428.57 per year however these values are underestimated due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data indicates that there are no expected crop losses from this event.
Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in the Town of Prosper are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the Town of Prosper are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in the Town of Prosper are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events. All the population of the Town of Prosper are vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of Prosper are expected at \$700 per year however these values are underestimated due to lack of accurate reporting. No crop losses resulted from this hazard in the Town of Prosper.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in the Town of Prosper are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the Town of Prosper are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in the Town of Prosper are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from lightning events. All the population of the Town of Prosper is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of Prosper are expected at \$7,500 per year however these values are underestimated due to lack of accurate reporting.

Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in the Town of Prosper are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the Town of Prosper are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in the Town of Prosper are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in Prosper. All the population of the Town of Prosper is exposed and vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), property losses in the Town of Prosper are expected but unknown due to lack of accurate reporting. No crop losses are expected from this hazard in the Town of Prosper.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in the Town of Prosper are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the Town of Prosper are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the Town of Prosper are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 38.19% of the Town of Prosper is vulnerable to wildfires, with the Town of Prosper and the unincorporated areas contributing with the majority of the exposed population. There have been no recorded injuries or fatalities due to wildfires.
Improved Property	Based on geographical data, property losses in the Town of Prosper are expected but unknown due to lack of accurate reporting; therefore, percentage of the overall property improvement values across the Town of Prosper are also unknown...
Emergency Facilities	Based on geographic information there are zero fire stations at risk from wildfire events.
Critical Facilities	Based on geographic information there are seven schools at risk from wildfire events.

Critical Infrastructure	Based on geographic information there are four bridges, zero dams, one water facility, two water towers, and one water treatment facility at risk from wildfire events.
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Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the Town of Prosper. All the population of the Town of Prosper are exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of Prosper are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the Town of Prosper.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in the Town of Prosper are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in the Town of Prosper are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in the Town of Prosper are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serves as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the Town of Prosper considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
Town of Prosper	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	?	N	64%
Average % Yes Capabilities – 64%															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes
Town of Prosper	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	90%
Average % Yes Capabilities – 90%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes
Town of Prosper	N	Y	Y	Y	Y	Y	Y	Y	?	N	70%
Average % Yes Capabilities – 70%											
Y- Yes N- No ?- Don't Know											

To quantify Prosper's legal and regulatory capabilities, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, the Town of Prosper and its jurisdictions have 64% of identified legal and regulatory capabilities, 90% of identified administrative and technical capabilities, and 70% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
The Town of Prosper	Town Manager	The Town council, including the mayor, mayor pro-tem, and council members, along with the town manager, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the town overall. As the governing body, the ability to implement and approve mitigation actions and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2016 HazMAP, the Prosper Hazard Mitigation Planning Committee developed mitigation strategies for the plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate Early Warning Systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic, and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis, economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

Town of Prosper Action Items: Deferred from 2016 Plan

Town of Prosper Action Item	Adopt and promote a public education program to mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Dam Failure, Flooding, High Wind, Lightning, Wildfire, Tornado, Hail, Extreme Heat, Drought, Winter Storms, Earthquakes, Expansive Soils
Goal/Objective	4A, 4B, 4C
Priority	Medium
Estimated Cost	\$30,000
Potential Funding Sources	General Fund, EMPG, PDM
Potential Matching Sources	Local funds, citizen cost-share, donations
Lead Department	Fire Department
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger, and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger, and less vulnerable to damages
Cost Effectiveness	Extreme cost effectiveness
Discussion	Share perceptions of disaster myths, increases information gathering. Program will include information about mitigation actions for each hazard.

Collin County Hazard Mitigation Action Plan

Status	Receive supplies and materials from the NCTCOG KnoWhat2do Program and provide to residents. Continue – will be included in 2021 Plan
Town of Prosper Action Item	Develop, implement, and enforce ordinances to restrict the use of public water resources for non-essential usage, such as washing cars, landscape, and filling swimming pools
Hazard(s) Addressed	Drought
Goal/Objective	2A, 2C, 3C
Priority	Moderate
Estimated Cost	\$45,000
Potential Funding Sources	General Fund, EMPG, other grants
Potential Matching Sources	Local donations, in-kind matching
Lead Department	Public Works, OEM
Implementation Schedule	2-5 years
Effect on Old Buildings	May require retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and lawn sprinklers
Cost Effectiveness	High. With millions of dollars potentially lost due to drought, this mitigation technique would have a long-term benefit on local farmers and citizens
Discussion	Additional project to include working with builders to encourage drought –tolerant landscape to reduce water usage with incentives
Status	Deferred – will be included in 2021 Plan

Town of Prosper Action Item	Implement individual/public tornado safe rooms and location awareness
Hazard(s) Addressed	Tornado, High Wind
Goal/Objective	1C, 2D, 4A, 4B,
Priority	High
Estimated Cost	Up to \$3,000 per residential safe room/\$1,000,000 public retrofit
Potential Funding Sources	FEMA, Local grants, PDM
Potential Matching Sources	Local Funding, Donations, Resident Match
Lead Department	Engineering
Implementation Schedule	2-5 years
Effect on Old Buildings	Enhance safety of existing residential/public structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	High, Residential safe room shelters decrease personal injuries and death during severe weather, tornadoes, or high winds
Discussion	Possible FEMA rebate program

Collin County Hazard Mitigation Action Plan

Status	Will be included in 2021, however, some residents were able to obtain funds through the NCTCOG Saferoom Rebate Program
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Town of Prosper Action Item	Protect citizens from extreme weather by building covered patios in public parks
Hazard(s) Addressed	Extreme Heat, Hail, High Winds, Lightning
Goal/Objective	2D
Priority	High
Estimated Cost	\$50,000
Potential Funding Sources	PDM, General Budget, State and Federal Grants
Potential Matching Sources	Citizen cost-share, Donations
Lead Department	Public Works/Parks
Implementation Schedule	2-3 years
Effect on Old Buildings	Potentially add covered patios to existing small structures
Effect on New Buildings	N/A
Cost Effectiveness	Cost is low compared to loss of life from heat illness and debris injuries
Discussion	Covered patios are an effective means of providing temporary relief from severe weather
Status	Deferred – will be included in 2021 Plan

Town of Prosper Action Item	Purchase and Distribute NOAA Radios to Vulnerable Populations
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Goal/Objective	3C
Priority	High
Estimated Cost	\$60,000
Potential Funding Sources	Grant Funds, HMGP, PDM
Potential Matching Sources	Local funds, General Budget, Donations, citizens cost-share
Lead Department	Fire Department, Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger, and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger, and less vulnerable to damages
Cost Effectiveness	moderate

Collin County Hazard Mitigation Action Plan

Discussion	Early warning, hazard and mitigation information, and reliable communications have been established to reduce loss of life, injuries, and property damage
Status	Deferred – will be included in 2021 Plan

Town of Prosper Action Item	Develop, Implement, and Enforce Private Residential and Commercial Construction Requirements
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Goal/Objective	1C, 2C
Priority	Moderate
Estimated Cost	\$85,000
Potential Funding Sources	PDM, EMGP
Potential Matching Sources	General budget, In-Kind
Lead Department	Development Services, OEM
Implementation Schedule	6-9 Months
Effect on Old Buildings	New standards could be used to drive retrofitting
Effect on New Buildings	Buildings will be safer and more resilient in face of hazards
Cost Effectiveness	High
Discussion	Develop and adopt building codes to harden private construction based on the hazards identified in this annex such as hail-resistant roofing and windows; wind and impact resistant doors, windows, and roofing ; wildfire breaks and fire resistant building materials; stricter foundation standards for earthquake and expansive soils; increased elevation (BFE) standards for flooding; higher grade insulation to mitigate extreme heat and winter weather; and resource-efficient (low-flow) plumbing for drought. Also, additional codes for dry-proofing and lightning protection (rods, grounding) for public buildings to mitigate flood, dam failure and lightning
Status	Town of Prosper has adopted current building code and will continue to adopt the most current building codes – will continue to be in future plans and updates

Town of Prosper Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	2A, 3A
Priority	High
Estimated Cost	\$150,000

Collin County Hazard Mitigation Action Plan

Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

Town of Prosper Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$45,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred will be included in 2021 Plan (50,000)

Town of Prosper Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2A

Priority	Low
Estimated Cost	\$100,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	12-18 months
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

Town of Prosper Action Items: New

Town of Prosper Action Item	Develop and implement a comprehensive public education program to educate on the actions to help mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Dam Failure, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4A, 4B, 4C
Priority	Medium
Estimated Cost	\$30,000
Potential Funding Sources	General Fund, EMPG, PDM
Potential Matching Sources	Local funds, citizen cost-share, donations
Lead Department	Fire Department
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger, and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger, and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.

Town of Prosper Action Item	Develop, implement, and enforce ordinances to restrict the use of public water resources for non-essential usage, such as washing cars, landscape, and filling swimming pools
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2A, 2C, 3C
Priority	Moderate
Estimated Cost	\$45,000
Potential Funding Sources	General Fund, EMPG, other grants
Potential Matching Sources	Local donations, in-kind matching
Lead Department	Public Works, OEM
Implementation Schedule	2-5 years
Effect on Old Buildings	May require retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and lawn sprinklers
Cost Effectiveness	High. With millions of dollars potentially lost due to drought, this mitigation technique would have a long-term benefit on local farmers and citizens
Discussion	Additional project to include working with builders to encourage drought –tolerant landscape to reduce water usage with incentives When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

Town of Prosper Action Item	Implement individual/public tornado safe rooms and location awareness
Hazard(s) Addressed	Tornado, High Wind
Goal/Objective	1C, 2D, 4A, 4B,
Priority	High
Estimated Cost	Up to \$3,000 per residential safe room/\$1,000,000 public retrofit
Potential Funding Sources	FEMA, Local grants, PDM
Potential Matching Sources	Local Funding, Donations, Resident Match
Lead Department	Engineering
Implementation Schedule	2-5 years
Effect on Old Buildings	Enhance safety of existing residential/public structures through retrofit
Effect on New Buildings	Enhance safety of new residential structures
Cost Effectiveness	High, Residential safe room shelters decrease personal injuries and death during severe weather, tornadoes, or high winds
Discussion	Possible FEMA rebate program

Town of Prosper Action Item	Protect citizens from extreme weather by building covered patios in public parks
Hazard(s) Addressed	Extreme Heat, Hail, High Winds, Lightning
Goal/Objective	2D
Priority	High
Estimated Cost	\$50,000
Potential Funding Sources	PDM, General Budget, State and Federal Grants
Potential Matching Sources	Citizen cost-share, Donations
Lead Department	Public Works/Parks
Implementation Schedule	2-3 years
Effect on Old Buildings	Potentially add covered patios to existing small structures
Effect on New Buildings	N/A
Cost Effectiveness	Cost is low compared to loss of life from heat illness and debris injuries
Discussion	Covered patios are an effective means of providing temporary relief from severe weather

Town of Prosper Action Item	Purchase and Distribute NOAA Radios to Vulnerable Populations
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Goal/Objective	3C
Priority	High
Estimated Cost	\$60,000
Potential Funding Sources	Grant Funds, HMGP, PDM
Potential Matching Sources	Local funds, General Budget, Donations, citizens cost-share
Lead Department	Fire Department, Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger, and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger, and less vulnerable to damages
Cost Effectiveness	moderate
Discussion	Early warning, hazard and mitigation information, and reliable communications have been established to reduce loss of life, injuries, and property damage

Town of Prosper Action Item	Develop, Implement, and Enforce Private Residential and Commercial Construction Requirements
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Goal/Objective	1C, 2C
Priority	Moderate
Estimated Cost	\$25,000
Potential Funding Sources	PDM, EMGP
Potential Matching Sources	General budget, In-Kind
Lead Department	Development Services, OEM
Implementation Schedule	6-9 Months
Effect on Old Buildings	New standards could be used to drive retrofitting
Effect on New Buildings	Buildings will be safer and more resilient in face of hazards
Cost Effectiveness	High
Discussion	Develop and adopt building codes to harden private construction based on the hazards identified in this annex such as hail-resistant roofing and windows; wind and impact resistant doors, windows, and roofing ; wildfire breaks and fire resistant building materials; stricter foundation standards for earthquake and expansive soils; increased elevation (BFE) standards for flooding; higher grade insulation to mitigate extreme heat and winter weather; and resource-efficient (low-flow) plumbing for drought. Also, additional codes for dry-proofing and lightning protection (rods, grounding) for public buildings to mitigate flood, dam failure and lightning

Town of Prosper Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	2A, 3A
Priority	High
Estimated Cost	\$125,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS
Implementation Schedule	1-2 years

Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.

Town of Prosper Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$50,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.

Town of Prosper Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2A
Priority	Low
Estimated Cost	\$50,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	12-18 months

Collin County Hazard Mitigation Action Plan

Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

Town of Prosper Action Item	Install outdoor warning sirens
Hazard(s) Addressed	Tornado, High Winds
Goal/Objective	1A, 1B
Priority	High
Estimated Cost	\$175,000
Potential Funding Sources	EMPG, PDM BRIC, General Funds, Developers,
Potential Matching Sources	General Funds, In-Kind
Lead Department	OEM
Implementation Schedule	6 Months
Effect on Old Buildings	N/A
Effect on New Buildings	N/A
Cost Effectiveness	Moderate
Discussion	To achieve 100% coverage to all residents of our fast growing jurisdiction, 4 new sirens would need to be installed. This action item would be specific to installation/placement of new OWS sirens in the jurisdiction.

National Flood Insurance Program (NFIP) Compliance

The Town of Prosper is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
480141#	PROSPER, TOWN OF	DENTON COUNTY/COLLIN COUNTY	6/21/1974	5/4/1982	4/18/2011	5/4/1982	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Compliance

Once the community applies for the NFIP, FEMA arranges for a study of the community to determine base flood elevations and flood risk zones. Consultation with the community occurs at the start of and during the study, and those communities with minimal flood risk are converted to the Regular Program without a study.

FEMA provides the studied community with a Flood Insurance Rate Map delineating base flood elevations and flood risk zones. The community is then given 6 months to adopt base flood elevations in its local zoning and building code ordinances. Once the community adopts more stringent ordinances, FEMA converts the community to the NFIP's Regular Program. FEMA then authorizes the sale of additional flood insurance in the community up to the Regular Program limits. The community must implement and enforce the adopted floodplain management measures. FEMA provides periodic community assistance visits with local officials to provide technical assistance regarding complying with NFIP floodplain management requirements.

The purchase of flood insurance is mandatory as a condition of receipt of federal or federally-related financial assistance for acquisition and/or construction of buildings in SFHAs of any participating community. Those communities notified as flood-prone which do not apply for participation in the NFIP within 1 year of notification are ineligible for federal or federally-related financial assistance for acquisition, construction, or reconstruction of insurable buildings in the SFHA.

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
Town of Prosper	Senior Engineer/Director	Completing and maintaining FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	The Engineering Department is responsible for issuing floodplain permits.	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with town's flood damage prevention order shall result in fines up to \$500 per violation plus court costs.
		Requiring and maintaining FEMA elevation certificates for all new and improved buildings located in floodplains	The Engineering Department is responsible for issuing floodplain permits.	
		Implementing damage reduction measures for existing buildings such as acquisition, relocation, retrofitting, and maintenance of drainage ways and retention basins	Maintenance of drainage ways and retention basins. Installation of retention basins on new construction.	
		Taking action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning	Implementing newly developed Storm-water Management Program which includes public education, new development standards, and other programs and policies.	

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), the Town of Prosper has developed a plan maintenance process which is described in the following paragraphs. Town of Prosper, along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by Collin County Commissioners Court, and formal adoption of the plan by City/Town Council by each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Plan would be implemented by the county and participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, the Town of Prosper will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	Activity	Schedule
Emergency Management Team	Monitoring Plan: Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
Planning Team	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising, and updating their respective plans and submitting them for approval. The plans will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and planning committees will establish a process in which the mitigation strategy, goals, objectives, and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives, and actions outlined in this plan will be integrated into these existing mechanisms as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
Town of Prosper	Town Council	Budget Meetings	As needed	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Emergency Management Coordinator	Emergency Action Plan updates	Every Five years	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	Town Council, Director of Planning	Capital improvement plans	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, Town Council	Drought Contingency plans	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education
	Planning Director, Town Council	Parks & Recreation Master Plan	Triennially	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Prosper Hazard Mitigation Planning Committee considers this HazMAP, including development and maintenance, to be the primary vehicles to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committee will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Annex S: Town of St. Paul



Town of St. Paul. It contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

1. Introduction

This annex was prepared in 2020 as part of an update to the Collin County Multijurisdictional Hazard Mitigation Action Plan. The Town of St. Paul participated on the Collin County Hazard Mitigation Planning Team (HMPT). This is a new hazard mitigation plan and the first to be submitted to FEMA for the Town of St. Paul. In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete hazard mitigation planning tool for the

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While the Town of St. Paul has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped the Town of St. Paul officials to recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places and online.

In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. The table below outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Centers for Environmental Information (NCEI)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Urban Interface
National Inventory of Dams	Dam Information

Planning Committee

This Hazard Mitigation Action Plan was developed by the Town of St. Paul Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the Collin County HMPT.

The Collin County HMPT was assembled in November 2020 with representatives from participating jurisdiction planning committees, including mayors, police chiefs, fire chiefs, and the general public. Collin County acted as the plan development consultant providing hazard mitigation planning services; the efforts of the planning committee were led by the Town of St. Paul Emergency Management Coordinator. The table below provides a list of the primary representatives on the St. Paul planning committee.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
Town of St. Paul	Mayor	Review of plan
Town of St. Paul	Town Secretary	Review of plan

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.
- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed

plan.

External stakeholders involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
NCTCOG	Emergency Preparedness Prog. Asst.	Review of plan
Collin County	Homeland Security Dept. Coordinator	Review of plan

Subsequent to the State of Texas and FEMA approval of the plan, each jurisdiction also is committed to accomplishing the following activities:

- Appoint members to a coordinating committee to monitor and work toward plan implementation.
- Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
- Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Collin County and included all jurisdictions' participation:

- Emailed Plan to St. Paul for updates – August 12, 2020
- Collin County Planning Meeting – November 5, 2020
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022 at 9AM

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.
- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated. An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee for the Town of St. Paul identified several natural and man-made hazards that could affect the town. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for St. Paul and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
		Level	Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3

25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for the Town of St. Paul

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	0	0	0	0	0
Drought	2	0	1	3	1.15
Earthquake	0	1	0	1	0.45
Expansive Soils	2	0	0	1	0.7
Extreme Heat	1	1	0	2	0.85
Flooding	1	1	0	0	0.65
Hail	2	0	2	1	1.2
High Winds	1	0	0	1	0.4
Lightning	1	0	0	0	0.3
Tornado	2	1	1	1	1.3
Wildfire	1	2	0	1	1.1
Winter Storms	2	0	2	3	1.4

The conclusions drawn from the hazard profiling process for Collin County jurisdictions, resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in Collin County.

Table 3.3 Hazard Rankings for the Town of St. Paul

High Risk (PRI 2 - 3)	
Moderate Risk (PRI 1.01 -1.9)	Tornado Winter Storms Drought Wildfire
Low Risk (PRI 0.50 – 1)	Extreme Heat Expansive Soils Hail Flooding
Negligible to No Risk (PRI 0 – 0.49)	Earthquake High Winds Lightning Dam Failure

Changes in Development and Priorities (Requirement §201.6(d) (3))

Our jurisdiction is in one of the fastest growing areas of the nation, hence development has increased and will continue to increase our vulnerability to hazards that may impact us.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the Town of St. Paul faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation.

Dam and Levee Failure A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. Dams typically are constructed of earth, rock, concrete, or mine tailings. A dam failure is an accidental or unintentional collapse, breach, or other failure of an impoundment structure that results in downstream flooding. Because dams are man-made structures, dam failures are usually considered technological hazards. However, since most dam failures result from prolonged periods of rainfall, they are often cited as secondary or cascading effects of natural flooding disasters and are not named as the primary hazard that causes disaster declarations.

Development of the downstream areas necessitates the original low hazard classifications to be changed to higher hazard classifications because the dams are no longer adequate for the increased downstream risks. NRCS data shows that there are no dams in the St. Paul that are no longer adequate for increased downstream risks. This percentage could actually be higher because detailed current evaluations of NRCS dams have not been conducted due to resource limitations. In addition, many of these inadequate dams have not been updated because many of the legally responsible entities of these dams do not have sufficient mechanisms funding for updates, or even adequate maintenance, in some cases. Soil and Water Conservation Districts do not have any statutory funding capability of their own, and counties, especially those with small populations and multiple dams, are not able to generate the resources needed to sustain a consistent and comprehensive effort upgrade these structures. While no record could be found of any previous dam failures in Collin County, three things are clear:

- There are no dams in St. Paul that are nearing the end of their designed project lives

- There are no dams in St. Paul that are in desperate need of detailed evaluations and consistent maintenance
- Increased development downstream of any dams may put more people, property, and infrastructure at risk.

Based on a quantitative analysis of no dams currently being in place in St. Paul and a qualitative analysis of the potential impacts that dam failures would have on the social, economic, and environmental components of the region, the risk of a dam failure hazard is negligible but as a participant in the county plan, inundation studies will be considered.

St. Paul is responsible for no high hazard dams identified by the NRCS in both the unincorporated County area and in several cities due to the use of easements and the Emergency Operations Plans for those dam sites.

Drought Drought has the potential to impact the entire planning area equally; all improved property, critical facilities, critical infrastructure, and the entire population of St. Paul are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma, Lake Tawakoni, Lake Fork and the Lake Chapman-Cooper reservoir system are water sources for the Town of St. Paul and are vulnerable to drought. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake An earthquake is a sudden motion or trembling caused by an abrupt release of accumulated strain on the tectonic plates that comprise the Earth's crust. The theory of plate tectonics holds that the Earth's crust is broken into several major plates. These rigid, 50- to 60- mile thick plates move slowly and continuously over the interior of the earth, meeting in some areas and separating in others. As the tectonic plates move together they bump, slide, catch, and hold. Eventually, faults along or near plate boundaries slip abruptly when the stress exceeds the elastic limit of the rock, and an earthquake occurs. The ensuing seismic activity and ground motion provoke secondary hazards: surface faulting, ground failure, and tsunamis. The vibration or shaking of the ground during an earthquake is referred to as ground motion. In general, the severity of ground motion increases with the amount of energy released and decreases with distance from the causative fault or epicenter. When a fault ruptures, seismic waves are propagated in all directions, causing the ground to vibrate at frequencies ranging from 0.1 to 30 Hz. Seismic waves are referred to as P waves, S waves, and surface waves. Earthquakes have the potential to occur anywhere in the geographic planning area, therefore all geographic areas are potentially vulnerable. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

Expansive Soils Expansive soils contain minerals such as "smectite" clays that are capable of absorbing water. When they absorb water they increase in volume. The more water they absorb the more their volume increases. Expansions of ten percent or more are not uncommon. This change in volume can exert enough force on a building or other structure to cause damage. Expansive soils will also shrink when they dry out. This shrinkage can remove support from buildings or other structures and result in damaging foundations. Fissures in the soil can also develop. These fissures can facilitate the deep penetration of water when moist conditions or runoff occurs. This produces a cycle of shrinkage and swelling that places repetitive stress on structures. The Town of St. Paul is at low risk from expansive

soils. The entire geographic planning area and properties have the potential to be vulnerable to expansive soils, especially buildings constructed under older building codes.

Extreme Heat Severe summer heat is characterized by a combination of a very high temperatures and exceptionally humid conditions. When persisting over a period of time, it is called a heat wave. Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air conditioning are most vulnerable.

Flooding Flooding is defined as the accumulation of water within a water body and the overflow of excess water onto adjacent floodplain lands. 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. The statistical meaning of terms like “25-year storm” and “100-year flood” can be confusing. Simply stated, a floodplain can be located anywhere; it just depends on how large and how often a flood event occurs. Floodplains are those areas that are subject to inundation from flooding. Floods and the floodplains associated with them are often described in terms of the percent chance of a flood event happening in any given year. As a community management or planning term, “floodplain” most often refers to an area that is subject to inundation by a flood that has a one percent chance of occurring in any given year (commonly and incorrectly referred to as the 100-year floodplain). Common flooding hazards within the planning area include impacts from flash flooding and from new development.

A flash flood is a rapid flood that inundates low-lying areas in less than six hours. This is caused by intense rainfall from a thunderstorm or several thunderstorms. Flash floods can also occur from the collapse of a man-made structure or ice dam. Construction and development can change the natural drainage and create brand new flood risks as new buildings, parking lots, and roads create less land that can absorb excess precipitation from heavy rains, hurricanes, and tropical storms. Flash floods are a high risk hazard since they can roll boulders, tear out trees, and destroy buildings and bridges. There were no trouble areas identified in St. Paul.

Hail Outgrowth of a severe thunderstorm in which balls or irregularly shaped lumps of ice greater than 0.75 inches in diameter fall with rain. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to warm air rising rapidly into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until, having developed sufficient weight, they fall as precipitation. The entire geographic planning area, properties, and populations have the potential to be vulnerable to hail. Exposed populations, manufactured homes, and older properties are most vulnerable.

High Wind Straight-line winds are often responsible for the wind damage associated with a thunderstorm. These winds are often confused with tornadoes because of similar damage and wind speeds. However, the strong and gusty winds associated with straight-line winds blow roughly in a straight line unlike the rotating winds of a tornado. Downbursts or micro-bursts are examples of damaging straight-line winds. A downburst is a small area of rapidly descending rain and rain-cooled air beneath a thunderstorm that produces a violent, localized downdraft covering 2.5 miles or less. Wind speeds in some of the stronger downbursts can reach 100 to 150 miles per hour, which is similar to that of a strong tornado. The winds produced from a downburst often occur in one direction, and the worst damage is usually on the forward side of the downburst. High winds have the potential to affect the entire planning area. Manufactured homes and exposed populations are most vulnerable.

High winds are a frequent occurrence with severe thunderstorms and they can affect all areas of St. Paul. These winds can occur suddenly and without warning during severe weather and may pose access challenges due to fallen trees on roadways. There have been several instances of damage occurring to business and commercial structures as a result of high winds. Outside of primary residential structures, there are few locations for the public to seek shelter during high winds.

Lightning Lightning damage results from four (4) effects of lightning strike: electrocution of humans and animals; vaporization of materials along the path of strike; fire caused by the high temperature produced by the strike; and a sudden power surge that can damage electrical and electronic utility substations and distribution lines. It is estimated that throughout the United States, a power outage caused by lightning occurs on 50 percent of the days throughout the year. Lightning has the potential to affect all populations and property in the Town of St. Paul. Property without lightning protection and exposed populations are most vulnerable.

Tornado A violently rotating column of air, in contact with the ground, either pendant from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a condensation funnel cloud. Tornadoes may occur anywhere in the geographic planning area, making all properties and populations potentially vulnerable. Manufactured homes and exposed populations are most vulnerable.

Wildland Fire Wildland fire is any fire occurring on grassland, forest, or prairie, regardless of ignition source, damages or benefits. Wildland fires are fueled almost exclusively by natural vegetation. They typically occur in national forests and parks, where federal agencies are responsible for fire management and suppression. Interface or intermix fires are urban/wildland fires in which vegetation and the built-environment provide fuel. Firestorms are events of such extreme intensity that effective suppression is virtually impossible. Firestorms occur during extreme weather and generally burn until conditions change or the available fuel is exhausted. For the purposes of this hazard analysis, wildland fires are assessed under what is known as the Wildland Urban Interface (WUI). The WUI is an area of development that is susceptible to wildland fires due to the amount of structures located in an area with vegetation that can act a fuel for a wildland fire.

Wildland fires can occur anywhere in the geographic planning area, but most vulnerable populations and structures are located in the WUI. According to the Texas Forest Service Wildfire Risk Assessment Summary 82.86% of the town's population lives in the Wildland Urban Interface and is at moderate threat to wildfires.

Winter Storms Winter storms originate as mid-latitude depressions or cyclonic weather systems, sometimes following the path of the jet stream. A winter storm or blizzard, combines heavy snowfall, high winds, extreme cold and ice storms. Many winter depressions give rise to exceptionally heavy rain and widespread flooding and conditions worsen if the precipitation falls in the form of snow. The winter storm season varies widely, depending on latitude, altitude and proximity to moderating influences. The entire geographic planning area, properties, and populations have the potential to be vulnerable to winter storms. Winter storms have the potential to make roads impassable for days. Residents may be confined to their homes due to the storm and may be without basic services, such as water and electricity, for an extended period of time. The homeless, elderly, and populations without access to heat are most vulnerable.

Identification of Assets and Vulnerability Assessment

An inventory of the Town of St. Paul geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population:** Includes the number of people residing in Collin County jurisdictions as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property:** Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities:** Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities:** Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure:** Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the 2020 NCTCOG Population Estimates, the total population of Town of St. Paul in 2020 was 1090 people, with 379 households. The count breakdown by municipal jurisdiction is provided in Table 3.4.

Table 3.4. Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total	Population Density (Sq. Mile)	Household	% of County Total	Household Density (Sq. Mile)
St. Paul	1090	0.09%	674.29	332	0.09%	237.42

Source: 2020 NCTCOG Population Estimate & Collin County Appraisal District

Table 3.5 summarizes population counts and population change (absolute and percent predication for Town of St. Paul.

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
St. Paul	1,066	1,090	1,090	0	0%

Source: 2020 NCTCOG Population Estimate

Property

There are an estimated 446 parcels in Town of St. Paul, with an estimated \$94,227,833 in total assessed value of, *Table 3.6* lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings) ¹
St. Paul	446	0.16%	\$94,227,833

Source: Collin County Appraisal District

Emergency Facilities

There are zero identified emergency facilities in the Town of St. Paul, including no fire stations, no police stations, and no hospitals. *Table 3.7* presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
St. Paul	0	0	0

Source: County Data and Regional Hazard Assessment Tool

Critical Facilities

There is one critical facility, which are considered non-emergency in Town of St. Paul. The critical facility is one historical property site (*Table 3.8*). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
St. Paul	0	1

Source: Local jurisdictions

Critical Infrastructure

There are no identified critical infrastructure facilities in the Town of St. Paul. (*Table 3.9*).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
St. Paul	0	0	0	0	0	0

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, Collin County's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for Collin County, four were analyzed using a Geographic Information System-based analysis, 5 using a statistical risk assessment methodology, and the remaining 3 using qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these 3 hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. Table 3.10 summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail	X		
High Winds		X	
Lightning		X	X

Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) zero (0) recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of St. Paul are expected but financially unknown due to lack of accurate reporting. Historical data indicates that crop losses in the Town of St. Paul are expected mostly during water shortages, financially unknown due to lack of accurate reporting .
Emergency Facilities	There are no emergency facilities located within the Town of St. Paul. Therefore, no facilities are at risk.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were no fatalities recorded due to extreme heat from the Town of St. Paul. The Town of St. Paul and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas and the improved property in the Town of St. Paul is not vulnerable to this hazard.
Emergency Facilities	There are no emergency facilities located within the Town of St. Paul. Therefore, no facilities are at risk.
Critical Facilities	National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the critical facilities in the Town of St. Paul are not vulnerable to this hazard.

Critical Infrastructure	According to National Centers for Environmental Information (NCEI) there is no impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in the Town of St. Paul.
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Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. Approximately 0.99% of the population of the Town of St. Paul is located within the 100-year floodplain.
Improved Property	Though there have been zero (0) recorded flood events in the Town of St. Paul, property losses are expected but financially unknown due to lack of accurate reporting. No crop losses are expected or recorded. Approximately 0.99% of the total assessed value of improvements in the Town of St. Paul is at risk from the 100-year storm event.
Emergency Facilities	There are no emergency facilities located within the Town of St. Paul. Therefore, no facilities are at risk.
Critical Facilities	There are no critical facilities located within the 100-year storm event.
Critical Infrastructure	0% of railways/highways and bridges, 0% of dams, 0% of water treatment works, and 0% waste water treatment facilities are at risk from the 100-year storm event. Many of these structures are designed to traverse or be located within the floodplain due to unavoidable circumstances. Additionally, treated wastewater is typically discharged towards streams, which makes portions of wastewater treatment facilities likely to be located within the floodplain.

Summary Table 3.14

Hail	
Population	According to National Centers for Environmental Information (NCEI), no recorded injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of St. Paul are expected but unknown due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data indicates that there are no expected crop losses from this event..
Emergency Facilities	There are no emergency facilities located within the Town of St. Paul. Therefore, no facilities are at risk.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the Town of St. Paul are vulnerable to this hazard.

Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in are vulnerable to this hazard.
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Summary Table 3.15

High Wind	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events. All the population of the Town of St. Paul are vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of St. Paul are expected but unknown due to lack of accurate reporting. No crop losses resulted from this hazard in St. Paul.
Emergency Facilities	There are no emergency facilities located within the Town of St. Paul. Therefore, no facilities are at risk.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the Town of St. Paul are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in the Town of St. Paul are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from lightning events. All the population of the Town of St. Paul is vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of St. Paul are expected but unknown due to lack of accurate reporting
Emergency Facilities	There are no emergency facilities located within the Town of St. Paul. Therefore, no facilities are at risk.
Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the Town of St. Paul are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in the Town of St. Paul are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in the Town of St Paul. All the population of St. Paul is exposed and vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), property losses in the Town of St. Paul are expected but unknown due to lack of accurate reporting. No crop losses are expected from this hazard in the Town of St. Paul.
Emergency Facilities	There are no emergency facilities located within the Town of St. Paul. Therefore, no facilities are at risk.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the Town of St. Paul are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the Town of St. Paul are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 82.86% of the Town of St. Paul is vulnerable to wildfires. There have been no recorded injuries or fatalities due to wildfires.
Improved Property	Based on historical data, annual financial losses expected from property loss due to wildfires are unknown due to lack of accurate reporting; therefore, percentage of the overall property improvement values across the Town of St. Paul are also unknown.
Emergency Facilities	There are no emergency facilities located within the Town of St. Paul. Therefore, no facilities are at risk.
Critical Facilities	Based on geographic information there are 0 schools at risk from wildfire events.
Critical Infrastructure	Based on geographic information there are 0 bridges, 0 dams, 0 wastewater treatment facility, and 0 water treatment facility at risk from wildfire events.

Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the Town of St. Paul. All the population of the Town of St. Paul are exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the Town of St. Paul are expected but unknown due to lack of reporting however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the Town of St. Paul.
Emergency Facilities	There are no emergency facilities located within the Town of St. Paul. Therefore, no facilities are at risk.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in the Town of St. Paul are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in the Town of St. Paul are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serve as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the Town of St. Paul considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
Town of St. Paul	Y	Y	Y	Y	N	Y	Y	N	N	Y	Y	N	N	?	57%
Average % Yes Capabilities – 62%															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes
<i>Town of St. Paul</i>	Y	Y	Y	N	Y	N	Y	N	Y	N	60%
Average % Yes Capabilities – 60%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes
<i>Town of St. Paul</i>	N	Y	Y	N	N	Y	Y	Y	N	?	50%
Average % Yes Capabilities – 50%											
Y- Yes N- No ?- Don't Know											

To quantify the Town of St. Paul's legal and regulatory capabilities, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-100%). Questionnaire responses indicated that on average, the Town of St. Paul has 57.14% of identified legal and regulatory capabilities, 60% of identified administrative and technical capabilities, and 50% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
Town of St. Paul	Town Secretary	The town council, including the mayor, mayor pro-tem, and council members, along with the town secretary, address the budget; pass laws, regulations, and codes; hire staff; approve plans; and determine the direction of the town overall. Ability to implement and approve mitigation actions and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2016 HazMAP, the Town of St. Paul Hazard Mitigation Planning Committee developed mitigation strategies for the plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate early warning systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornados through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties for the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages from chronic hazard events.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis, economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

Town of St. Paul Action Items: Deferred from 2016 Plan

Town of St. Paul Action Item	Adopt and promote public education program.
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Goal/Objective	4A, 4B, 4-C
Priority	Medium
Estimated Cost	\$15,000
Potential Funding Sources	General fund, HMGP, PDM, other state/federal grants
Potential Matching Sources	Local funds, citizen cost-share, donations
Lead Department	Town Administration
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Public education is extremely effective for low cost.
Discussion	Also the utilization of social media will be key in this program. Program will include information about mitigation actions and education.
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

Collin County Hazard Mitigation Action Plan

Town of St. Paul Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	Tornadoes
Goal/Objective	1-C
Priority	High
Estimated Cost	\$3,000 per safe room
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	Town Administration
Implementation Schedule	2-3 years
Effect on Old Buildings	Some buildings modified for safe room retrofit
Effect on New Buildings	Buildings constructed with safe rooms
Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	Implement Individual Tornado Safe Room Rebate Program
Status	Deferred – Residents did received funding through the NCTCOG Saferoom Rebate Program. The NCTCOG Program has been suspended

Town of St. Paul Action Item	Purchase of a CASA (WX) Weather Radar system
Hazard(s) Addressed	Hail, Tornadoes, Wildfire, Flooding, Lightning, Dam Failure
Goal/Objective	1-A, 3-C
Priority	High
Estimated Cost	\$550,000
Potential Funding Sources	Local Funding, Federal Funding, HMPG
Potential Matching Sources	Local Grants
Lead Department	Town Administration
Implementation Schedule	12-36 Months
Effect on Old Buildings	n/a
Effect on New Buildings	Increase response decisions by 100%
Cost Effectiveness	Cost effectiveness is low compared to the benefits.
Discussion	The Collaborative Adaptive Sensing of the Atmosphere (CASA WX) project is a multi-sector partnership dedicated to engineering revolutionary weather-sensing networks. The main purpose of the CASA WX project is to save lives and minimize injuries due to severe weather. This is accomplished through the enhancement of data by providing lower atmospheric coverage at faster rates. The CASA WX radars provide jurisdictions more accurate weather data and geographically specific weather data culled from the most active levels of the atmosphere. This data

	could save lives by providing the public more time to react and prepare appropriately as severe weather affects their location. The more accurate data will also provide a better means to analyze severe weather post event which can also help in the assessment of damage after a severe weather event.
Status	No longer viable project for St. Paul

Town of St. Paul Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Populations, Businesses, and Critical Infrastructure.
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Expansive Soils, Earthquake, Dam Failure, Flooding
Goal/Objective	3-C
Priority	High
Estimated Cost	\$60,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Town Administration
Implementation Schedule	12-18 months
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning saves lives, which outweighs the cost of the radios.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens about severe weather, civil emergencies and hazard information. It is impossible to quantify the value of a human life or value of an injury.
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	1-A, 3-C
Priority	Medium
Estimated Cost	\$65,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local funds, donations, in-kind, grants
Lead Department	Town Administration
Implementation Schedule	18-36 Months

Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire
Cost Effectiveness	CWPPs show county officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around lake development properties.
Discussion	This project will become increasingly needed as development around Richland Chambers (Tarrant County Water Supply) increases.
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams within the county.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	2-A, 3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Town Administration
Implementation Schedule	12-18 Months
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Develop and implement an extreme temperature program that identifies locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$5,000-\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Town Administration

Implementation Schedule	12 months
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Develop, implement, and enforce building codes that would prevent building deterioration from structure-impacting hazards.
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Dam Failure, Earthquake, Expansive Soils, Flooding
Goal/Objective	2-C, 3-C
Priority	Low
Estimated Cost	\$5,000- \$7,500
Potential Funding Sources	General Fund
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Town Administration
Implementation Schedule	12 Months
Effect on Old Buildings	New building codes would allow for existing buildings to be retrofitted to mitigate against structure-impacting hazards.
Effect on New Buildings	New building codes would allow for new buildings to be constructed to mitigate against structure-impacting
Cost Effectiveness	Low - Benefits outweigh costs
Discussion	Building codes would help to promote better building standards such as including hail-resistant roofing and windows; wind and impact resistant doors, windows, and roofing ; wildfire breaks and fire resistant building materials; stricter foundation standards for earthquake and expansive soils; increased elevation (BFE) standards for flooding; higher grade insulation to mitigate extreme heat and winter weather; and resource-efficient (low-flow) plumbing for drought. Also, additional codes for dry-proofing and lightning protection (rods, grounding) for public buildings to mitigate flood, dam failure and lightning.
Status	Deferred – will be included in 2021 Plan

Collin County Hazard Mitigation Action Plan

Town of St. Paul Action Item	Develop and implement mandatory water conservation measures
Hazard(s) Addressed	Drought
Goal/Objective	4-C
Priority	Medium
Estimated Cost	\$1,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Town Administration
Implementation Schedule	1-2 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Promote water conservation throughout the county and work with local water supplies to implement mandatory water restrictions
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Develop and implement storm water management on creek waterways
Hazard(s) Addressed	Flooding
Goal/Objective	2-D, 2-E, 3-C
Priority	Medium
Estimated Cost	\$75,000
Potential Funding Sources	HMGP, General Funds
Potential Matching Sources	Local funds, In-kind match
Lead Department	Town Administration
Implementation Schedule	6 months
Effect on Old Buildings	May prevent flooding of existing structures
Effect on New Buildings	May prevent flooding of planned development areas
Cost Effectiveness	Low compared to life safety benefits
Discussion	Project would prevent erosion, stopping expansion of the floodplain
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Develop and implement debris management program targeting stream banks at bridges
Hazard(s) Addressed	Flooding

Goal/Objective	2-E, 3-C
Priority	Medium
Estimated Cost	\$534,000
Potential Funding Sources	HMGP, General Funds
Potential Matching Sources	Local funds, In-kind match
Lead Department	Town Administration
Implementation Schedule	6 months
Effect on Old Buildings	Could prevent flooding and disruption to transportation
Effect on New Buildings	None
Cost Effectiveness	Low compared to life safety benefits
Discussion	Town of St. Paul needs to ensure clear waterways in order to prevent buildup of debris and materials that could cause flooding and contribute to damage to bridges.
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works
Implementation Schedule	6 months – 18 months
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	. Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

Collin County Hazard Mitigation Action Plan

Town of St. Paul Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works
Implementation Schedule	12-18 months
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Water Shed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS, Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low

Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.
Status	Deferred – will be included in 2021 Plan

Town of St. Paul Items: New

Town of St. Paul Action Item	Develop and implement a comprehensive public education program to educate on the actions to help mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4A, 4B, 4-C
Priority	Medium
Estimated Cost	\$15,000
Potential Funding Sources	General fund, HMGP, PDM, other state/federal grants
Potential Matching Sources	Local funds, citizen cost-share, donations
Lead Department	Department of Town Administration
Implementation Schedule	1-2 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation..

Town of St. Paul Action Item	Implement Individual Tornado Safe Room Rebate Program
Hazard(s) Addressed	Tornadoes
Goal/Objective	1-C
Priority	High
Estimated Cost	\$3,000 per safe room
Potential Funding Sources	HMGP, PDM, Resident Match
Potential Matching Sources	Local Grants, FEMA
Lead Department	Department of Town Administration
Implementation Schedule	2-3 years
Effect on Old Buildings	Some buildings modified for safe room retrofit
Effect on New Buildings	Buildings constructed with safe rooms

Collin County Hazard Mitigation Action Plan

Cost Effectiveness	Residential safe room shelters potentially decrease personal injuries and death during severe weather, tornadoes or high wind events.
Discussion	Implement Individual Tornado Safe Room Rebate Program

Town of St. Paul Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Populations, Businesses, and Critical Infrastructure.
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Expansive Soils, Earthquake, Flooding
Goal/Objective	3-C
Priority	High
Estimated Cost	\$60,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Department of Town Administration
Implementation Schedule	12-18 months
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning saves lives, which outweighs the cost of the radios.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens about severe weather, civil emergencies and hazard information. It is impossible to quantify the value of a human life or value of an injury.

Town of St. Paul Action Item	Develop a Community Wildfire Protection Plan (CWPP)
Hazard(s) Addressed	Wildfire
Goal/Objective	1-A, 3-C
Priority	Medium
Estimated Cost	\$65,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local funds, donations, in-kind, grants
Lead Department	Department of Town Administration
Implementation Schedule	18-36 Months
Effect on Old Buildings	Reduce vulnerability of existing structures to damages or loss from wildfire
Effect on New Buildings	Reduce vulnerability of new structures to damages or loss from wildfire

Collin County Hazard Mitigation Action Plan

Cost Effectiveness	CWPPs show county officials where to redouble their efforts in preventing wildfire, saving time and money. Also work to establish urban wildfire interface around lake development properties.
Discussion	This project will become increasingly needed as development around Richland Chambers (Tarrant County Water Supply) increases.

Town of St. Paul Action Item	Develop and implement an extreme temperature program that identifies locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	3-C
Priority	Medium
Estimated Cost	\$5,000-\$10,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Department of Town Administration
Implementation Schedule	12 months
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold

Town of St. Paul Action Item	Develop, implement, and enforce building codes that would prevent building deterioration from structure-impacting hazards.
Hazard(s) Addressed	Hail, Lightning, Drought, Extreme Heat, High Winds, Tornado, Wildfire, Winter Storm, Earthquake, Expansive Soils, Flooding
Goal/Objective	2-C, 3-C
Priority	Low
Estimated Cost	\$5,000- \$7,500
Potential Funding Sources	General Fund
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Department of Town Administration
Implementation Schedule	12 Months
Effect on Old Buildings	New building codes would allow for existing buildings to be retrofitted to mitigate against structure-impacting hazards.
Effect on New Buildings	New building codes would allow for new buildings to be constructed to mitigate against structure-impacting

Cost Effectiveness	Low - Benefits outweigh costs
Discussion	Building codes would help to promote better building standards such as including hail-resistant roofing and windows; wind and impact resistant doors, windows, and roofing ; wildfire breaks and fire resistant building materials; stricter foundation standards for earthquake and expansive soils; increased elevation (BFE) standards for flooding; higher grade insulation to mitigate extreme heat and winter weather; and resource-efficient (low-flow) plumbing for drought. Also, additional codes for dry-proofing and lightning protection (rods, grounding) for public buildings to mitigate flood, dam failure and lightning.

Town of St. Paul Action Item	Develop and implement mandatory water conservation measures
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	4-C
Priority	Medium
Estimated Cost	\$1,000
Potential Funding Sources	HMGP, PDM, General Fund
Potential Matching Sources	Local funds, donations, in-kind
Lead Department	Department of Town Administration
Implementation Schedule	1-2 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Low cost for effective means of preserving water.
Discussion	Promote water conservation throughout the county and work with local water supplies to implement mandatory water restrictions. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

Town of St. Paul Action Item	Develop and implement storm water management on creek waterways
Hazard(s) Addressed	Flooding
Goal/Objective	2-D, 2-E, 3-C
Priority	Medium
Estimated Cost	\$75,000
Potential Funding Sources	HMGP, General Funds

Collin County Hazard Mitigation Action Plan

Potential Matching Sources	Local funds, In-kind match
Lead Department	Department of Town Administration
Implementation Schedule	6 months
Effect on Old Buildings	My prevent flooding of existing structures
Effect on New Buildings	May prevent flooding of planned development areas
Cost Effectiveness	Low compared to life safety benefits
Discussion	Project would prevent erosion, stopping expansion of the floodplain

Town of St. Paul Action Item	Develop and implement debris management program targeting stream banks at bridges
Hazard(s) Addressed	Flooding
Goal/Objective	2-E, 3-C
Priority	Medium
Estimated Cost	\$534,000
Potential Funding Sources	HMGP, General Funds
Potential Matching Sources	Local funds, In-kind match
Lead Department	Department of Town Administration
Implementation Schedule	6 months
Effect on Old Buildings	Could prevent flooding and disruption to transportation
Effect on New Buildings	None
Cost Effectiveness	Low compared to life safety benefits
Discussion	Town of St. Paul needs to ensure clear waterways in order to prevent buildup of debris and materials that could cause flooding and contribute to damage to bridges.

Town of St. Paul Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Department of Town Administration
Implementation Schedule	6 months – 18 months

Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	. Project outputs will guide development of future earthquake mitigation projects.

Town of St. Paul Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Department of Town Administration
Implementation Schedule	12-18 months
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

National Flood Insurance Program (NFIP) Compliance

St. Paul is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

CID	Community Name	County	Initial FHBM Identified	Initial FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
481318#	ST. PAUL, TOWN OF	COLLIN COUNTY	6/6/1978	4/2/1991	06/02/09(M)	8/12/2002	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Compliance

Once the community applies for the NFIP, FEMA arranges for a study of the community to determine base flood elevations and flood risk zones. Consultation with the community occurs at the start of and during the study, and those communities with minimal flood risk are converted to the Regular Program without a study.

FEMA provides the studied community with a Flood Insurance Rate Map delineating base flood elevations and flood risk zones. The community is then given 6 months to adopt base flood elevations in its local zoning and building code ordinances. Once the community adopts more stringent ordinances, FEMA converts the community to the NFIP's Regular Program. FEMA then authorizes the sale of additional flood insurance in the community up to the Regular Program limits. The community must implement and enforce the adopted floodplain management measures. FEMA provides periodic community assistance visits with local officials to provide technical assistance regarding complying with NFIP floodplain management requirements.

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
Town of St. Paul	Mayor	Taking action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning	No current areas of repetitive flooding. Floodplain Administrator will continue to monitor for any new flooding areas.	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with town's flood damage prevention order shall result in fines up to \$2000 per violation plus court costs.
		Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the Town of St. Paul. Collin County requires 2 feet of freeboard above the base flood elevation for the top of bottom floor on residential structures and non-residential structures that will be built on properties created or platted after the effective date of the Flood Damage Prevention Order	
		Future Mitigation Projects	The Town of St. Paul will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), the Town of St. Paul has developed a plan maintenance process which is described in the following paragraphs. The Town of St. Paul , along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by Collin County Commissioners Court, and formal adoption of the plan by City/Town Council by each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Plan would be implemented by the county and participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, the Town of St. Paul will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	Activity	Schedule
Town Secretary	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting them for approval. The plans will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms *(In compliance with 201.6(c)(4)(ii))*

Based on the requirements set forth in § 201.6(c)(4)(ii), the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for each jurisdiction was carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and planning committees will establish a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into the existing regional and local planning strategies.

Local and regional planning committees currently use comprehensive land use planning, capital improvements planning, and building code ordinances to guide development. The mitigation strategy, goals, objectives and actions outlined in this plan will be integrated into these existing mechanisms as applicable. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdiction	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
Town of St. Paul	Mayor, Town Council	Budget Meetings	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
		Emergency Action Plan updates	Every Five Years	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
		Floodplain ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
		Capital improvement plans	As Needed	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
		Drought Contingency plans	As needed	Integrate drought actions such as xeriscaping, water restrictions, and public education
		Natural Resource Conservation Plan	As Needed	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the St. Paul Hazard Mitigation Planning Committee considers this HazMAP, including development and maintenance, to be the primary vehicles to ensure implementation of local hazard mitigation actions.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

The process described here is the same as was used since the last planning update.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committee will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participants.

Annex T: City of Wylie



contains capability assessment information, a specific vulnerability assessment, and a complete mitigation strategy. The methodology and process for developing this annex are explained throughout the following sections.

1. Introduction

This annex was prepared in 2020 as part of an update to the Collin County Multi-Jurisdictional Hazard Mitigation Action Plan. This plan updates the Wylie hazard mitigation plan submitted to FEMA as part of the 2016 Collin County plan. The City of Wylie participated in the Collin County Hazard Mitigation Planning Team (HMPT) for this update. In addition to the countywide hazards and strategies discussed in the main plan, this annex serves as a complete hazard mitigation planning tool for the City of Wylie. It

2. Plan Development and Adoption Process

In order to apply for federal aid for technical assistance and post-disaster funding, local jurisdictions must comply with Part 201.3 of the Disaster Mitigation Act of 2000 implemented in the Federal Code of Regulations 44 CFR Part 201.6. While the City of Wylie has historically implemented measures to reduce their vulnerability to hazards, passage of DMA 2000 helped Wylie officials to recognize the benefits of a long-term approach to hazard mitigation, which achieves a gradual decrease of impacts associated through the implementation of a Hazard Mitigation Plan. Collin County's Hazard Mitigation Action Plan represents the collective efforts of all participating jurisdictions, the general public, and stakeholders.

Organizing the Planning Effort

A comprehensive county approach was taken in developing the plan. An open public involvement process was established for the public, neighboring communities, regional agencies, businesses, academia, etc. to provide opportunities for everyone to become involved in the planning process and to make their views known. The meetings were advertised with notices in public places, including online. In accordance with Part 201.6(c)(5) of the Disaster Mitigation Act of 2000 (DMA 2000), Collin County developed this Hazard Mitigation Action Plan. This plan identifies hazards and mechanisms to minimize future damages associated with these hazards, which threaten Collin County and its jurisdictions.

Existing Data and Plans

Existing hazard mitigation information and other plans were reviewed during the development of the Hazard Mitigation Action Plan. GIS, statistical and qualitative data was gathered through numerous sources. The table below outlines the sources of data for the plan:

Table 2.1 Plan Source Data

Source	Data
City and County Appraisal Data 2020	Population and demographics
Regional Hazard Assessment Tool	Hazard occurrences
National Center for Environmental Information (NCEI)	Hazard occurrences
Texas Forest Service/Texas Wildfire Risk Assessment Summary Report	Wildfire Threat and Wildland/Urban Interface
National Inventory of Dams	Dam Information

Planning Committee

This Hazard Mitigation Action Plan was developed by the City of Wylie Hazard Mitigation Planning Committee, with support of the North Central Texas Council of Governments and in conjunction with the Collin County HMPT.

The Collin County HMPT was assembled in November 2020 with representatives from participating jurisdiction planning committees, including mayors, police chiefs, fire chiefs, and the general public. Collin County acted as the plan development consultant providing hazard mitigation planning services; the efforts of the Wylie planning committee were led by the City of Wylie Emergency Management Coordinator.

Table 2.2 Hazard Mitigation Committee – Primary Representatives

Representing	Position	Role
City of Wylie	Emergency Management Coordinator	Information Collection
City of Wylie	City Engineer	Floodplain Manager
	Building/Planning	Information Collection
Collin County	Emergency Management Coordinator	General Assistance

Collin County served as the coordinator and lead agency for all jurisdictions by accomplishing the following activities through the planning process:

- Assigned the County's Assistant Emergency Management Coordinator to provide technical assistance and necessary data to the planning committee.
- Scheduled, coordinated, and facilitated community meetings with the assistance of the HMPT and the planning committees.
- Provided any necessary materials, handouts, etc. for public planning meetings.
- Worked with the HMPT and planning committees to collect and analyze data and develop goals and implementation strategies.
- Prepared, based on community input and planning team/committee direction, the first draft of the plan, and provided technical writing assistance for review, editing and formatting.
- Coordinated with the stakeholders within the jurisdictions and the unincorporated areas of Collin County during plan development.

Each of the individual jurisdictions participated in accomplishing similar activities associated with development of the plan as follows:

- Coordinated input from representatives of neighborhood stakeholder groups and provided a representative to the County HMPT.
- Attended regular meetings of the planning team as coordinated by Collin County.
- Assisted Collin County staff with identifying hazards and estimating potential losses from future hazard events.
- Assisted Collin County in developing and prioritizing mitigation actions to address the identified risks.
- Assisted Collin County in coordinating public meetings to develop the plan.
- Identified the community resources available to support the planning effort.

- Worked for the support of neighborhood stakeholders for the recommendations resulting from the planning process.
- Submitted the proposed plan to all appropriate departments for review and comment and worked with Collin County to incorporate the resulting comments into the proposed plan.

External stakeholders involved in reviewing the Collin County Hazard Mitigation Action Plan:

Table 2.3 External Stakeholders

Representing	Position	Role
Lakepointe Hospital	Representative	Review of plan
Wylie ISD	Representative	Review of plan
First Baptist Church Wylie	Representative	Review of plan

Subsequent to the State of Texas and FEMA approval of the plan, each organization also is committed to accomplishing the following activities:

1. Appoint members to a coordinating committee to monitor and work toward plan implementation.
2. Publicize the plan to neighborhood interests and ensure that new community members are aware of the plan and its contents.
3. Monitor progress in achieving the plan's goals through regular maintenance and implementation projects.

Planning Meetings

During the planning process, the HMPT met to obtain relevant information from the participating jurisdictions and to discuss the objectives and progress of the plan. The objectives of these meetings were to gather information and to provide guidance for each jurisdiction throughout the planning stages.

The following meetings were held by Collin County and included all jurisdiction's participation:

- Collin County HazMAP Kickoff Meeting – August 12, 2020
- Collin County Planning Meeting – November 11, 2020
- Collin County Planning Meeting – June 12, 2021
- Collin County HazMAP Public Meeting – 11/2/2021 at 2PM
- Collin County HazMAP Public Meeting – 01/12/2022 a 9AM

Public Involvement

Support from the community is vital for any successful hazard mitigation plan. The HMPT and planning committee provided opportunities, announced through public communication means, for public participation and input throughout the planning process prior to this draft and before approval of the finalized plan. Advertisement and sign in sheets for these meetings are located in Appendix A.

- The first public meeting was held on November 2, 2021 at 2PM, and advertised on the Collin County website along with other jurisdictional websites inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to comment. The meeting was held virtually via WebEX.

- A second public meeting was held on January 12, 2022 at 9AM. Announcements were placed on jurisdictions websites, including Collin County inviting the public, neighboring communities, local business, academia, agencies, and nonprofits to view and comment on the HazMAP prior to plan submission.

There were no comments directly related to the mitigation plan received from citizens, non-profits, businesses, academia, or interested parties; therefore, no feedback was incorporated.

An additional opportunity for the public to comment on the plan will be held prior to formal plan adoption.

This provided all citizens, stakeholders, neighboring communities, agencies, businesses, academia, non-profit organizations, and all interested parties an opportunity to be involved in the planning process and to take part in the decisions making process that affect the future of the communities that they live in.

3. Jurisdictional Hazard Identification and Risk Assessment

The Hazard Mitigation Planning Committee for the City of Wylie identified several natural and man-made hazards that could affect the city. The committee decided to focus on the natural hazards identified in Section 5 of this update. This was done after reviewing the 2016 HazMAP, the State of Texas Hazard Mitigation Plan, as well as other sources such as federal and state agencies. The hazards were ranked using the Priority Risk Index.

Priority Risk Index

A Priority Risk Index (PRI) was developed with the purpose of categorizing potential hazards for Collin County and ranks each hazard as high, moderate, low, or negligible to no risk. The hazard classification generated through the use of the PRI allows for the prioritization of those high hazard risks for mitigation planning purposes, and more specifically, the identification of hazard mitigation opportunities for Collin County jurisdictions to consider as part of their proposed mitigation strategy.

The PRI is used to assist all jurisdictions participating in the Collin County HazMAP in determining which hazards pose the most significant threat based on a variety of factors. The PRI is not scientifically based, but is rather meant to be utilized as an objective and systematic planning tool for classifying and prioritizing hazard risks in Collin County based on standardized criteria. The PRI results in numerical values that allow identified hazards to be ranked against one another. The sum of all four categories equals the final PRI value, as shown below:

$$\text{PRI Value} = (\text{Probability} \times .30) + (\text{Life Impact} \times .35) + (\text{Property Impact} \times .25) + (\text{Spatial Extent} \times .10)$$

The higher the PRI value, the greater the hazards risk. These values were obtained by assigning varying degrees of risk to four categories for each hazard: Probability, Life Impact, Property Impact, and Spatial Extent (*Table 3.1*). Each category has been assigned an Index Value (0 to 3) and a Weighing Factor (0 – 100%). These values may be adjusted during future plan updates. In order to evaluate the risk of each hazard, the assigned PRI Value for each category is multiplied by the weighing factor. Then, the PRI for each hazard is calculated by adding the product obtained in each category. According to the weighing scheme applied for Collin County, the highest possible PRI value is 3.0. The PRI calculations are presented in *Table 3.2*. *Table 3.1* breaks down the value of each category.

Table 3.1 Priority Risk Index Value

Assigned Weighing Factor	PRI Category	Degree of Risk		
		Level	Criteria	Index Value
30%	Probability	Unlikely	Less than 1% annual probability	0
		Possible	Between 1 and 10% annual probability	1
		Likely	Between 10 and 100% annual probability	2
		Highly Likely	100% annual probability	3
35%	Life Impact	Minor	Very few injuries, if at all none	0
		Limited	Minor Injuries	1
		Critical	Multiple deaths/injuries	2
		Catastrophic	High number of deaths/injuries	3
25%	Property Impact	Minor	Only minor property damage and minimal disruption of life. Temporary shutdown of critical facilities.	0
		Limited	More than 10% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one day.	1
		Critical	More than 25% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for more than one week.	2
		Catastrophic	More than 50% of property in affected area damaged/destroyed. Complete shutdown of critical facilities for 30 days or more.	3
10%	Spatial Extent	Negligible	Less than 1% of area affected	0
		Small	Between 1 and 10% of area affected	1
		Moderate	Between 10 and 50% of area affected	2
		Large	Between 50 and 100% of area affected	3

Table 3.2 Priority Risk Index for the City of Wylie

Hazard	Category/Degree of Risk				
	Probability Index Value (0 - 3 30%)	Life Impact Index Value (0 - 3 35%)	Property Impact Index Value (0 - 3 25%)	Spatial Extent Index Value (0 - 3 10%)	PRI Value 2021
Dam Failure	1	0	0	0	0.3
Drought	2	0	1	3	1.15
Earthquake	0	1	0	1	0.45
Expansive Soils	2	0	0	1	0.7
Extreme Heat	1	1	0	3	0.95
Flooding	1	1	0	1	0.75
Hail	2	0	1	2	1.05
High Winds	1	0	0	1	0.4
Lightning	2	1	0	0	0.95
Tornado	2	2	2	2	2
Wildfire	1	0	0	0	0.3
Winter Storms	2	0	1	3	1.15

The conclusions drawn from the hazard profiling process for the city of Wylie resulted in the classification of risk for each identified hazard according to four categories: High Risk, Moderate Risk, Low Risk, and Negligible to No Risk (*Table 3.3*). For purposes of these classifications, risk is expressed in relative terms according to the probability of occurrence and estimated impact that a hazard will have on human life and property in the city of Wylie.

Table 3.3 Hazard Rankings City of Wylie

High Risk (PRI 2 - 3)	Tornado
Moderate Risk (PRI 1.01 -1.9)	Hail Winter Storms
Low Risk (PRI 0.50 – 1)	Drought Lightning Expansive Soils Extreme Heat Flooding
Negligible to No Risk (PRI 0 – 0.49)	Earthquake Dam Failure Wildfire High Winds

Changes in Development and Priorities (Requirement §201.6(d)(3))

The City of Wylie was a participating jurisdiction in the 2016 Collin County Hazard Mitigation Action Plan. Since then, Wylie has completed several of their original action items, in an effort to lower vulnerability on populations and property from natural hazards. The following actions, sorted by type of action, have had a direct impact on lowering vulnerability:

- Natural Systems Protection
- Local Rules and Regulations
 - Maintained continued NFIP compliance through continued enforcement and compliance with city ordinance.
 - Expanded early warning sirens and local warning system to notify the public of impending severe weather to reduce the loss of life and mitigate the effects of the hazards.

The City of Wylie is continuously working to increase their outdoor warning system to accommodate expanding areas. The development and implementation of these projects have directly led to lower vulnerability for residents and property located in Wylie. A NexGEN software upgrade has been completed and two new outdoor warning sirens are scheduled for installation by fall of 2021 with more to follow along with siren upgrades.

As of January 1, 2015 the official population was 45,000 and the current population is 56,376. Housing units have increased from approximately 14,971 to 19,113. Enrollment in Wylie IDS rose from 14,426 in 2015 to approximately 18,300 for the 2021 school year.

The City of Wylie has new developments that include Collin College, an apartment complex, Holiday Inn Express, La Quinta, Whataburger, Chik-Fil-A, new subdivisions, expansions of existing subdivisions, various retail and an assisted living facility.

Planned development for the City of Wylie includes Wylie Fire Rescue Station #4, an expansion of the KCS yard, an apartment complex, and various retail.

New priorities are noted and ranked in each new action item, Section 6. Except for actions completed or cancelled, other priorities remain the same as in the previous version of this plan.

Vulnerability Narratives

This annex focuses on specific areas of vulnerability the City of Wylie faces with each hazard. The hazards identified in the main plan are all addressed in this annex, therefore the natural hazards rated negligible to no risk are included, described, and considered for mitigation in this plan.

Dam and Levee Failure The City of Wylie borders along the southern and western area of Lake Lavon including just west of the Lake Lavon Dam. Lake Lavon is owned and managed by the Army Corps of Engineers. In the event of a worst case scenario dam failure the inundation zone does not affect the City of Wylie. This was tested in a joint exercise with the Army Corps of Engineers. The land south of Lake Lavon Dam is the spillway then it leads to the next lake which is Lake Ray Hubbard. Therefore the City of Wylie is not considered to be at risk for dam failure although unincorporated areas served by Wylie Fire Rescue may be, so inundation studies will be considered. Muddy Creek Dam is owned by the City of Wylie and is located west of Country Club Road across from the Municipal Complex. Any breach of this dam would flow southeast towards FM 544 and may have an effect on businesses and some residences depending on capacity. This inundation would possibly have an effect on the neighboring jurisdictions of

Sachse and Rowlett. This would be a low risk as it would not affect a high population but could still cause damage for some businesses/residents.

Drought Drought has the potential to impact the entire planning area equally; all improved property, emergency facilities, critical facilities, critical infrastructure, and the entire population of Wylie are vulnerable to this hazard. Foundations of all buildings are vulnerable; however, older structures, or those built under less stringent foundation code requirements are most vulnerable. Lake Lavon, Lake Texoma, Lake Tawakoni, Lake Fork and the Lake Chapman-Cooper reservoir system are water sources for the City of Wylie and are vulnerable to drought. In turn, the city's population, wildlife and vegetation are vulnerable. Lower income populations who may not have the resources to buy containerized water in the event of a shortage may be more vulnerable than other populations.

Earthquake All properties and populations have the potential to be vulnerable to earthquakes. Buildings constructed under older building codes, aging underground infrastructure, and roads are most vulnerable to damages from seismic activity.

Expansive Soils All properties have the potential to be vulnerable to expansive soils, especially those constructed under older building codes.

Extreme Heat Extreme heat generally affects the entire population, but the homeless, very young, elderly, and populations without air conditioning are most vulnerable.

Flooding This hazard was identified as having low risk to the City of Wylie. Areas that are prone to flash flooding are: the S curve on McMillan Rd off of Country Club and Sachse Rd at Creek Crossing on the border of Wylie and Sachse.

Hail Hail storms are common during the severe weather months within "tornado alley." It is common for roofs of houses and vehicles to suffer damage from the occasional hail storm. All properties and populations have the potential to be vulnerable to hail. Exposed populations, manufactured homes, and older properties are most vulnerable.

High Winds High Winds are common during the severe weather months within "tornado alley". It is common for fences and trees to suffer damage from the occasional high wind storm. All properties and populations have the potential to be vulnerable to high winds, manufactured homes and exposed populations are most vulnerable.

Lightning All properties and populations have the potential to be vulnerable to lightning. Property without lightning protection and exposed populations are most vulnerable.

Tornado The City of Wylie is within "tornado alley", therefore, there is the potential for a tornado to occur. All properties and populations have the potential to be vulnerable to tornadoes, manufactured homes and exposed populations are most vulnerable.

Wildland Fire This hazard was identified as having minimal or low risk to the City of Wylie. According to data by the Texas Forest Service, it is estimated that 38.07% percent of Wylie's population lives within the WUI which is located primarily in the southern part of the city.

Winter Storms Texas is greatly affected by winter storms because this is not a common occurrence as in some states. Heavy ice and snow can cause loss of power for an extended amount of time as well as transportation issues which impact life safety. Freezing temperatures and blowing winds can also contribute to life safety issues as well as property damage. Vulnerable populations include the homeless, elderly, and those without access to heat. Critical facilities are also at risk.

Identification of Assets and Vulnerability Assessment

An inventory of Wylie's geo-referenced assets was created in order to identify and characterize property and population potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are located in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. For this assessment, five categories of assets were evaluated using Geographic Information System and statistical analysis. The five categories of vulnerable assets include:

- **Population**: Includes the number of people residing in Collin County jurisdictions as delineated by U.S. Census 2020 block data provided by NCTCOG.
- **Improved property**: Includes all developed properties according to local parcel data from the Collin County Central Appraisal District. The information has been expressed in terms of the total assessed value of improvements that may be exposed to the identified hazards.
- **Emergency facilities**: Includes fire stations, police stations and hospitals, provided by the Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.
- **Critical facilities**: Includes schools and historic places provided by Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions. These are non-emergency facilities, but still provide critical services and functions for vulnerable sectors of the population.
- **Critical infrastructure**: Includes airports, natural gas facilities, wastewater facilities, potable water treatment facilities, wastewater treatment facilities, dams, and bridges. Data for all critical facilities was obtained from Regional Hazard Assessment Tool, Collin County Emergency Management Coordinator, and participating jurisdictions.

The following tables provide a breakdown by municipal jurisdiction of the geo-referenced assets that were used for the vulnerability assessment.

Population

According to the US Census Bureau, the total population of the City of Wylie in 2020 was 53,067 people, with 19,113 households. The count breakdown by municipal jurisdiction is provided in *Table 3.4*.

Table 3.4 Collin County Population Counts

Jurisdiction	Population			Households		
	Population	% of County Total	Population Density (Sq. Mile)	Household	% of County Total	Household Density (Sq. Mile)
Wylie	53,067	4.44%	1340.36	17,084	4.44%	471.96

Source: US Census Bureau & Collin County Appraisal District

Table 3.5 summarizes population counts and population change (absolute and percent predictions for Collin County).

Table 3.5 Population Predictions

Jurisdiction	Population 2010 Census	Population 2018 Estimate	Population 2019 Estimate	Absolute Change 2018-2019	Percent (%) Change 2018-2019
Wylie	41,427	49,500	51,730	2,230	4.51%

Source: 2020 NCTCOG Population Estimates

Property

There are an estimated 17,130 parcels in Wylie, with an estimated \$4,065,640,595 in total assessed value of, Table 3.6 lists the total number and percentage of parcels by jurisdiction.

Table 3.6 Parcel Counts and Improvements Value

Jurisdiction	Number of Parcels	% of County Total	Total Assessed Value of Improvements (Buildings)
Wylie	17,130	4.09%	\$4,065,640,595

Source: Collin County Appraisal District

Emergency Facilities

There are 5 identified emergency facilities in the City of Wylie, including 3 fire stations, 1 police station (including communications), and 1 hospital. Table 3.7 presents the distribution of emergency facilities by jurisdiction. Geographic coordinates were used to determine the location of each facility.

Table 3.7 Emergency Facilities

Jurisdiction	Fire Stations	Police Stations	Hospitals
Wylie	3	1	1

Source: County Data and Regional Hazard Assessment Tool

Critical Facilities

There are 29 critical facilities, which are considered non-emergency in Wylie. The critical facilities include 20 schools and 9 historical property sites (Table 3.8). Geographic coordinates (i.e., latitude and longitude) were used to determine the location of each facility.

Table 3.8 Critical Facilities

Jurisdiction	Schools	Historical Property
Wylie	20	9

Source: Local jurisdictions

Critical Infrastructure

There are two identified critical infrastructure facilities in Wylie, including zero airports, zero natural gas facilities, one water treatment facilities, one wastewater treatment facilities, two dams, and zero railway/highway bridges (*Table 3.9*).

Table 3.9 Critical Infrastructure

Jurisdiction	Airports	Natural Gas Facilities	Wastewater Treatment Facilities	Potable Water Treatment Facilities	Dams	Railway/ Highway Bridges
Wylie	0	0	1	1	2	0

Source: Local jurisdictions

Methodology

Based on the type of information available for analysis, Collin County's vulnerability assessment was conducted using two distinct methodologies, a Geographic Information System-based analysis and a statistical risk assessment methodology. Each approach provides estimates for the potential impact of hazards by using a common, systematic framework for evaluation of historical occurrence information provided by National Centers for Environmental Information, the Texas Forest Service, and the FEMA Resilience and Planning Tool. The results of the vulnerability assessment are provided by jurisdiction for each hazard analyzed.

Of the 12 hazards evaluated for Collin County, four were analyzed using a Geographic Information System-based analysis, 5 using a statistical risk assessment methodology, and the remaining 3 using qualitative analysis. Qualitative analysis was used due to lack of information, the inability to define specific areas of risk, and/or inexistence of historical records. Additional information regarding these 3 hazards is unattainable at the present time; studies to address this data deficiency are noted as action items in this update. *Table 3.10* summarizes the methodology used for each hazard.

Table 3.10 Analysis used for Vulnerability Assessment Collin County

Hazard	Geographic Information System-based Analysis	Statistical Analysis	Qualitative Analysis
Dam Failure			X
Drought	X		
Earthquake			X
Expansive Soils			X
Extreme Heat		X	
Flooding	X		
Hail	X		

Collin County Hazard Mitigation Action Plan

High Winds		X	
Lightning		X	
Tornado		X	
Wildfire	X		
Winter Storms		X	

Summary of Vulnerability Assessment

A summary of the vulnerability assessment for each hazard using geographic and statistical analysis is presented in the following pages. The detailed assessment is presented in the following sections.

Summary Table 3.11

Drought	
Population	According to National Centers for Environmental Information (NCEI) no recorded injuries or fatalities have been recorded for drought events. There are no personal losses expected from drought events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Wylie are expected but financially unknown due to lack of accurate reporting; however county-wide property loss is estimated at \$21,208.33 per year. Historical data indicates that crop losses in the City of Wylie are expected mostly during water shortages, financially unknown due to lack of accurate reporting however county-wide crop loss is estimated to be \$58,916.67 per year.
Emergency Facilities	Because of the nature of this hazard, no losses are expected on emergency facilities but foundation issues could occur due to drought events.
Critical Facilities	Because of the nature of this hazard, no losses are expected on critical facilities but foundation issues could occur due to drought events.
Critical Infrastructure	Because of the nature of this hazard, no losses are expected on critical infrastructure but foundation issues and road degradation could occur due to drought events.

Summary Table 3.12

Extreme Heat	
Population	According to National Centers for Environmental Information (NCEI), there were four (4) county-wide fatalities recorded due to extreme heat, none from the City of Wylie. The City of Wylie and its population are vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to developed areas and the improved property in the City of Wylie is not vulnerable to this hazard.

Emergency Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings and the emergency facilities in the City of Wylie are not vulnerable to this hazard.
Critical Facilities	According to National Centers for Environmental Information (NCEI), there is no impact of extreme heat to buildings, and the critical facilities in the City of Wylie are not vulnerable to this hazard.
Critical Infrastructure	According to National Centers for Environmental Information (NCEI) there is no impact of extreme heat to critical infrastructure, and vulnerability to this hazard is considered minimal in the City of Wylie.

Summary Table 3.13

Flooding	
Population	Flooding produces an expected annualized count of zero (0) fatalities and injuries per year. Approximately 427 residential parcels in the City of Wylie are located within the 100-year floodplain.
Improved Property	There have been five (5) recorded flood events in the City of Wylie. Property losses are expected at \$2,800 per year however these values are underestimated due to lack of accurate reporting. No crop losses are expected or recorded. Approximately \$60,830,722 of the total assessed value is at risk from the 100-year storm event.
Emergency Facilities	Emergency facilities have the potential to be at risk in the 100-year storm event.
Critical Facilities	Critical facilities have the potential to be at risk in the 100-year storm event.
Critical Infrastructure	Critical Infrastructure has the potential to be at risk in the 100-year storm event.

Summary Table 3.14

Hail	
Population	According to the National Centers for Environmental Information (NCEI), no injuries or fatalities have been recorded for hailstorm events. There are no personal losses expected from hailstorm events.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Wylie are expected at \$7,573,171.43 per year however these values are underestimated due to lack of accurate reporting. All improved property is vulnerable to this hazard. Although some crops are susceptible to hail hazards, available historical data for Wylie indicates that there are no expected crop losses from this event.

Emergency Facilities	Because of the unpredictability of the geographical location of hailstorms, all emergency facilities in the City of Wylie are vulnerable to this hazard.
Critical Facilities	Because of the unpredictability of the geographical location of hailstorms, all critical facilities in the City of Wylie are vulnerable to this hazard.
Critical Infrastructure	Because of the unpredictability of the geographical location of hailstorms, all critical infrastructures in the City of Wylie are vulnerable to this hazard.

Summary Table 3.15

High Wind	
Population	According to the National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from high wind events. All the population of the City of Wylie are vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Wylie are expected at \$900 per year however these values are underestimated due to lack of accurate reporting. No crop losses resulted from this hazard in the City of Wylie.
Emergency Facilities	Because of the expected geographical widespread nature of high winds, all emergency facilities in the City of Wylie are vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of high winds, all critical facilities in the City of Wylie are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of high winds, all critical infrastructures in the City of Wylie are vulnerable to this hazard.

Summary Table 3.16

Lightning	
Population	According to the National Centers for Environmental Information (NCEI), there are no recorded injuries or fatalities from lightning events. All the population of the City of Wylie are vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Wylie are expected but unknown due to lack of accurate reporting.
Emergency Facilities	Because of the expected geographical widespread nature of lightning, all emergency facilities in the City of Wylie are vulnerable to this hazard.

Critical Facilities	Because of the expected geographical widespread nature of lightning, all critical facilities in the City of Wylie are vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of lightning, all critical infrastructures in the City of Wylie are vulnerable to this hazard.

Summary Table 3.17

Tornado	
Population	According to National Centers for Environmental Information (NCEI), there have been no recorded injuries or fatalities from tornado events in the City of Wylie. All the population of the City of Wylie is exposed and vulnerable to this hazard.
Improved Property	According to National Centers for Environmental Information (NCEI), an average loss of \$7,142.86 per year in property losses is expected to result from tornado events. No crop losses are expected from this hazard in the City of Wylie.
Emergency Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all emergency facilities in the City of Wylie are exposed and vulnerable to this hazard.
Critical Facilities	Because of the impossibility to predict the geographical area of impact for tornados, all critical facilities in the City of Wylie are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the impossibility to predict the geographical area of impact for tornados, all critical infrastructures in the City of Wylie are exposed and vulnerable to this hazard.

Summary Table 3.18

Wildfire	
Population	Based on geographical data, approximately 38.07% of the City of Wylie is vulnerable to wildfires. There have been no recorded injuries or fatalities due to wildfires.
Improved Property	Based on historical data, annual financial losses expected from property loss due to wildfires are unknown due to lack of accurate reporting; therefore, the percentage of the overall property improvement values across the City of Wylie are also unknown.
Emergency Facilities	Based on geographic information there are two fire stations, one police station, and one hospital at risk from wildfire events.
Critical Facilities	Based on geographic information there are 17 schools and 15 historical properties at risk from wildfire events.

Critical Infrastructure	Based on geographic information there are no bridges, no dams, one wastewater treatment facility, and no water treatment facility at risk from wildfire events.
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Summary Table 3.19

Winter Storm	
Population	According to National Centers for Environmental Information (NCEI), there was one (1) county-wide fatality recorded due to winter storms, none from the City of Wylie. All the population of the City of Wylie are exposed and vulnerable to this hazard.
Improved Property	According to the National Centers for Environmental Information (NCEI), property losses in the City of Wylie are expected but unknown due to lack of reporting; however county-wide property loss is estimated at \$116,250 per year. No crop losses are expected from this hazard in the City of Wylie.
Emergency Facilities	Because of the expected geographical widespread nature of winter storms, all emergency facilities in the City of Wylie are exposed and vulnerable to this hazard.
Critical Facilities	Because of the expected geographical widespread nature of winter storms, all critical facilities in the City of Wylie are exposed and vulnerable to this hazard.
Critical Infrastructure	Because of the expected geographical widespread nature of winter storms, all critical infrastructures in the City of Wylie are exposed and vulnerable to this hazard.

4. Capability Assessment

The risk assessment and capabilities assessment serve as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the City of Wylie considered not only its level of hazard risk but also the existing capabilities to minimize or eliminate that risk.

Table 4.1 Legal and Regulatory Capability Summary

Legal and Regulatory Capabilities															
Jurisdiction	Building Code	Zoning Ordinance	Subdivision Ordinance or regulation	Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances wildfire ordinances, hazard setback requirements)	Growth management ordinances (also called "smart Growth" or anti-sprawl programs)	Site Plan review requirements	General or comprehensive plan	A capital improvements plan	An economic development plan	An emergency response plan	A post-disaster recovery plan	A post-disaster recovery ordinance	Real estate disclosure requirements	Other	% Yes per Jurisdiction
Wylie	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	N	71%
Average % Yes Capabilities – 71%															
Y- Yes N- No ?- Don't Know															

Table 4.2 Administrative and Technical Capability Summary

Administrative and Technical Capabilities											
Jurisdiction	Planner(s) or engineer(s) with knowledge of land development and land management	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Planners or engineer(s) with an understanding of natural and/or human caused hazards	Floodplain manager	Surveyors	Staff with education or expertise to assess the community's vulnerability to hazards	Personnel skilled in GIS	Scientists familiar with the hazards of the community	Emergency manager	Grant writers	% Yes per Jurisdiction
Wylie	Y	Y	Y	Y	N	Y	Y	N	Y	Y	80%
Average % Yes Capabilities – 80%											
Y- Yes N- No ?- Don't Know											

Table 4.3 Fiscal Capability Summary

Fiscal Capabilities											
Jurisdiction	Community Development Block Grants (CDBG)	Capital improvements project funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas, or electric service	Impact fees for homebuyers or developers for new developments/homes	Incur debt through general obligation bonds	Incur debt through special tax bonds	Incur debt through private activity bonds	Withhold spending in hazard-prone areas	Other	% Yes per Jurisdiction
Wylie	N	Y	N	Y	N	N	N	N	Y	N	20%
Average % Yes Capabilities – 20%											
Y- Yes N- No ?- Don't Know											

To quantify Wylie's legal and regulatory, administrative and technical, and fiscal capabilities, an overall rating system was administered for each category: limited (0-30%), moderate (31-70%), and strong (70-

100%). Questionnaire responses indicated that on average, Wylie has 71.42% of identified legal and regulatory capabilities, 80% of identified administrative and technical capabilities, and 20% of identified fiscal capabilities.

Table 4.4 Administrative Information

Jurisdiction	Chief Administrative Officer	Ability to Implement Capabilities
City of Wylie	City Manager	The city manager, along with Directors (department heads), address the budget; pass ordinances and codes; hire staff; approve plans; and determine the direction of the city overall. As the governing body, the ability to implement and approve mitigation actions, expand mitigation activities and programs, and integrate mitigation into existing policies and programs is a function of this group.

Specific actions that can expand and improve existing capabilities, authorities, plans, policies, and resources for mitigation include: budgeting and passing policies and procedures, adopting and implementing stricter mitigation regulations, approving the hiring and training of staff for mitigation activities, and approving mitigation updates and additions to existing plans as new needs are recognized.

5. Mitigation Strategies

Based on the results of the risk and capability assessments, and reviews of the goals and objectives included in the 2016 HazMAP, the Wylie Hazard Mitigation Planning Committee developed mitigation strategies for the plan update.

Goal 1 Reduce or eliminate loss of life, injuries and property damage resulting from severe weather events.

Objective 1-A Provide adequate warning and communication before, during, and after a hazard event.

Objective 1-B Expand and coordinate early warning systems currently in use.

Objective 1-C Reduce or eliminate loss of life and property damage from tornadoes through the construction and use of safe rooms or shelter areas.

Goal 2 Protect existing and new properties from the effects of all natural hazards.

Objective 2-A Conduct studies to determine hazard and vulnerability threat assessment for all natural hazards.

Objective 2-B Rehabilitate or retrofit identified high hazard critical infrastructure.

Objective 2-C Enact and enforce regulatory measures that enforce hazard mitigation measures.

Objective 2-D Construct enhancements or additions to current and new facilities which mitigate the effects of natural hazards.

Objective 2-E Maintain NFIP compliance, storm water management, and implement drainage projects.

Goal 3 Reduce losses and repetitive damages for chronic hazard events.

Objective 3-A Conduct a hazard/vulnerability assessment of personal properties and structures located in flood zones.

Objective 3-B Develop and implement a buyout program for those personal properties and structures located in high hazard flood zones starting with those that are most vulnerable to life and property loss.

Objective 3-C Develop and execute new programs which identify and reduce threats from natural hazards.

Goal 4 Develop public education campaigns to disseminate information about actions to mitigate potential loss of life, injuries and property damage resulting from natural hazards.

Objective 4-A Educate the public on risks, threats, and vulnerability from all natural hazards.

Objective 4-B Educate the public on actions they can take to prevent or reduce the loss of life or property from all natural hazards.

Objective 4-C Develop and implement a community education campaign to heighten public awareness about chronic flooding and options for insurance coverage to protect their personal properties as well as long term benefits from a buyout program.

6. Action Items

Below is a list of the new and deferred action items identified for the HazMAP Update. Each of the actions in this section were prioritized based on FEMA's STAPLEE criteria, which includes considering the social, technical, administrative, political, legal, economic and environmental factors necessary for the implementation of each action. As part of the STAPLEE analysis economic considerations were weighed for each action. The STAPLEE was used for the 2016 Plan along with the 2021 Update. Priority rankings are classified as indicated in the table below.

Priority	Description
High	Benefits of mitigating risk of death or severe bodily injury outweigh costs to implement actions rated as high priorities.
Medium	Reducing vulnerability to threats and the resulting improvement in quality of life and peace of mind are benefits for actions rated as medium priorities.
Low	Awareness of low risk/low impact hazards offer benefits of time to assess, plan and integrate low priority mitigation actions as time, need, and funding permit.

City of Wylie Action Items: Deferred from 2016 Plan

City of Wylie Action Item	Add outdoor warning sirens to meet the needs of the growing population in newly developed areas and/or subdivisions.
Hazard(s) Addressed	Tornado, Hail, High Winds, Dam Failure, Lightning, Flooding, Wildfire
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$30,000 per siren
Potential Funding Sources	General Fund
Potential Matching Sources	None
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Outdoor warning systems will help alert the public to reduce personal and property damage before a disaster strikes.
Status	Two Sirens and software have been added or in the process of being added. Continue to add additional sirens as needed based on population needs.

City of Wylie Action Item	Adopt and implement water conservation regulations
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Collin County Hazard Mitigation Action Plan

Hazard(s) Addressed	Drought
Goal/Objective	2-C, 3-C
Priority	High
Estimated Cost	\$7,500 to \$15,000
Potential Funding Sources	General Fund
Potential Matching Sources	None
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Minimal compared to benefit to community
Discussion	This will mitigate drought conditions.
Status	Deferred – will be included in 2021 Plan

City of Wylie Action Item	Develop and implement a comprehensive public education program to educate on the actions to help mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Dam Failure, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	High
Estimated Cost	\$7,500-\$15,000
Potential Funding Sources	General Fund
Potential Matching Sources	None
Lead Department	Emergency Management
Implementation Schedule	2-3 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.
Status	Receive supplies and materials from the NCTCOG KnowWhat2do Program and provide to residents. Continue – will be included in 2021

City of Wylie Action Item	Develop and implement an extreme temperature program that provides resources and identifies locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D
Priority	Medium
Estimated Cost	\$10,000-\$15,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local funds, NPO donations, In-kind
Lead Department	Emergency Management, Planning
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of the program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold.
Status	Deferred – will be included in 2021 Plan

City of Wylie Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Watershed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind
Lead Department	Planning and Zoning/ NRCS, Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.

Collin County Hazard Mitigation Action Plan

Status	Deferred – will be included in 2021 Plan
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City of Wylie Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.
Status	Deferred – will be included in 2021 Plan

City of Wylie Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds
Lead Department	Emergency management, Public works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.

Collin County Hazard Mitigation Action Plan

Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.
Status	Deferred – will be included in 2021 Plan

City of Wylie Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information
Status	Deferred – will be included in 2021 Plan

City of Wylie Action Items: New

City of Wylie Action Item	Add outdoor warning sirens to meet the needs of the growing population in newly developed areas and/or subdivisions.
Hazard(s) Addressed	Tornado, Hail, High Winds, Dam Failure, Lightning, Flooding, Wildfire
Goal/Objective	1-A, 1-B
Priority	High
Estimated Cost	\$30,000 per siren
Potential Funding Sources	General Fund
Potential Matching Sources	None
Lead Department	Emergency Management
Implementation Schedule	2-5 years

Collin County Hazard Mitigation Action Plan

Effect on Old Buildings	None
Effect on New Buildings	None
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Outdoor warning systems will help alert the public to reduce personal and property damage before a disaster strikes. This action item would be specific to installation/placement of new OWS sirens in the jurisdiction.

City of Wylie Action Item	Adopt and implement water conservation regulations
Hazard(s) Addressed	Drought, Expansive Soils
Goal/Objective	2-C, 3-C
Priority	High
Estimated Cost	\$7,500 to \$15,000
Potential Funding Sources	General Fund
Potential Matching Sources	None
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Will identify need for retrofits, such as low-flow plumbing
Effect on New Buildings	May require new codes for low-flow plumbing and foundation integrity
Cost Effectiveness	Minimal compared to benefit to community
Discussion	This will mitigate drought conditions. When water is conserved and not used for landscape during droughts, this would provide water for homeowners to use, through drip irrigation, to keep their foundations at a consistent saturation level, mitigating the impacts of drought and lack of water.

City of Wylie Action Item	Develop and implement a comprehensive public education program to educate on the actions to help mitigate the impacts of each identified hazard.
Hazard(s) Addressed	Tornado, Hail, Winter Storms, High Winds, Dam Failure, Lightning, Expansive Soils, Extreme Heat, Earthquake, Flooding, Wildfire, Drought
Goal/Objective	4-A, 4-B, 4-C
Priority	High
Estimated Cost	\$7,500-\$15,000
Potential Funding Sources	General Fund
Potential Matching Sources	None
Lead Department	Emergency Management

Collin County Hazard Mitigation Action Plan

Implementation Schedule	2-3 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
Effect on New Buildings	Depending on mitigation actions taken for structures, can make new building safer, stronger and less vulnerable to damages
Cost Effectiveness	Minimal compared to preservation of life safety
Discussion	Public education can help educate the public to reduce personal and property damage during disasters. Program will include information about hazard mitigation.

City of Wylie Action Item	Develop and implement an extreme temperature program that provides resources and identifies locations for vulnerable residents to go to during periods of extreme temperatures.
Hazard(s) Addressed	Extreme Heat, Winter Storms
Goal/Objective	2-D
Priority	Medium
Estimated Cost	\$10,000-\$15,000
Potential Funding Sources	HMGP, PDM
Potential Matching Sources	Local funds, NPO donations, In-kind
Lead Department	Emergency Management, Planning
Implementation Schedule	1-2 years
Effect on Old Buildings	Could require retrofit to accommodate required space and resources
Effect on New Buildings	May entail enhanced construction materials
Cost Effectiveness	Cost to implement this program is low compared to the benefits of the program.
Discussion	Cooling shelters would allow special populations to reduce their vulnerability to extreme heat, as warming centers would aid residents in extreme cold.

City of Wylie Action Item	Hire consultant to complete new inundation studies of all high and moderate hazard dams.
Hazard(s) Addressed	Dam Failure, Flood
Goal/Objective	3-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	HMPG, Watershed Authorities, Dam Sponsors
Potential Matching Sources	Local Sponsors, In-Kind

Collin County Hazard Mitigation Action Plan

Lead Department	Planning and Zoning/ NRCS, Emergency Management
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will determine what mitigation actions are needed to protect existing buildings in inundation zones
Effect on New Buildings	Results will determine what mitigation actions are needed for new buildings in inundation zones
Cost Effectiveness	Low
Discussion	Dam Failure data deficiency identified in Chapter 3. Identify all structures and infrastructures that would be impacted by a potential dam failure.

City of Wylie Action Item	Conduct earthquake assessment study to determine potential for earthquakes to affect public facilities and utilities.
Hazard(s) Addressed	2-A
Goal/Objective	Earthquake
Priority	Low
Estimated Cost	\$20,000
Potential Funding Sources	HMGP
Potential Matching Sources	Local Funds
Lead Department	Public Works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Results will help identify/define retrofits or additions to reduce vulnerability to earthquakes
Effect on New Buildings	Results will identify/define codes for new construction to reduce vulnerability to earthquakes
Cost Effectiveness	Low
Discussion	Project outputs will guide development of future earthquake mitigation projects.

City of Wylie Action Item	Conduct a soil analysis to determine the scope, impact, and extent of expansive soils
Hazard(s) Addressed	Expansive Soils
Goal/Objective	2-A
Priority	Low
Estimated Cost	\$10,000
Potential Funding Sources	Federal grants, state grants
Potential Matching Sources	Local funds

Collin County Hazard Mitigation Action Plan

Lead Department	Emergency management, Public works, Planning Zoning
Implementation Schedule	1-2 years
Effect on Old Buildings	Study would identify existing construction most at risk for expansive soil damage.
Effect on New Buildings	Study would be used to identify undeveloped areas at risk for expansive soil damage for real estate disclosure.
Cost Effectiveness	High. This study would lead to targeted mitigation projects to lower vulnerability to expansive soils.
Discussion	Study would be used to identify scope, impact, and extent of expansive soils throughout jurisdiction.

City of Wylie Action Item	Purchase and Distribute NOAA Weather Radios to Vulnerable Residents
Hazard(s) Addressed	Dam Failure, Drought, Earthquake, Expansive Soils, Extreme Heat, Flooding, Hail, High Winds, Lightning, Tornado, Wildfire, Winter Storms
Goal/Objective	1-A
Priority	High
Estimated Cost	\$75,000
Potential Funding Sources	Grant Funds, HMPG, PDM, Partial payment by receiving party
Potential Matching Sources	Local funds, in-kind, donations, citizen cost-share
Lead Department	Emergency Management
Implementation Schedule	2-5 years
Effect on Old Buildings	Depending on mitigation actions taken for structures, can make existing building safer, stronger and less vulnerable to damages through retrofits
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Cost Effectiveness	Advanced warning and mitigation information saves lives which outweighs the cost of a radio.
Discussion	Weather Alert Radios are a proven means to alert and warn citizens and provide information about severe weather as well as provide other emergency and hazard information

National Flood Insurance Program (NFIP) Compliance

Wylie is participating in the National Flood Insurance Program and has identified their respective areas as vulnerable to flooding. This is incorporated into all current and future planning for dealing with repetitive loss vulnerabilities.

Table 6.1 NFIP Compliance

CID	Community Name	County	Initial FHB Identified	Initial FIRM Identified	Curr Eff Map Date	Reg- Emer Date	Tribal
480759#	WYLIE, CITY OF	ROCKWALL COUNTY/DALLAS COUNTY/COLLIN COUNTY	11/12/1976	6/4/1980	7/7/2014	6/4/1980	No

Source: <http://www.fema.gov/cis/TX.html>

Jurisdiction Activities

In order to maintain eligibility with NFIP, jurisdictions are required to maintain their list of properties that hold a policy with NFIP, along with up-to-date maps of the floodplains in the jurisdictions. Each jurisdiction participating in the Collin County Hazard Mitigation Action Plan completes this basic requirement and has the information on file with the jurisdiction's designated floodplain manager. Using this plan, participating jurisdictions will be able to continue their compliance with NFIP by implementing damage control measures and to take action to minimize the effects of flooding in their respective jurisdictions.

Table 6.2 NIFP Activity

Jurisdiction	Community Floodplain Administrator	NFIP Activity	Activity Description	Enforcement
City of Wylie	City Engineer	Complete and maintain FEMA elevation certificates for pre-FIRM and or post-FIRM buildings	Permits are issued through the Building Dept. The City requires a residential structure to have the lowest floor elevated at least 2 feet above the base flood elevation. Non-residential is the same or be designed so that below the base flood level the structure is watertight with the walls substantially impermeable to the passage of water.	NFIP compliance is implemented and enforced through a process of floodplain identification using FEMA floodplain maps, permit issuance, building requirements, and compliance inspections pending approval. Failure to comply with City's flood ordinance can
		Floodplain development permits	Permits are required for any new construction in a floodplain.	
		Coordinate with FEMA in identifying	The City of Wylie attends meetings held by FEMA	

Collin County Hazard Mitigation Action Plan

		Special Flood Hazard Areas for future FIRM maps	and/or their contractors to better identify areas that are flood prone that are not shown on current Flood Insurance Rate Maps.	shall result in a fine up to \$2,000.
		Take action to minimize the effects of flooding on people, property, and building contents through measures including flood warning, emergency response, and evacuation planning	Maintain road closures to known flood prone areas. Use public outreach via Nixle for flash flood warnings.	
		Future Mitigation Projects	The City of Wylie will continue to monitor for new areas of flooding that have not been previously identified for mitigation.	

7. Plan Maintenance

Monitoring, Evaluating and Updating the Plan

In Compliance with requirement § 201.6(c)(4)(i), Collin County has developed a plan maintenance process which is described in the following paragraphs. Collin County, along with participating jurisdictions are responsible for monitoring implementation of the plan, executing a yearly evaluation of its effectiveness, and updating the plan within a 5-year cycle.

Following formal adoption by Collin County Commissioners Court, and formal adoption of the plan by City Council by each participating jurisdiction, the actions outlined in the Collin County Hazard Mitigation Plan would be implemented by the county and participating jurisdictions as described throughout this document.

The Collin County Emergency Management Coordinator, working in conjunction with the respective jurisdictions, will be responsible for ensuring the mitigation plan is monitored, evaluated, and reviewed on an annual basis. This will be accomplished by calling an annual meeting of the planning committee, whose members will provide assistance and expertise for plan review, evaluating, updating, and monitoring. This meeting will be open to the public and public notices will encourage community participation. During this annual meeting, Wylie will provide information on the implementation status of each action included in the plan. As part of the evaluation, the planning committee will assess whether goals and objectives address current and expected conditions, whether the nature and/or magnitude of the risks have changed, if current resources are appropriate for implementing the plan, whether outcomes have occurred as expected, and if agencies and other partners participated as originally proposed. These activities will take place according to the timetable presented below:

Table 7.1 Plan Maintenance Timeline

Personnel	Activity	Schedule
Emergency Management Coordinator	Monitoring Plan : Track implementation and action items, changes to risk assessment, changes to planning team members, changes to capabilities, plan integrations	Biannually
	Evaluate Plan: Assess effectiveness by evaluating completed actions, implementation processes, responsible personnel and lessons learned.	Annually
	Update Plan	Once every 5 years

At least once every five (5) years, or more frequently, if such a need is determined by the participating jurisdiction, the multi-jurisdictional plan will undergo a major update. During this process, all sections of the plan will be updated with current information, analyses done and new and/or modified mitigation action plans will be developed. The revised plan will be submitted for state and federal review and approval, and presented for approval to the Collin County Commissioner's Court and the respective councils of incorporated cities/towns included in the Collin County plan. Each participating jurisdiction will undertake the same process for reviewing, revising and updating their respective plans and submitting them for approval. The plans will be updated every five years in accordance with federal requirements.

Plan Incorporation into Existing Planning Mechanisms (*In compliance with 201.6(c)(4)(ii)*)

2016 Plan Incorporation: The vulnerability and capabilities assessments for each jurisdiction were carefully reviewed and considered when developing the mitigation actions for this plan. The HMPT and planning committees have established a process in which the mitigation strategy, goals, objectives and actions outlined in this plan will be incorporated into existing local planning strategies and mechanisms, as appropriate. Those mechanisms include the following:

Table 7.2 Plan Incorporation Mechanisms

Jurisdictions	Responsible Personnel	Jurisdictional Plans	Integration Schedule	Integration Plan
City of Wylie	City Council	Budget	Annually	Integration of mitigation projects identified in HazMAP, grants, and other fiscal allowances for mitigation actions and related costs
	Emergency Management Coordinator	Emergency Action Plan	Every Five Year	EAP Mitigation annex updates based on HazMAP HIRA; update preparedness, response and recovery actions related to identified hazards
	Designated Floodplain Manager	Floodplain Ordinances	As needed	Enhance mitigation of flood hazards using HazMAP flood data for floodplain management and community development.
	City Council, Director of Planning	Capital Improvement Plan	Annually	Strengthen critical infrastructure and key resources based on HazMAP hazard analysis, incorporate vulnerability data and action items.
	Public Works Director, City Council	Drought Contingency Plan	Assessed annually and updated as needed.	Integrate drought actions such as xeriscaping, water restrictions, and public education
	Planning Director, City Council	Natural Resource Conservation Plan	Assessed annually and updated as needed.	Integrate conservation measures by directing development away from hazard-prone areas identified in HazMAP.

Although it is recognized there are many possible benefits to integrating components of this HazMAP into other planning mechanisms, the Wylie Hazard Mitigation Planning Committee considers this HazMAP, including development and maintenance, to be the primary vehicle to ensure implementation of local hazard mitigation actions.

The process described here is the same as was used since the last planning update.

Continued Public Involvement (In compliance with 201.6(c)(4)(iii))

As stated in requirement § 201.6(c)(4)(iii) The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

To address this requirement, ongoing public participation will be encouraged throughout the entire planning and implementation process. A copy of the plan will be provided on the Collin County website. The planning team and committees will continue meeting on a regular basis to ensure the successful implementation of the plan and to discuss any additional issues regarding the emergency management of Collin County. The annual meetings for monitoring, evaluating, and updating the plan will be open to the public and public notices will encourage community participation.

Planning Process Documents

Public Meeting #1 Announcement

The screenshot shows the City of Princeton Texas website. The header includes navigation links for Business, Government, Departments, and How Do I... A search bar is also present. The main content area features a large announcement for the "Collin County Hazard Mitigation Action Plan Public Meeting #1" scheduled for November 2, 2021, from 2:00 PM to 3:30 PM. The announcement includes a registration link and a meeting information section.

Collin County Hazard Mitigation Action Plan Public Meeting #1

In Uncategorized

COLLIN COUNTY HAZARD MITIGATION ACTION PLAN PUBLIC MEETING #1 NOVEMBER 2, 2021 2:00PM - 3:30PM

The public is encouraged to attend the Public Meeting to discuss and review Collin County's Hazard Mitigation Plan.

All attendees must register to attend the meeting.

Registration Link: <https://collincountytx.webex.com/collincountytx/j.php?RGID=r15d6c29210f3161f0ca10409f2fb4f9>

More information: www.princeton.tx.gov

Meeting Information

Date: Tuesday, November 2nd

Time: 2:00PM - 3:30PM

Format: Virtual via WebEx

Registration Link: <https://collincountytx.webex.com/collincountytx/j.php?RGID=r15d6c29210f3161f0ca10409f2fb4f9>

Questions or issues: rgurney@co.collin.tx.us

Collin County Hazard Mitigation Plan: https://www.collincountytx.gov/emergency_management/Documents/CollinHazMAP2016.pdf

The screenshot shows the Collin County website. The header includes navigation links for ONLINE SERVICES, GOVERNMENT, PUBLIC SAFETY & COURTS, COUNTY DIRECTORY, and SERVICES. The main content area features a detailed announcement for the "Hazard Mitigation Plan virtual meeting Nov. 2". The announcement includes a description, meeting information, and a registration link.

COLLIN COUNTY
collincountytx.gov

Search...

ONLINE SERVICES **GOVERNMENT** **PUBLIC SAFETY & COURTS** **COUNTY DIRECTORY** **SERVICES**

Collin County > Government > Announcements > Announcement Details

Announcement Details

Title Hazard Mitigation Plan virtual meeting Nov. 2

Description Please join Collin County and participating cities within the County to provide input to our Hazard Mitigation Plan. The Hazard Mitigation plan identifies some of our natural hazards and possible actions to reduce or eliminate the impacts.

Everyone will need to register to receive the WebEx login information to attend.

Meeting Information

Date: Tuesday, November 2nd

Time: 2:00PM - 3:30PM

Format: Virtual via WebEx

Registration Link: <https://collincountytx.webex.com/collincountytx/j.php?RGID=r15d6c29210f3161f0ca10409f2fb4f9>

Questions or issues, contact Randall Gurney: rgurney@co.collin.tx.us

Expires 11/2/2021

Expires Attachments

Close

Collin County Government

- Collin County Overview
- Public Notices & Meetings
- Commissioners Court
- Commissioners Court Agendas
- Commissioners Court Videos
- General Announcements
- Elected Officials
- All Officials
- Boards and Commissions
- Open Government
- File a Public Information Request
- Court Services
- Sales Auctions
- How Do I
- Emergencies
- Holiday Closures
- Locations

Collin County Cities

- Chambers of Commerce
- Economic Development Corporations

Texas State Government

Federal Government

Announcements

Public Meeting #1 Attendees

Name	Email Address	City
Edie Sims	esims@blueridgecity.com	Blue Ridge
Alexa Bach	kyrosalexa@gmail.com	Plano
Simon Katz	skatz@parkertexas.us	Parker
Meredith Nurge	mnurge@co.collin.tx.us	Collin County
Amanda Meldrum	ameldrum@friscofire.com	Frisco
Janis Cable	jcable@lowrycrossingtexas.org	Lowry Crossing
Dustin Lankford	dlankford@princetontx.us	Princeton
Eric Everson	eeverson@celina-tx.gov	Celina
Kent Bauer	kbauer@prospertx.gov	Town of Prosper
Perry Elliott	pellott@murphytx.org	Murphy
Dustin Butler	dbutler@csmediatexas.com	Wylie
Elizabeth Carlberg	ecarlberg@co.collin.tx.us	McKinney
Adam Wilbourn	awilbourn@fairviewtexas.org	Fairview
Carol King	carol.king@newhopetx.gov	McKinney
Dustin Butler	dbutler@csmediatedas.com	Princeton
Lance Gant	lgant@lucastexas.us	Lucas
Kim Dobbs	kdobbs@lavontx.gov	Lavon
Tenishea Turner	tturner@princetontx.us	Princeton
Carl Nix	cnix@cityofmelissa.com	Melissa
Brittany Elliott	bellott@cityofmelissa.com	Melissa
Cody Nelson	cnelson@annatexas.gov	Anna
Jason Lane	jlane@friscofire.com	Frisco
Randall Gurney	rgurney@co.collin.tx.us	McKinney

Public Meeting #2 Announcement



Public Meeting #2 Attendees

Name	Email Address	City
Danny Anthony	danthony@lavontx.gov	Lavon
Danny Anthony	danthony@cityoflavon.gov	Lavon
Danny Anthony	danny.anthony@lavonvfd.org	lavon
Gina Zimmer	gzimmer@collincountytx.gov	
LeAnn Strait	townhall@stpaultexas.us	St Paul
Dustin Butler	dbutler@csmediatexas.com	Wylie
Connor Pittman	cpittman@csmediatexas.com	
Pandora Wilson	pawski1@gmail.com	McKinney
Adam Wilbourn	awilbourn@fairviewtexas.org	Fairview
Barry KOFFROTH	bkoffroth@gmail.com	PROSPER
Amy Bartley	abartley95@gmail.com	Prosper
Leigh Ann Nolen	lnolen@co.collin.tx.us	Collin County
Yoon Kim	ykim@co.collin.tx.us	McKinney
Elizabeth Carlberg	ecarlberg@co.collin.tx.us	McKinney
T Scally	wiztoms@hotmail.com	Princeton
Tom Harvey	tharvey@princetontx.us	Princeton
Dustin Lankford	dlankford@princetontx.us	Princeton
Carol King	carol.king@newhopetx.gov	New Hope
Kim Dobbs	kdobbs@lavontx.gov	LAVON
Amanda Meldrum	ameldrum@friscofire.com	Frisco
Jason Lane	jlane@friscofire.com	Frisco
Eric Everson	eeverson@celina-tx.gov	Celina
Lance Gant	lgant@lucastexas.us	Lucas
Randall Gurney	rgurney@co.collin.tx.us	McKinney

Meeting News Report



May 17, 2022

The Honorable Chris Hill
Judge, Collin County
2300 Bloomdale Rd.
McKinney, TX 75071

RE: Approvable Pending Adoption of Collin County, Texas Multi-Jurisdiction Hazard Mitigation Plan (HMP)

Funding Source: n/a

Judge Hill:

Congratulations! FEMA has concluded the review of the Collin County, Texas Multi-Jurisdiction HMP, and the plan is found to be approvable pending adoption. For this plan to receive final FEMA approval, the jurisdictions must adopt this plan and submit the complete adoption package to the state within 90 days. The plan update timeline will begin on the date of the FEMA approval letter. Please e-mail the complete adoption package to HM-Plans@tdem.texas.gov as follows:

- The final plan formatted as a single document
 - Plan must be dated to match the date of the first adoption
 - Remove track changes, strikethroughs, and highlights
- All signed resolutions as a separate single document

The previous review tool may contain recommendations to be applied to your next update. DO NOT make any further changes to your plan until it has been approved.

If you have any questions concerning this procedure, please do not hesitate to contact me at jim.guin@tdem.texas.gov. We commend you for your commitment to mitigation.

Respectfully,

A handwritten signature in black ink that reads "Jim Guin". The script is fluid and cursive, with the first letters of "Jim" and "Guin" being capitalized and prominent.

Jim Guin
Hazard Mitigation Supervisor
Hazard Mitigation Division
Texas Division of Emergency Management

Cc: Kevin Enoch, kevin.enoch@tdem.texas.gov
Sara Haak, sara.haak@tdem.texas.gov
Rory Halpin, rory.halpin@tdem.texas.gov



FEMA

May 16, 2022

Jasper Cooke, Hazard Mitigation Section Chief
Texas Division of Emergency Management
P.O. Box 15467
Austin, TX 78761

RE: Approvable Pending Adoption of the Collin County, Texas Multi-Jurisdiction Hazard Mitigation Plan

Dear Mr. Cooke:

This office has concluded its review of the referenced plan, in conformance with the Final Rule on Mitigation Planning (44 CFR § 201.6). Formal approval of this plan is contingent upon the adoption by the participants on Enclosure A, as well as the receipt of the final draft of the plan containing all plan components.

Adopting resolutions must be submitted to this agency for review and approval no later than one year from the date of this letter. Failure to submit these resolutions in a timely manner could lead to a required update of the plan prior to FEMA approval.

Once this final requirement has been met, a letter of official approval will be generated. The Local Hazard Mitigation Planning Tool, with the reviewer's comments has been enclosed to further assist the jurisdictions in complying with planning requirements.

Sincerely,

A handwritten signature in black ink, appearing to read "Ronald C. Wanhanen".

Ronald C. Wanhanen
Chief, Risk Analysis Branch

Enclosures

Enclosure A

Attached is the list of participating local governments included in the May 16, 2022 review of the referenced Hazard Mitigation plan.

Community Name

- | |
|-------------------------|
| 1) Allen city |
| 2) Anna city |
| 3) Blue Ridge city |
| 4) Celina city |
| 5) Collin County |
| 6) Fairview town |
| 7) Farmersville city |
| 8) Frisco city |
| 9) Josephine city |
| 10) Lavon city |
| 11) Lowry Crossing city |
| 12) Lucas city |
| 13) Melissa city |
| 14) Murphy city |
| 15) New Hope town |
| 16) Parker city |
| 17) Princeton city |
| 18) Prosper town |
| 19) St. Paul town |
| 20) Wylie city |

Adoption Submittal (Final)

Following the issuance this of Approvable Pending Adoption letter, all participants are provided one year to adopt the plan and submit it through the State to FEMA. For multi-jurisdictional plans, multiple adoptions should be submitted as a complete package as outlined below.

The State must submit the plan files via:

Floodmaps File eXchange (FFX): <https://www.floodmaps.fema.gov/ffx/>

Risk Management Directorate (RMD) SharePoint:

<https://rmd.msc.fema.gov/Regions/VI/Mitigation%20Planning/Forms/AllItems.aspx>

Note: You will be requested to register if you have not already done so.

All plans containing Protected Critical Infrastructure Information (PCII) must be submitted through the Floodmaps File Exchange (FFX) to ensure secure file submissions.

1. Final draft of the plan in MS Word or pdf format containing:
 - a. The final plan formatted as a single document.
 - b. Documentation demonstrating adoption by the participating jurisdictions seeking approval. (i.e. copies of signed resolutions, official meeting minutes, etc....) Note: Adoption resolutions can be separate files. Additional adoptions are not required to provide a copy of the plan.
 - c. Remove strikethroughs, highlights and all Track Changes must be accepted in the final plan.
2. Send an email addressed to r6-mtd-planning@fema.dhs.gov as notification that the electronic file has been submitted. Please DO NOT send plans to the email inbox as it has very strict size limitations which will lock the inbox and not allow additional emails to be received. The email must include the following information:
 - a. Include the follow when applicable: (Note: A submittal letter is no longer required.)
 - i. Subject line [Approval Review for Name of Plan, State]
 - ii. FEMA funding source, grant or disaster number, and project number (when applicable)
 - iii. list of adopting jurisdictions
 - iv. Plan File name (file name must include date submitted)
3. Submittals which do not conform to the above requirements will be returned to the State for resubmission



Item No. 7.a.

City Council Agenda
Staff Report

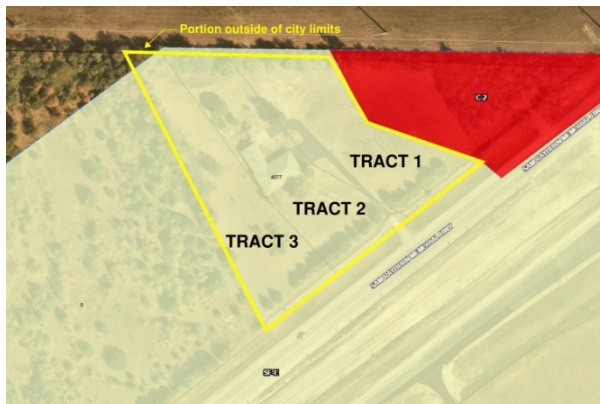
Meeting Date: 7/26/2022
Staff Contact: Ross Altobelli

AGENDA ITEM:

Consider/Discuss/Action on a Resolution approving an Agreement regarding services including a plan for municipal services regarding 0.02± acre, the northwestern point of the property, generally located on the north side of Sam Rayburn Memorial Highway (S.H. 121), 2,070± feet west of E Farm to Market Road 455. (Director of Development Services Ross Altobelli)

SUMMARY:

Paragon Realty Group, LLC has submitted a petition to annex 0.02± acre, being the remaining portion of a lot which was not annexed with the majority of the property by Ordinance No. 532-2010, generally located on the north side of Sam Rayburn Memorial Highway (S.H. 121), 2,070± feet west of E Farm to Market Road 455. The Agreement for Services is required by state law prior to approval of annexation.



FINANCIAL IMPACT:

N/A

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

Goal 1: Growing Anna Economy

Goal 2: Sustainable Anna Community Through Planned Managed Growth

STAFF RECOMMENDATION:

Recommended for approval.

ATTACHMENTS:

1. Resolution (Service Agreement) 4877 Sam Rayburn Highway Annexation
2. Exhibit A Legal Description
3. Exhibit B Ord. 532-2010
4. Exhibit C (Service Plan-Agreement) 4877 Sam Rayburn Highway

APPROVALS:

Lauren Mecke, Planning Manager
Ross Altobelli, Director of Development Services
Jim Proce, City Manager

Created/Initiated - 7/19/2022
Approved - 7/20/2022
Final Approval - 7/21/2022

CITY OF ANNA, TEXAS

RESOLUTION NO. _____

A RESOLUTION ADOPTING A CONDITIONAL AGREEMENT REGARDING SERVICES RELATED TO ANNEXATION OF A 0.02± ACRE TRACT OF LAND

WHEREAS, Chapter 43 of the Texas Local Government Code authorizes the annexation of territory, subject to the laws of this state; and

WHEREAS, the City of Anna, Texas (the “City”) is a Texas home-rule municipality; and

WHEREAS, Section 43.0671 of the Texas Local Government Code authorizes a municipality to extend the boundaries of the municipality and annex areas by request of the owner(s) of the areas; and

WHEREAS, on or about July 6, 2022, the respective owners submitted a written request to the City for annexation of a tract of land into the corporate limits of the City (the “Annexation Tract”); and

WHEREAS, the Annexation Tract is a 0.02 acre tract of land situated in the David Van Winkle Survey, Abstract No. 937, Collin County, Texas, being part of a tract (Tract Three) conveyed to Alex Johnson in Document No. 20111208001327520 of the deed records of Collin County, Texas; and

WHEREAS, the Annexation Tract is described as a portion of a lot more specifically in EXHIBIT A which was not annexed by Ordinance No. 532-2010, EXHIBIT B, attached hereto; and

WHEREAS, the owners of the Annexation Tract have executed a conditional written agreement regarding municipal services to be provided by the City in accordance with Texas Local Government Code § 43.0672 (the “Conditional Agreement”) and said agreement is as set forth in EXHIBIT C, attached hereto; and

WHEREAS, the Conditional Agreement is conditioned on the City of Anna City Council (the “City Council”) adopting an ordinance annexing the Annexation Tract described above on or before the 26th day of July 2022 and if the City Council does not adopt such ordinance on or before said date then the Conditional Agreement shall be null and void in its entirety; and

WHEREAS, the City desires to adopt and enter into the Conditional Agreement; provided, however, that the Conditional Agreement shall not require the City Council to annex the Annexation Tract;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF CITY OF ANNA, TEXAS:

SECTION 1. The recitals set forth above are hereby incorporated in this resolution as if set forth in full for all purposes.

SECTION 2. The City Council hereby approves and enters into the Conditional Agreement and authorizes the City Manager to execute said agreement on behalf of the City.

SECTION 3. This resolution shall become effective immediately upon the date and time of its adoption and it is accordingly so resolved.

PASSED, APPROVED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS, THIS THE 26TH DAY OF JULY 2022.

CITY OF ANNA, TEXAS

**NATE PIKE
MAYOR**

ATTEST:

**CARRIE L. LAND
CITY SECRETARY**

EXHIBIT "A"
FIELD NOTE DESCRIPTION

A 3.021 ACRE TRACT OF LAND THAT IS A PART OF THE DAVID VAN WINKLE SURVEY, ABSTRACT NO. 937, COLLIN COUNTY, TEXAS, BEING ALL OF TRACTS ONE (1), TWO (2) AND THREE (3) OF THE TRACT CONVEYED TO ALEX JOHNSON IN DOCUMENT NO. 20111208001327520 OF THE DEED RECORDS OF COLLIN COUNTY, TEXAS, BEING FURTHER DESCRIBED AS FOLLOWS:

BEGINNING AT A FOUND 1/2" IRON ROD WITH CAP AT THE SOUTHEASTERLY CORNER OF THAT TRACT CONVEYED TO RICHARD DZANSKI IN DOCUMENT NO. 20150826001080360 OF THE DEED RECORDS OF COLLIN COUNTY, TEXAS, BEING ALSO ON THE NORTHWESTERLY RIGHT OF WAY LINE OF SAM RAYBURN HIGHWAY;

THENCE NORTH 28°29'42" WEST ON THE EASTERLY LINE OF SAID DZANSKI TRACT, A DISTANCE OF 508.53 FEET TO A FOUND 5/8" IRON ROD ON THE SOUTHERLY LINE OF TRACTS OWNED BY WKG ENTERPRISES LTD;

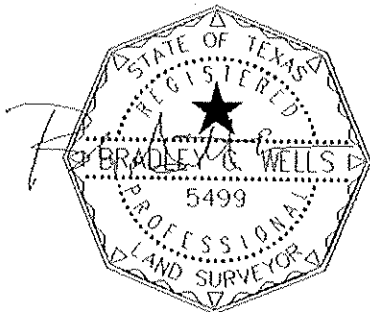
THENCE SOUTH 89°53'44" EAST ON A SOUTHERLY LINE OF SAID WKG TRACT, PASSING AT 55.57 FEET A FOUND 5/8" IRON ROD, A TOTAL DISTANCE OF 334.59 FEET TO A FOUND 5/8" IRON ROD AT THE NORTHWESTERLY CORNER OF THAT TRACT CONVEYED TO TREY SPYROPOULOS IN DOCUMENT NO. 20080606000688540 OF THE DEED RECORDS OF COLLIN COUNTY, TEXAS;

THENCE ON THE WESTERLY LINE OF SAID SPYROPOULOS TRACT THE FOLLOWING TWO COURSES:

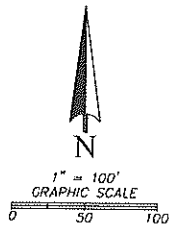
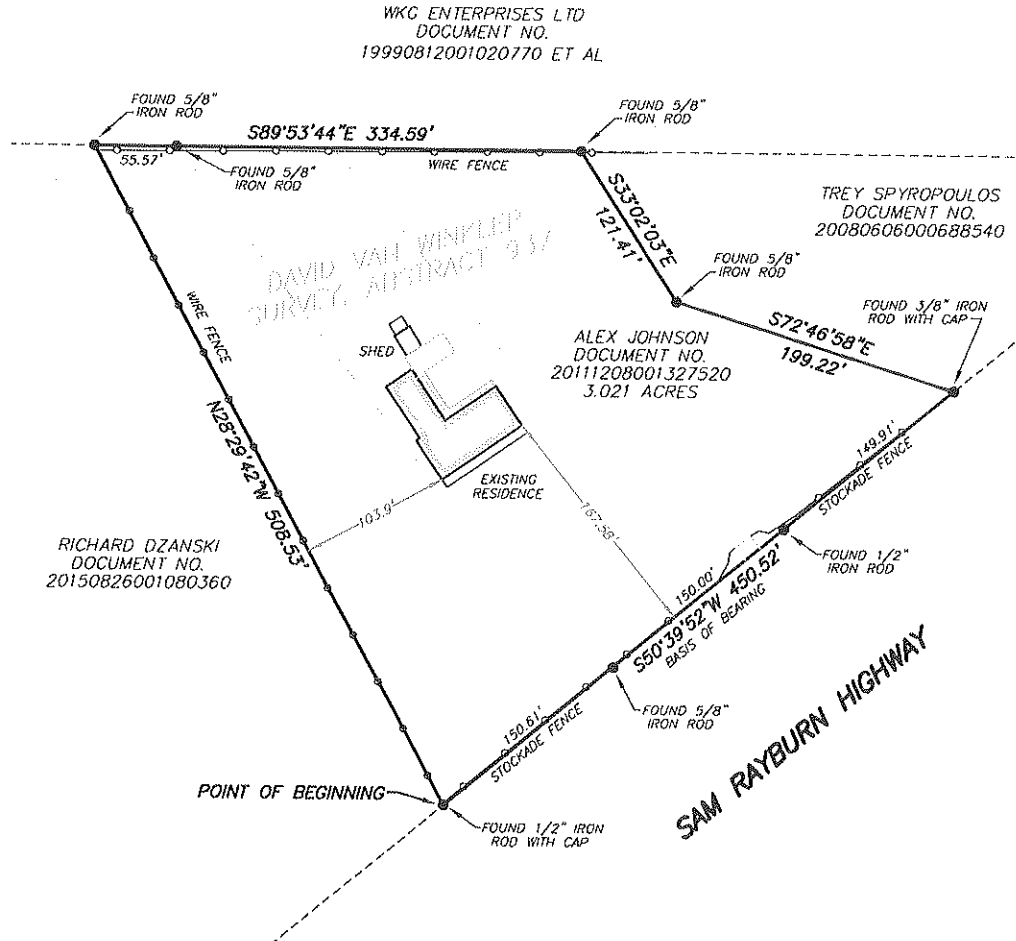
SOUTH 33°02'03" EAST, A DISTANCE OF 121.41 FEET TO A FOUND 5/8" IRON ROD,

SOUTH 72°46'58" EAST, A DISTANCE OF 199.22 FEET TO A FOUND 3/8" IRON ROD WITH CAP AT THE SOUTHWESTERLY CORNER OF SAID SPYROPOULOS TRACT, BEING ON THE NORTHWESTERLY RIGHT OF WAY LINE OF SAM RAYBURN HIGHWAY;

THENCE SOUTH 50°39'52" WEST ON SAID RIGHT OF WAY LINE, PASING AT 149.91 FEET A FOUND 1/2" IRON ROD, AT 299.91 FEET A FOUND 5/8" IRON ROD, FOR A TOTAL DISTANCE OF 450.52 FEET TO THE POINT OF BEGINNING.



STREET ADDRESS	LEGAL DESCRIPTION
4877 SAM RAYBURN HWY. ANNA, TX 75409	SEE ATTACHED EXHIBIT "A"

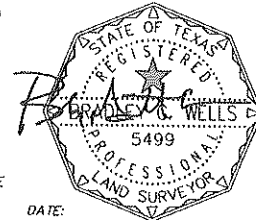


BASIS OF BEARING

THE BEARINGS SHOWN HEREON ARE BASED ON THE NORTHWEST LINE OF SAM RAYBURN HIGHWAY, HAVING A GRID BEARING OF SOUTH 50°39'52\"

CERTIFICATION

THIS SURVEY IS THE RESULT OF AN ON-THE-GROUND SURVEY, AND THERE ARE NO DISCREPANCIES, CONFLICTS, SHORTAGES IN AREA, ENCROACHMENTS, OVERLAPPING OF IMPROVEMENTS, OR ROADWAYS, EXCEPT AS OTHERWISE SHOWN BY THE SURVEY, ALL MONUMENTS SHOWN EXIST AND THE LOCATION AND SIZE SHOWN ARE TRUE AND CORRECT.



SYMBOL LEGEND

- MONUMENT FOUND AS NOTED
- MONUMENT SET AS NOTED
- () RECORD VALUE PER DEED
- NO () MEASURED VALUE

DATE:
OCTOBER 4, 2021

SURVEY JOB #	CLIENT INFORMATION	SURVEYOR INFORMATION
21-1189		
SURVEY INVOICE #		
239		
CERTIFIED TO:		
KELLER WILLIAMS PARAGON GROUP PARHAM GHASSEMI	KW PARAGON GROUP	BRAD WELLS, RPLS 315 FAIRLAND DRIVE WYLIE, TX 75098 (405) 305-8325 wellsbg@gmail.com
	FLOOD ZONE	
THIS SURVEY IS PREPARED FOR THE EXCLUSIVE USE AND BENEFIT OF THE PARTIES LISTED HEREON. LIABILITY TO THIRD PARTIES MAY NOT BE TRANSFERRED OR ASSIGNED.	ACCORDING TO FEMA F.I.R.M. MAP 48085C0180J WITH AN EFFECTIVE DATE OF 06/02/2009, THE SUBJECT PROPERTY LIES IN ZONE "X", AN AREA OF MINIMAL FLOOD HAZARD.	DATE REVISION 1 DATE REVISION 2

CITY OF ANNA, TEXAS

ORDINANCE NO. 532-2010

AN ORDINANCE ANNEXING INTO THE CITY OF ANNA, TEXAS THE HEREINAFTER DESCRIBED TERRITORY ADJACENT TO AND ADJOINING THE CITY OF ANNA, TEXAS, TO WIT: BEING A CERTAIN AREA OF LAND SITUATED IN THE D. VAN WINKLE LAND SURVEY, ABSTRACT NUMBER A0937, SISTER GROVE ESTATES, HIRAM BRINLEE LAND SURVEY, ABSTRACT NUMBER A0030, J. C. NEIL LAND SURVEY, ABSTRACT NUMBER A0659, AND THE JAS SORREL LAND SURVEY, ABSTRACT NUMBER A0858, COUNTY OF COLLIN, STATE OF TEXAS; AMENDING THE OFFICIAL CITY MAP; PROVIDING FOR A SERVICE PLAN; REQUIRING THE FILING OF THIS ORDINANCE WITH THE COLLIN COUNTY CLERK; PROVIDING A CUMULATIVE REPEALER CLAUSE; PROVIDING FOR SEVERABILITY; PROVIDING FOR ENGROSSMENT AND ENROLLMENT; PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the City of Anna, Texas ("City") is a home-rule municipality located in Collin County, Texas, created in accordance with the provisions of the Texas Local Government Code and operating pursuant to the enabling legislation of the State of Texas and the City's Home-Rule Charter; and

WHEREAS, the City desires to annex into its corporate limits the hereinafter described territory adjacent to and adjoining the City (hereinafter, referenced as the "Territory"), to wit: being a certain area of land situated in the D. Van Winkle land survey, Abstract Number A0937, Sister Grove Estate, Hiram Brinlee land survey, Abstract Number A0030, J. C. Neil land survey, Abstract Number A0659, and the Jas Sorrel land survey, Abstract Number A0858, County of Collin, State of Texas and more particularly described in the attached Exhibit A, which is incorporated herein for all purposes; and

WHEREAS, all statutory notice requirements relating to the annexation of the Territory pursuant to Chapter 43 of the Texas Local Government Code have been satisfied; and

WHEREAS, two public hearings were conducted in accordance with Section 43.052 of the Texas Local Government Code to consider the annexation of the Territory; and

WHEREAS, said public hearings were conducted and held no more than forty (40) days nor less than twenty (20) days prior to the institution of annexation proceedings; and

WHEREAS, the City Council of the City of Anna, Texas ("City Council") has determined that it would be advantageous and beneficial to the City, its citizens, and the inhabitants of the Territory, to annex the Territory to the City; and

WHEREAS, the City Council has determined that the Territory is adjacent to and adjoins the City; and

WHEREAS, the City Council has investigated, determined and officially finds that no part of the Territory is within the extraterritorial jurisdiction of any other incorporated city or town; and

WHEREAS, to the extent that this ordinance would cause an unincorporated area to be entirely surrounded by the City's corporate limits, the City Council has found—and incorporates herein its finding—that surrounding the area is in the public interest; and

WHEREAS, a service plan providing for the extension of municipal services into the Territory, which was prepared prior to and made available at the aforementioned public hearings, is attached hereto as Exhibit B and incorporated herein for all purposes; and

WHEREAS, all procedures and proceedings related to this ordinance and to the annexation of the Territory have been undertaken and acted upon in accordance with the Texas Open Meetings Act, as applicable; and

WHEREAS, after hearing the arguments for and any arguments against the annexation of the Territory, the City Council finds that the Territory should be annexed;

NOW THEREFORE BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS:

Section 1. Incorporation of Recitals. The above-stated recitals are incorporated into this ordinance as if set forth in full here for all purposes.

Section 2. Territory Annexed.

(a) The Territory, described in Exhibit A attached hereto, which is hereby made an integral part of this ordinance, lying adjacent to and adjoining the present corporate boundaries of the City, is hereby added and annexed into the City, and the Territory shall hereafter be included within the corporate boundary limits of the City, and the present boundary limits of the City are altered and amended so as to include the Territory within the corporate limits of the City.

(b) From and after the passage of this ordinance, the Territory shall be a part of the City, and, subject to the municipal service plan referenced in Section 4 of this ordinance, the inhabitants thereof shall be entitled to all of the rights, privileges and immunities as all other similarly situated citizens of the City, and shall be bound by all of the ordinances and regulations enacted pursuant to and in conformity with the general laws of the State of Texas.

Section 3. Official City Map Amended.

(a) The official map and boundaries of the City's corporate limits are hereby amended so as to include the Territory.

(b) The City Manager is hereby directed and authorized to perform or cause to be performed all acts necessary to update the official map of the City to add the Territory hereby annexed as required by law, but any delay in or failure to update such map shall in no way impact or affect the validity of this ordinance or this annexation.

Section 4. Municipal Service Plan. The municipal service plan for the Territory, attached hereto as Exhibit B, was submitted in accordance with Chapter 43 of the Texas Local Government Code and is hereby approved as part of this ordinance.

Section 5. Filing of Ordinance. The City Secretary is hereby directed to file or cause to be filed a certified copy of this ordinance in the office of the County Clerk of Collin County, Texas, and any other necessary agencies, including the United States Department of Justice.

Section 6. Cumulative Repealer. This ordinance shall be cumulative of all other ordinances and shall not repeal any of the provisions of such ordinances except for those instances where there are direct conflicts with the provisions of this ordinance. Ordinances, or parts thereof, in force at the time this ordinance shall take effect and that are inconsistent with this ordinance are hereby repealed to the extent that they are inconsistent with this ordinance.

Section 7. Severability. If any section, article, paragraph, sentence, clause, phrase or word in this Ordinance, or application thereof to any person or circumstance, is held invalid or unconstitutional by a Court of competent jurisdiction, such holding shall not affect the validity of the remaining portions of the Ordinance, and the City Council hereby declares it would have passed such remaining portions of the Ordinance despite such invalidity, which remaining portions shall remain in full force and effect.

Section 8. Engrossment and Enrollment. The City Secretary of the City of Anna is hereby directed to engross and enroll this ordinance by copying the Caption in the minutes of the City Council of the City of Anna and by filing this ordinance in the ordinance records of the City.

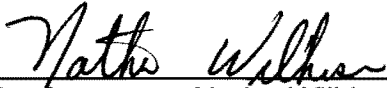
Section 9. Effective Date. This ordinance shall be in full force and effect from and after its date of passage.

PASSED by the City Council of the City of Anna, Texas, this 14th day of December, 2010, by the following vote of the members of the City Council as present:

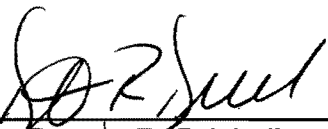
AYES	7	NAYS	0	ABSTAIN	0
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ATTEST:

APPROVED:



City Secretary, Natha Wilkison



Mayor, Darren R. Driskell



Exhibit A
Tract 1

Situated in Collin County, Texas and being part of the Hiram Brinlee Survey, Abstract No. 30, the David VanWinkle Survey, Abstract No. 937, the J. Serrel Survey, Abstract No. 858, and being more particularly described as follows:

BEGINNING in the east line of the Serrel Survey and the west line of the VanWinkle Survey, and being in the northwest right-of-way line of the Sam Rayburn Memorial Highway;

THENCE north 51 degrees 37 minutes 57 seconds east a distance of 271.95 feet to a point for corner;

THENCE north 01 degrees 04 minutes 59 seconds east a distance of 569.82 feet to a point for corner;

THENCE north 50 degrees 50 minutes 29 seconds east of 816.32 feet to a point for corner;

THENCE north 88 degrees 29 minutes 45 seconds east of 292.55 feet to a point for corner;

THENCE south 44 degrees 59 minutes 59 seconds east of 150.12 feet to a point for corner;

THENCE south 76 degrees 23 minutes 59 seconds east of 136.30 feet to a point for corner;

THENCE north 51 degrees 15 minutes 03 degrees 00 seconds east of 253.04 feet to a point for corner;

THENCE south 89 degrees 14 minutes 47 seconds east of 874.33 feet to a point for corner;

THENCE south 50 degrees 48 minutes 42 seconds west of 3,187.32 feet to a point for corner;

THENCE north 00 degrees 38 minutes 22 seconds east of 469.21 feet to a point for corner;

THENCE south 89 degrees 34 minutes 10 seconds west of 143.22 feet to a point for corner;

THENCE south 50 degrees 48 minutes 42 seconds west of 1,821.96 feet to a point for corner;

THENCE south 18 degrees 18 minutes 57 seconds east of 481.61 feet to a point for corner;

THENCE south 50 degrees 48 minutes 42 seconds 71 west of 3,401.28 to a point for corner;

THENCE north 00 degrees 43 minutes 03 seconds west of 554.26 feet to a point for corner;

THENCE south 51 degrees 06 minutes 17 seconds west of 1,093.06 feet to a point for corner;

THENCE south 53 degrees 22 minutes 55 seconds west of 1,001.53 feet to a point for corner;

THENCE south 00 degrees 21 minutes 03 seconds west of 555.56 feet to a point for corner;

THENCE south 53 degrees 39 minutes 51 seconds west of 1,016.70 feet to a point for corner;

THENCE north 88 degrees 13 minutes 50 seconds west of 1,620.46 feet to a point for corner;

THENCE north 53 degrees 39 minutes 51 seconds east of 3,019.60 feet to a point for corner in a curve to the left with a radius of 11,500 feet and a chord bearing of north 52 degrees 14 minutes 17 seconds a distance of 572.44 feet;

THENCE with said curve a distance of 572.50 feet;

THENCE north 50 degrees 48 minutes 42 seconds east of 1,827.32 feet to a point for corner;

THENCE south 27 degrees 07 minutes 05 seconds east of 441.32 feet to a point for corner;

THENCE north 47 degrees 50 minutes 19 seconds east of 162.13 feet to a point for corner;

THENCE north 53 degrees 48 minutes 04 seconds east of 106.99 feet to a point for corner;

THENCE north 22 degrees 18 minutes 01 seconds west of 448.06 feet to a point for corner;

THENCE north 50 degrees 48 minutes 42 seconds east of 418.34 feet to a point for corner;

THENCE south 11 degrees 29 minutes 28 seconds west of 219.79 feet to a point for corner;

THENCE south 03 degrees 50 minutes 54 seconds west of 394.84 feet to a point for corner;

THENCE north 53 degrees 48 minutes 08 seconds east of 348.61 feet to a point for corner;

THENCE north 40 degrees 06 minutes 17 seconds east of 202.48 feet to a point for corner;

THENCE north 51 degrees 46 minutes 59 seconds east of 28.13 feet to a point for corner;

THENCE north 62 degrees 35 minutes 57 seconds east of 159.85 feet to a point for corner;

THENCE north 50 degrees 11 minutes 40 seconds east of 1,281.05 feet to a point for corner;

THENCE north 53 degrees 24 minutes 32 seconds east of 518.17 feet to a point for corner;

THENCE north 50 degrees 03 minutes 48 seconds east of 1,751.40 feet to the PLACE OF BEGINNING and containing 173.68 acres of land more or less save and except areas that are already within the City Limits of Anna.

Tract 2

Situated in Collin County, Texas and being part of the David VanWinkle Survey, Abstract No. 937, and being more particularly described as follows:

BEGINNING in the most easterly intersection of the right-of-way line of F. M. Highway 455 and the south line of Wild Rose Farms Subdivision;

THENCE south 86 degrees 56 minutes 22 seconds east a distance of 388.23 feet to a point for corner;

THENCE south 175.53 feet to a point for corner;

THENCE east 262.60 feet to a point for corner;

THENCE south 299.84 feet to a point for corner;

THENCE west 227.42 feet to a point for corner in a non tangent curve to the left with a radius of 776.52 feet and a chord bearing of north 40 degrees 26 minutes 36 seconds west a distance of 651.86 feet;

THENCE northwesterly with said curve a distance of 672.70 feet to the PLACE OF BEGINNING and containing 3 acres of land more or less save and except areas that are already within the City Limits of Anna.

Tract 3

Situated in Collin County, Texas and being part of the David VanWinkle Survey, Abstract No. 937, and being more particularly described as follows:

BEGINNING in the southwesterly intersection of the right-of-way line of F. M. Highway 455 and the southeast right-of-way line the Sam Rayburn Memorial Highway;

THENCE north 46 degrees 41 minutes 05 seconds east a distance of 131.89 feet to a point for corner;

THENCE north 50 degrees 52 minutes 42 seconds east a distance of 1,111.73 feet to a point for corner;

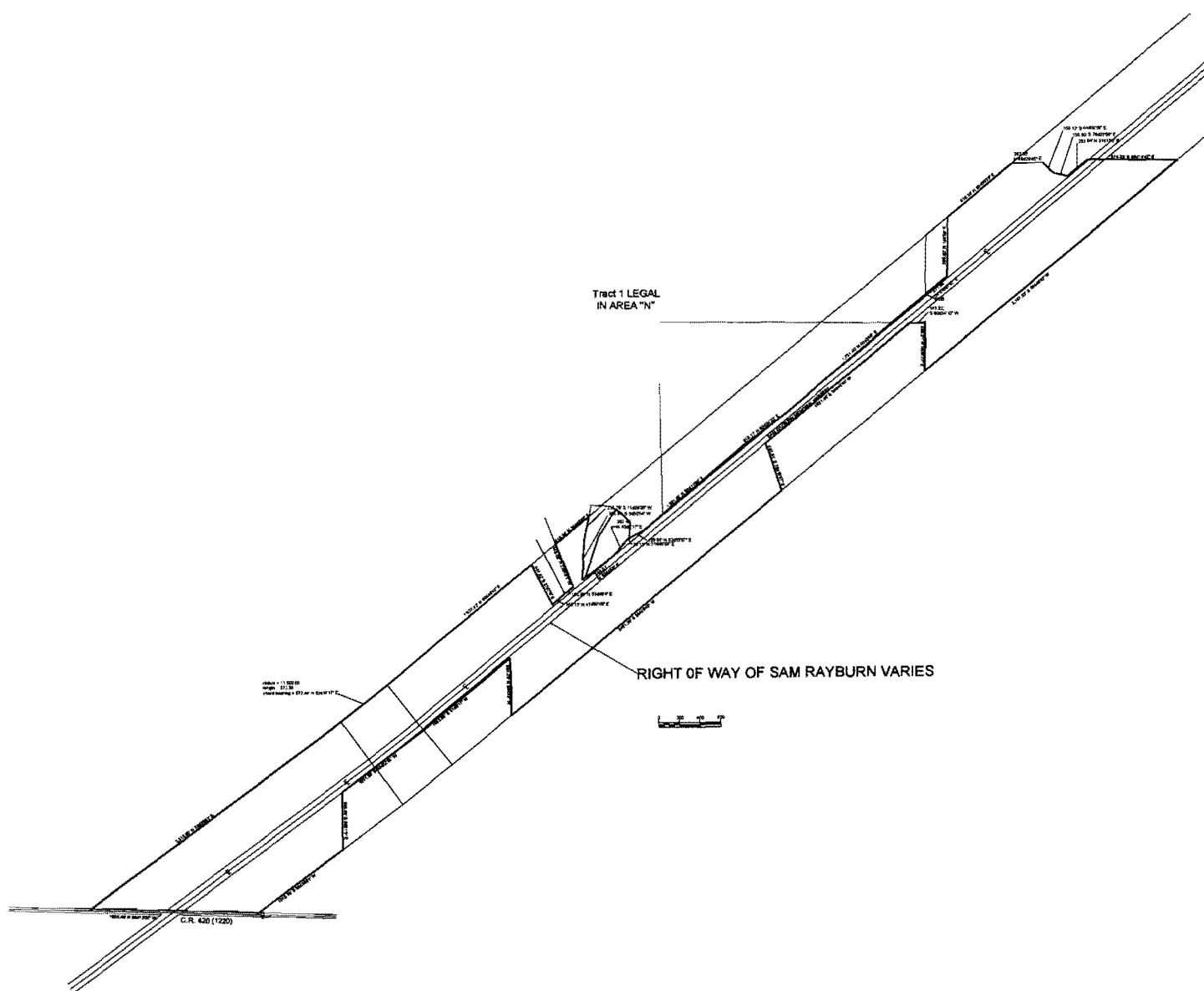
THENCE north 89 degrees 54 minutes 59 seconds east a distance of 694.26 feet to a point for corner;

THENCE south 50 degrees 48 minutes 42 seconds west a distance of 1,395.58 feet to a point for corner;

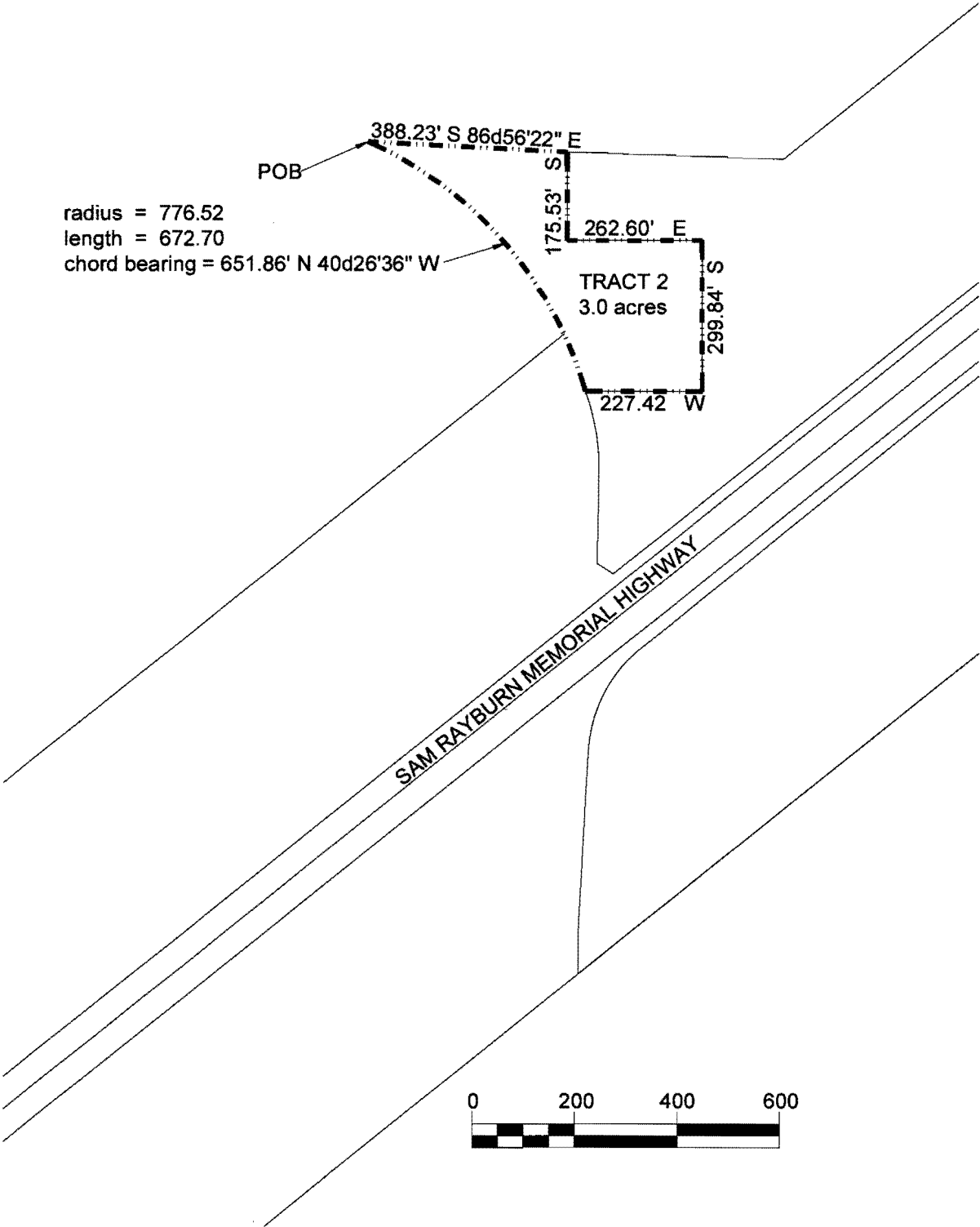
THENCE north 89 degrees 20 minutes 53 seconds west a distance of 334.24 feet to a point for corner;

THENCE north 77 degrees 22 minutes 23 seconds west a distance of 169.63 feet to a point for corner;

THENCE north 56 degrees 03 minutes 23 seconds west a distance of 85.93 feet to the PLACE OF BEGINNING and containing 13.7 acres of land more or less save and except areas that are already within the City Limits of Anna.



Tract 2 LEGAL
IN AREA "N"



Tract 3 LEGAL
IN AREA "N"

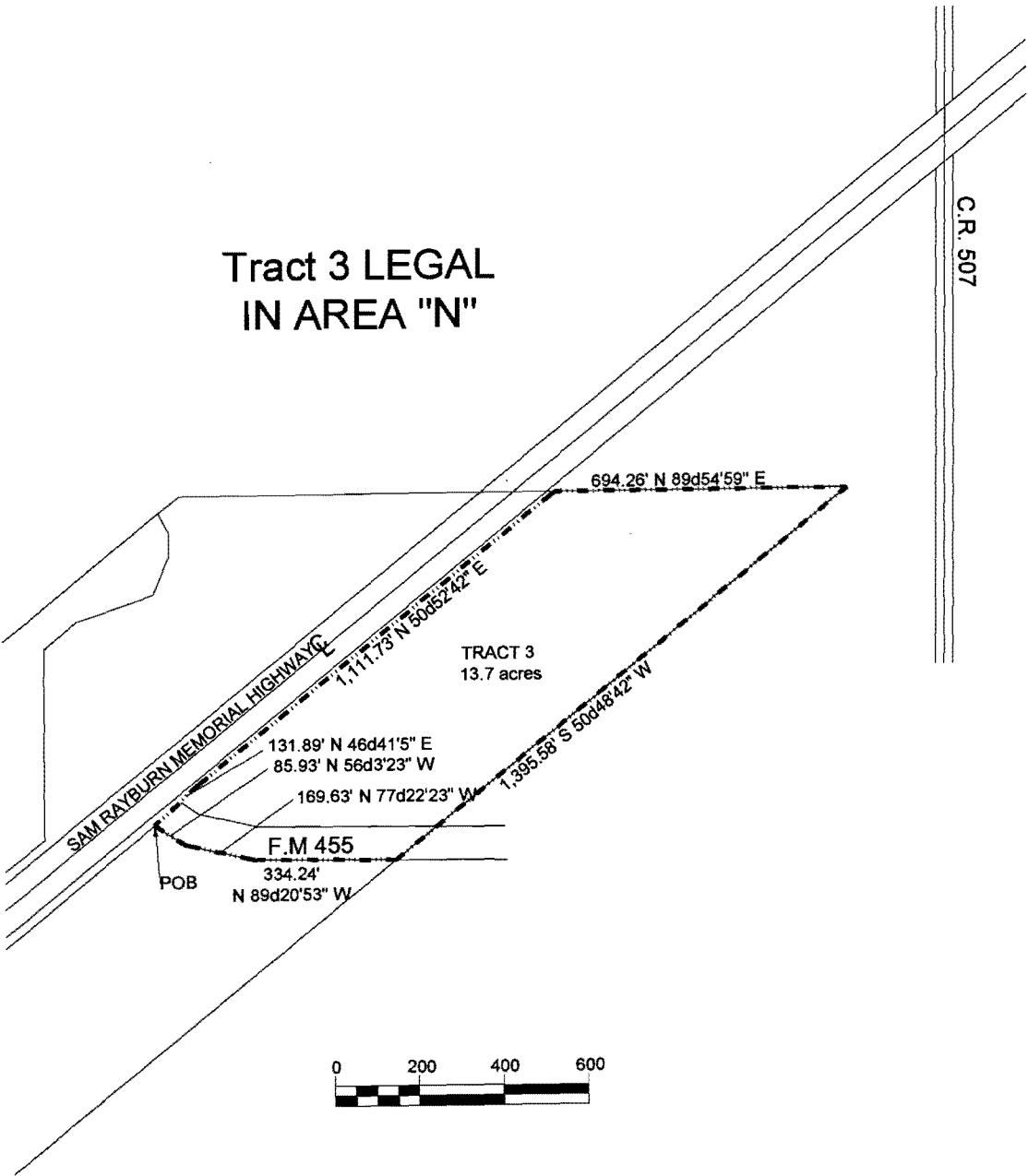


EXHIBIT B

ANNEXATION SERVICE PLAN

POLICE PROTECTION

On the effective date of annexation, the City of Anna, Texas and its Police Department will provide police protection to the newly annexed area at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

FIRE PROTECTION

On the effective date of annexation, the City of Anna, Texas and its Fire Department will provide fire protection to the newly annexed area at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

EMERGENCY MEDICAL SERVICES

On the effective date of annexation, the City of Anna, Texas, through its contract with Collin County or another service provider, will provide emergency medical services to the newly annexed area at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

SOLID WASTE COLLECTION

On the effective date of annexation, the City of Anna, Texas, through its contract with Bradshaw and Son or another service provider, will provide solid waste collection to residents and businesses in the newly annexed area (to the extent that the service provider has access to the area to be serviced) at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area. Such service will be provided in accordance with existing City policies and Ordinances, and only upon payment of any required deposits and the agreement to pay lawful service fees and charges for solid waste collection.

Residents and businesses of the newly annexed area that have existing contracts with solid waste service providers have two years from the date of annexation or until the termination date of the existing contract, whichever is sooner, to begin solid waste

collection service through the City. Solid waste collection is mandatory for City of Anna residents and businesses operating within the city limits.

WATER AND WASTEWATER FACILITIES

On the effective date of annexation, any and all water or waste water facilities owned by the City of Anna, Texas at the time of annexation shall be maintained and operated by the City of Anna, Texas. Of such facilities, the City will maintain the main water transmission and wastewater collection lines. All water and wastewater service lines (up to and including the service line connection with the City's main line, shall be maintained by the property owner served by the service connection.

Residents and owners of property in newly annexed areas that are located within the City's water or wastewater CCN will be offered water and wastewater service in accordance with City policies and ordinances in existence at the time of annexation or as may be amended from time-to-time by the City Council. Generally, these ordinances state that the land owner or customer must bear the cost of construction of water and wastewater system facilities to a point where suitable connection to the existing system can be made and service to the customer can be provided. All water and wastewater facilities designed to connect to the City's existing system must be approved by the City and meet all City zoning, subdivision, and other development ordinances and requirements.

ROADS AND STREETS

On the effective date of annexation, any and all existing public roads or streets in the newly annexed area which have been dedicated to Collin County, Texas or to the City of Anna, Texas, or which are owned by the City of Anna, Texas shall be maintained to the same degree and extent that other roads and streets are maintained in areas of the City with similar topography land use and population density. Specific maintenance activities are determined by available funding and the need for maintenance as determined by the City. The City is not obligated to maintain any portion of a private road or street. Any and all lighting of roads and streets which may be positioned in a public right of way, roadway or utility company easement shall be maintained by the applicable utility company servicing that area of the City of Anna, Texas pursuant to the rules regulations and fees of such utility.

An owner of land within the newly annexed area that desires to develop said property will be required pursuant to the ordinances of the City of Anna, Texas to provide internal and peripheral streets and to construct those streets in accordance with the specifications required by the City of Anna, Texas.

PARKS PLAYGROUNDS AND SWIMMING POOLS OR ANY OTHER PUBLICLY OWNED FACILITY BUILDING OR SERVICE

The City Council of the City of Anna, Texas is not aware of the existence of any public parks, public playgrounds, public swimming pools, or any other publicly owned facility, building or service now located in the area proposed for annexation. In the event any such parks, playgrounds, swimming pools, or any other public facilities, buildings or services do exist and are public facilities, the City of Anna, Texas will maintain such areas upon annexation to the same extent and degree that it maintains public parks, public playgrounds, public swimming pools, other public facilities buildings or services and other similar areas of the City now incorporated in the City of Anna, Texas.

To the extent that it becomes necessary because of development demands population growth or a bona fide need, the City Council of the City of Anna, Texas will undertake to provide any such facility which it deems necessary to adequately provide for the health and safety of the citizens of the newly incorporated area based upon the standard considerations of topography, land use and population density.

OTHER MUNICIPAL SERVICES

Following annexation by the City of Anna, Texas, the City will provide code enforcement, planning, and animal control services to the newly annexed area, to the extent such services are funded in the annual budget and provided by the City within its full-purpose boundaries. Such services will be provided to the newly annexed area at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

CONSTRUCTION OF CAPITAL IMPROVEMENTS

The City Council of the City of Anna, Texas finds and determines it to be unnecessary to acquire or construct specific capital improvements for the purposes of providing full municipal services to the newly annexed area. The City Council finds and determines that it has at the present time adequate facilities to provide the same type, kind and level of service which exists in and is presently being administered to other areas already incorporated in the City of Anna, Texas with the same or similar topography, land use and population density.

SPECIFIC FINDINGS

The City Council of the City of Anna, Texas finds and determines that this proposed Service Plan will not provide any fewer services and it will not provide a lower level of service in the area proposed to be annexed than were in existence in the proposed area at the time immediately preceding the annexation process. Furthermore the City Council of the City of Anna, Texas finds and determines that the rural nature of the area

is characteristically different from other more highly developed areas within the corporate limits of the City of Anna, Texas. Consequently because of the differing characteristics of topography, land use, and population density the service levels which may ultimately be provided in the newly annexed area may differ somewhat from services provided in other areas of the City of Anna, Texas. These differences are specifically dictated because of differing characteristics of the property. The City of Anna, Texas will undertake to perform consistent with this contract so as to provide this newly annexed area with the same type, kind and quality of service presently enjoyed by the citizens of the City of Anna, Texas who reside in areas of similar topography, land use and population density.

TERM

This Service Plan shall be valid for a term of ten (10) years. Renewal of the Service Plan shall be at the discretion of the City Council.

AMENDMENTS

This Service Plan may be amended if the City Council determines at a public hearing that changed conditions or subsequent occurrences make this Service Plan unworkable or obsolete. The City Council may amend the Service Plan to conform to the changed conditions or subsequent occurrences pursuant to Texas Local Government Code, Section 43.056.

AGREEMENT REGARDING SERVICES

This Agreement Regarding Services (this “Agreement” or “Service Plan”) is entered into this 26th day of July, 2022 by and between Paragon Realty Group, LLC, and the City of Anna, Texas a home rule municipality.

SUBJECT PROPERTY

The real property that is the subject of this Service Plan is described as follows:

4877 Sam Rayburn Highway. 0.02± acres. The northwestern point of the property, located on the north side of Sam Rayburn Memorial Highway (S.H. 121), 2,070± feet west of E Farm to Market Road 455

AGREEMENT CONDITIONED ON ANNEXATION

This Agreement is conditioned on the City of Anna City Council adopting an ordinance annexing the Subject Property described above on or before the 26th day of July, 2022. If the City Council does not adopt such ordinance on or before said date then this Agreement shall be null and void in its entirety. Nothing in this Agreement shall require the City Council to annex the Subject Property.

POLICE PROTECTION

On the effective date of annexation, the City of Anna, Texas and its Police Department will provide police protection to the newly annexed area at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

FIRE PROTECTION

On the effective date of annexation, the City of Anna, Texas and its Fire Department will provide fire protection to the newly annexed area at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

EMERGENCY MEDICAL SERVICES

On the effective date of annexation, the City of Anna, Texas, through its contract with Collin County or another service provider, will provide emergency medical services to the newly annexed area at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

SOLID WASTE COLLECTION

On the effective date of annexation, the City of Anna, Texas, through its contract with CARDS Dallas, Inc. or another service provider, will provide solid waste collection to residents and businesses in the newly annexed area (to the extent that the service provider has access to the area to be serviced) at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area. Such service will be provided in accordance with existing City policies and Ordinances, and only upon payment of any required deposits and the agreement to pay lawful service fees and charges for solid waste collection. Solid waste collection through a subscription with the City's solid waste franchisee is mandatory for City of Anna residents and businesses operating within the city limits unless provided for otherwise by ordinance.

WATER AND WASTEWATER FACILITIES

On the effective date of annexation, any and all water or wastewater facilities owned by the City of Anna, Texas at the time of annexation shall be maintained and operated by the City of Anna, Texas. Of such facilities, the City will maintain the main water transmission and wastewater collection lines. All water and wastewater service lines from the building to the easement or right-of-way line, shall be maintained by the property owner served by the service connection.

Residents and owners of property in newly annexed areas that are located within the City's water or wastewater CCN will be offered water and wastewater service in accordance with City policies and ordinances in existence at the time of annexation or as may be amended from time-to-time by the City Council. Generally, these ordinances state that the landowner or customer must bear the cost of construction of water and wastewater system facilities to a point where suitable connection to the existing system can be made and service to the customer can be provided. All water and wastewater facilities designed to connect to the City's existing system must be approved by the City and meet all City zoning, subdivision, and other development ordinances and requirements.

ROADS AND STREETS

On the effective date of annexation, any and all existing public roads or streets in the newly annexed area which have been dedicated to Collin County, Texas or to the City of Anna, Texas, or which are owned by the City of Anna, Texas shall be maintained to the same degree and extent that other roads and streets are maintained in areas of the City with similar topography land use and population density. Specific maintenance activities are determined by available funding and the need for maintenance as determined by the City. The City is not obligated to maintain any portion of a private road or street. Any and all lighting of roads and streets which may be positioned in a public right of way, roadway or utility company easement shall be maintained by the applicable utility company servicing that area of the City of Anna, Texas pursuant to the rules regulations and fees of such utility.

An owner of land within the newly annexed area that desires to develop said property will be required pursuant to the ordinances of the City of Anna, Texas to provide internal and peripheral streets and to construct those streets in accordance with the specifications required by the City of Anna, Texas.

PARKS PLAYGROUNDS AND SWIMMING POOLS OR ANY OTHER PUBLICLY OWNED FACILITY BUILDING OR SERVICE

The City Council of the City of Anna, Texas is not aware of the existence of any public parks, public playgrounds, public swimming pools, or any other publicly owned facility, building or service now located in the area proposed for annexation. In the event any such parks, playgrounds, swimming pools, or any other public facilities, buildings or services do exist and are public facilities, the City of Anna, Texas will maintain such areas upon annexation to the same extent and degree that it maintains public parks, public playgrounds, public swimming pools, other public facilities buildings or services and other similar areas of the City now incorporated in the City of Anna, Texas.

To the extent that it becomes necessary because of development demands population growth or a bona fide need, the City Council of the City of Anna, Texas will undertake to provide any such facility which it deems necessary to adequately provide for the health and safety of the citizens of the newly incorporated area based upon the standard considerations of topography, land use and population density.

OTHER MUNICIPAL SERVICES

Following annexation by the City of Anna, Texas, the City will provide code enforcement, planning, and animal control services to the newly annexed area, to the extent such services are funded in the annual budget and provided by the City within its full-purpose boundaries. In addition, the City will provide other municipal services that the City may from time to time provide to other similarly situated areas within the City's corporate limits. The services referenced in this paragraph will be provided to the newly annexed area at

the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

CONSTRUCTION OF CAPITAL IMPROVEMENTS

The City Council of the City of Anna, Texas finds and determines it may be necessary to acquire or construct specific capital improvements for the purposes of providing full municipal services to the newly annexed area. These capital improvements shall be constructed as part of the development of the property and may be eligible for impact fee reimbursement. Subject to the foregoing, the City Council finds and determines that it has at the present time adequate facilities to provide the same type, kind and level of service which exists in and is presently being administered to other areas already incorporated in the City of Anna, Texas with the same or similar topography, land use and population density.

SPECIFIC FINDINGS

The City Council of the City of Anna, Texas finds and determines that this Service Plan will not provide any fewer services and it will not provide a lower level of service in the area proposed to be annexed than were in existence in the proposed area at the time immediately preceding the annexation process. Furthermore, the City Council of the City of Anna, Texas finds and determines that the rural nature of the area is characteristically different from other more highly developed areas within the corporate limits of the City of Anna, Texas. Consequently because of the differing characteristics of topography, land use, and population density the service levels which may ultimately be provided in the newly annexed area may differ somewhat from services provided in other areas of the City of Anna, Texas. These differences are specifically dictated because of differing characteristics of the property. The City of Anna, Texas will undertake to perform consistent with this contract so as to provide this newly annexed area with the same type, kind and quality of service presently enjoyed by the citizens of the City of Anna, Texas who reside in areas of similar topography, land use and population density.

AMENDMENTS

This Service Plan may be amended if the City Council determines at a public hearing that changed conditions or subsequent occurrences make this Service Plan unworkable or obsolete. The City Council may amend the Service Plan to conform to the changed conditions or subsequent occurrences pursuant to Texas Local Government Code, Section 43.056.

Owner(s):

Paragon Realty Group, LLC
a Texas Limited Liability Company

By: Paragon Realty Group, LLC
a Texas Limited Liability Company
Its Manager

By: _____
Name: Parham Ghassemi
Title: Manager

IN WITNESS WHEREOF:
STATE OF TEXAS

§
§
§

COUNTY OF TARRANT

This instrument was acknowledged before me on the ____ day of _____,
20____, by _____ as owner of _____.

Notary Public, State of Texas

City of Anna:

By: _____
Name: Jim Proce
Title: City Manager

IN WITNESS WHEREOF:
STATE OF TEXAS

§
§
§

COUNTY OF COLLIN

This instrument was acknowledged before me on the ____ day of _____, 2022, by
Jim Proce as representative of the City of Anna.

Notary Public, State of Texas



Item No. 7.b.

City Council Agenda
Staff Report

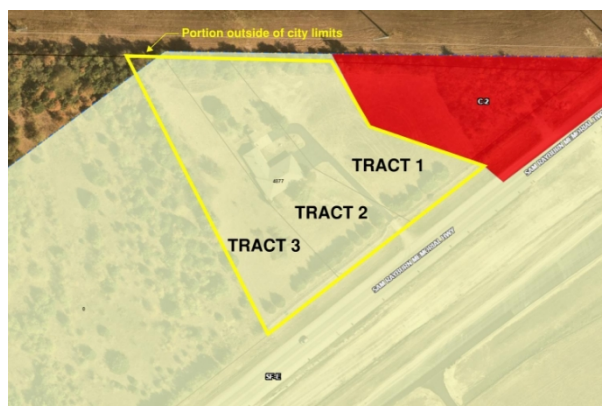
Meeting Date: 7/26/2022
Staff Contact: Ross Altobelli

AGENDA ITEM:

Conduct a Public Hearing/Consider/Discuss/Action on an Ordinance annexing 0.02± acre, the northwestern point of the property, generally located on the north side of Sam Rayburn Memorial Highway (S.H. 121), 2,070± feet west of E Farm to Market Road 455. (Director of Development Services Ross Altobelli)

SUMMARY:

Paragon Realty Group, LLC has submitted a petition to annex 0.02± acre, being the remaining portion of a lot which was not annexed with the majority of the property by Ordinance No. 532-2010, generally located on the north side of Sam Rayburn Memorial Highway (S.H. 121), 2,070± feet west of E Farm to Market Road 455.



FINANCIAL IMPACT:

N/A

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

Goal 1: Growing Anna Economy

Goal 2: Sustainable Anna Community Through Planned Managed Growth

STAFF RECOMMENDATION:

Recommended for approval.

ATTACHMENTS:

1. Ordinance (Annexation) 4877 Sam Rayburn Highway
2. Exhibit A Legal Description
3. Exhibit B Ord. 532-2010
4. Exhibit C (Service Plan-Agreement) 4877 Sam Rayburn Highway

APPROVALS:

Lauren Mecke, Planning Manager
Ross Altobelli, Director of Development Services
Jim Proce, City Manager

Created/Initiated - 7/19/2022
Approved - 7/20/2022
Final Approval - 7/21/2022

CITY OF ANNA, TEXAS

ORDINANCE NO. _____

AN ORDINANCE ANNEXING THE HEREINAFTER DESCRIBED TERRITORY TO THE CITY OF ANNA, COLLIN COUNTY, TEXAS, AND EXTENDING THE BOUNDARY LIMITS OF SAID MUNICIPALITY SO AS TO INCLUDE SAID HEREINAFTER DESCRIBED PROPERTY WITHIN SAID MUNICIPAL CORPORATE LIMITS AND GRANTING TO ALL THE INHABITANTS OF SAID PROPERTY ALL THE RIGHTS AND PRIVILEGES OF OTHER CITIZENS AND BINDING SAID INHABITANTS BY ALL OF THE ACTS, ORDINANCES, RESOLUTIONS, AND REGULATIONS OF SAID CITY AS SET FORTH HEREIN; PROVIDING A REPEALER CLAUSE; PROVIDING A SEVERABILITY CLAUSE; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, Chapter 43 of the Texas Local Government Code authorizes the annexation of territory, subject to the laws of this state; and

WHEREAS, the City of Anna, Texas (the “City”) is a Texas home-rule municipality; and

WHEREAS, Section 43.0671 of the Texas Local Government Code authorizes a municipality to extend the boundaries of the municipality and annex areas by request of the owner(s) of the areas; and

WHEREAS, the procedures prescribed by the Texas Local Government Code and the laws of this state have been duly followed with respect to the City’s annexation of following described territory, to wit: a 0.02 acre tract of land situated in the David Van Winkle Survey, Abstract No. 937, Collin County, Texas, being part of a tract (Tract Three) conveyed to Alex Johnson in Document No. 20111208001327520 of the deed records of Collin County, Texas; and

WHEREAS, the land being annexed under this ordinance (the “Annexation Tract”) is described as a portion of a lot more specifically in EXHIBIT A which was not annexed by Ordinance No. 532-2010, EXHIBIT B, attached hereto; and

WHEREAS, the Annexation Tract is wholly located with the City’s extraterritorial jurisdiction; and

WHEREAS, on or about July 6, 2022, the respective owners of the Annexation Tract submitted a written request to the City for annexation of said tract into the corporate limits of the City and the City and said owners have entered into a written agreement regarding municipal services to be provided by the City in accordance with Texas Local Government Code § 43.0672 and said written agreement is as set forth in EXHIBIT C, attached hereto; and

WHEREAS, the City timely published notice and held a public hearing on this annexation at a duly noticed public meeting in accordance with the laws of this state;

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS:

SECTION 1. The recitals set forth above are hereby incorporated in this ordinance as if set forth in full for all purposes.

SECTION 2. The Annexation Tract is hereby annexed into the corporate boundary limits of the City of Anna, Collin County, Texas, and that said corporate boundary limits of the City of Anna be and the same are hereby extended to include the above described territory within the corporate limits of the City, and the same shall hereafter be included within the territorial limits of the City, and the inhabitants thereof shall hereafter as set forth be entitled to all the rights and privileges of other similarly situated citizens of the City of Anna and they shall be bound by the acts, ordinances, resolutions, regulations and all other legal acts of said city.

SECTION 3. The official map and boundaries of the City of Anna are hereby amended and revised so as to include the area annexed, and to reflect the expansion of the City's extraterritorial jurisdiction resulting from such annexation and the City Manager is directed to take all actions necessary to make said changes to the official boundary map of the City.

SECTION 4. The City Secretary is hereby directed to file a certified copy of this ordinance and the amended official boundary map referenced in Section 3 with the with the County Clerk of Collin, Texas and the Texas Comptroller's Office.

SECTION 5. It is hereby declared to be the intention of the City Council that the phrases, clauses, sentences, paragraphs and sections of this ordinance be severable, and if any phrase, clause, sentence, paragraph or section of this ordinance shall be declared unconstitutional by the valid judgment or decree of any court of competent jurisdiction, such unconstitutionality shall not affect any of the remaining phrases, clauses, sentences, paragraphs or sections of this ordinance, and the remainder of this ordinance shall be enforced as written.

SECTION 6. All ordinances and parts thereof in conflict herewith are hereby expressly repealed insofar as they conflict herewith.

SECTION 7. This ordinance shall become effective immediately upon the date and time of its adoption and it is accordingly so ordained.

PASSED, APPROVED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS, THIS THE 26TH DAY OF JULY, 2022.

CITY OF ANNA, TEXAS

NATE PIKE, MAYOR

ATTEST:

CARRIE L. LAND, CITY SECRETARY

EXHIBIT "A"
FIELD NOTE DESCRIPTION

A 3.021 ACRE TRACT OF LAND THAT IS A PART OF THE DAVID VAN WINKLE SURVEY, ABSTRACT NO. 937, COLLIN COUNTY, TEXAS, BEING ALL OF TRACTS ONE (1), TWO (2) AND THREE (3) OF THE TRACT CONVEYED TO ALEX JOHNSON IN DOCUMENT NO. 20111208001327520 OF THE DEED RECORDS OF COLLIN COUNTY, TEXAS, BEING FURTHER DESCRIBED AS FOLLOWS:

BEGINNING AT A FOUND 1/2" IRON ROD WITH CAP AT THE SOUTHEASTERLY CORNER OF THAT TRACT CONVEYED TO RICHARD DZANSKI IN DOCUMENT NO. 20150826001080360 OF THE DEED RECORDS OF COLLIN COUNTY, TEXAS, BEING ALSO ON THE NORTHWESTERLY RIGHT OF WAY LINE OF SAM RAYBURN HIGHWAY;

THENCE NORTH 28°29'42" WEST ON THE EASTERLY LINE OF SAID DZANSKI TRACT, A DISTANCE OF 508.53 FEET TO A FOUND 5/8" IRON ROD ON THE SOUTHERLY LINE OF TRACTS OWNED BY WKG ENTERPRISES LTD;

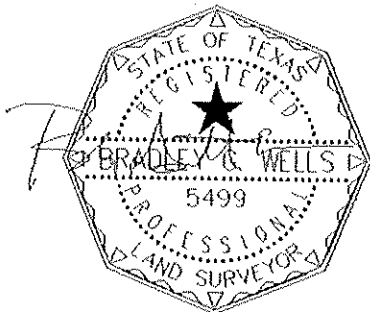
THENCE SOUTH 89°53'44" EAST ON A SOUTHERLY LINE OF SAID WKG TRACT, PASSING AT 55.57 FEET A FOUND 5/8" IRON ROD, A TOTAL DISTANCE OF 334.59 FEET TO A FOUND 5/8" IRON ROD AT THE NORTHWESTERLY CORNER OF THAT TRACT CONVEYED TO TREY SPYROPOULOS IN DOCUMENT NO. 20080606000688540 OF THE DEED RECORDS OF COLLIN COUNTY, TEXAS;

THENCE ON THE WESTERLY LINE OF SAID SPYROPOULOS TRACT THE FOLLOWING TWO COURSES:

SOUTH 33°02'03" EAST, A DISTANCE OF 121.41 FEET TO A FOUND 5/8" IRON ROD,

SOUTH 72°46'58" EAST, A DISTANCE OF 199.22 FEET TO A FOUND 3/8" IRON ROD WITH CAP AT THE SOUTHWESTERLY CORNER OF SAID SPYROPOULOS TRACT, BEING ON THE NORTHWESTERLY RIGHT OF WAY LINE OF SAM RAYBURN HIGHWAY;

THENCE SOUTH 50°39'52" WEST ON SAID RIGHT OF WAY LINE, PASING AT 149.91 FEET A FOUND 1/2" IRON ROD, AT 299.91 FEET A FOUND 5/8" IRON ROD, FOR A TOTAL DISTANCE OF 450.52 FEET TO THE POINT OF BEGINNING.



STREET ADDRESS	LEGAL DESCRIPTION	
4877 SAM RAYBURN HWY. ANNA, TX 75409	SEE ATTACHED EXHIBIT "A"	
WKG ENTERPRISES LTD DOCUMENT NO. 19990812001020770 ET AL DAVID VAN WINKLE SURVEY, ABSTRACT 931 TREY SPYROPOULOS DOCUMENT NO. 20080606000688540 ALEX JOHNSON DOCUMENT NO. 20111208001327520 3.021 ACRES RICHARD DZANSKI DOCUMENT NO. 20150826001080360 POINT OF BEGINNING SHED EXISTING RESIDENCE SAM RAYBURN HIGHWAY BASIS OF BEARING THE BEARINGS SHOWN HEREON ARE BASED ON THE NORTHWEST LINE OF SAM RAYBURN HIGHWAY, HAVING A GRID BEARING OF SOUTH 50°39'52\"/> CERTIFICATION THIS SURVEY IS THE RESULT OF AN ON-THE-GROUND SURVEY, AND THERE ARE NO DISCREPANCIES, CONFLICTS, SHORTAGES IN AREA, ENCROACHMENTS, OVERLAPPING OF IMPROVEMENTS, OR ROADWAYS, EXCEPT AS OTHERWISE SHOWN BY THE SURVEY, ALL MONUMENTS SHOWN EXIST AND THE LOCATION AND SIZE SHOWN ARE TRUE AND CORRECT. DATE: OCTOBER 4, 2021 STATE OF TEXAS REGISTERED PROFESSIONAL LAND SURVEYOR 5499 SYMBOL LEGEND ● MONUMENT FOUND AS NOTED ○ MONUMENT SET AS NOTED () RECORD VALUE PER DEED - NO () MEASURED VALUE 1" = 100' GRAPHIC SCALE 0 50 100		
SURVEY JOB #: 21-1189	CLIENT INFORMATION	
SURVEY INVOICE #: 239		
CERTIFIED TO:		
KELLER WILLIAMS PARAGON GROUP PARHAM GHASSEMI		
THIS SURVEY IS PREPARED FOR THE EXCLUSIVE USE AND BENEFIT OF THE PARTIES LISTED HEREON. LIABILITY TO THIRD PARTIES MAY NOT BE TRANSFERRED OR ASSIGNED.	ACCORDING TO FEMA F.I.R.M. MAP 48085C0180J WITH AN EFFECTIVE DATE OF 06/02/2009, THE SUBJECT PROPERTY LIES IN ZONE "X", AN AREA OF MINIMAL FLOOD HAZARD.	
SURVEYOR INFORMATION		BRAD WELLS, RPLS 315 FAIRLAND DRIVE WYLIE, TX 75098 (405) 305-8325 wellsbg@gmail.com
DATE	REVISION 1	DATE

CITY OF ANNA, TEXAS

ORDINANCE NO. 532-2010

AN ORDINANCE ANNEXING INTO THE CITY OF ANNA, TEXAS THE HEREINAFTER DESCRIBED TERRITORY ADJACENT TO AND ADJOINING THE CITY OF ANNA, TEXAS, TO WIT: BEING A CERTAIN AREA OF LAND SITUATED IN THE D. VAN WINKLE LAND SURVEY, ABSTRACT NUMBER A0937, SISTER GROVE ESTATES, HIRAM BRINLEE LAND SURVEY, ABSTRACT NUMBER A0030, J. C. NEIL LAND SURVEY, ABSTRACT NUMBER A0659, AND THE JAS SORREL LAND SURVEY, ABSTRACT NUMBER A0858, COUNTY OF COLLIN, STATE OF TEXAS; AMENDING THE OFFICIAL CITY MAP; PROVIDING FOR A SERVICE PLAN; REQUIRING THE FILING OF THIS ORDINANCE WITH THE COLLIN COUNTY CLERK; PROVIDING A CUMULATIVE REPEALER CLAUSE; PROVIDING FOR SEVERABILITY; PROVIDING FOR ENGROSSMENT AND ENROLLMENT; PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the City of Anna, Texas ("City") is a home-rule municipality located in Collin County, Texas, created in accordance with the provisions of the Texas Local Government Code and operating pursuant to the enabling legislation of the State of Texas and the City's Home-Rule Charter; and

WHEREAS, the City desires to annex into its corporate limits the hereinafter described territory adjacent to and adjoining the City (hereinafter, referenced as the "Territory"), to wit: being a certain area of land situated in the D. Van Winkle land survey, Abstract Number A0937, Sister Grove Estate, Hiram Brinlee land survey, Abstract Number A0030, J. C. Neil land survey, Abstract Number A0659, and the Jas Sorrel land survey, Abstract Number A0858, County of Collin, State of Texas and more particularly described in the attached Exhibit A, which is incorporated herein for all purposes; and

WHEREAS, all statutory notice requirements relating to the annexation of the Territory pursuant to Chapter 43 of the Texas Local Government Code have been satisfied; and

WHEREAS, two public hearings were conducted in accordance with Section 43.052 of the Texas Local Government Code to consider the annexation of the Territory; and

WHEREAS, said public hearings were conducted and held no more than forty (40) days nor less than twenty (20) days prior to the institution of annexation proceedings; and

WHEREAS, the City Council of the City of Anna, Texas ("City Council") has determined that it would be advantageous and beneficial to the City, its citizens, and the inhabitants of the Territory, to annex the Territory to the City; and

WHEREAS, the City Council has determined that the Territory is adjacent to and adjoins the City; and

WHEREAS, the City Council has investigated, determined and officially finds that no part of the Territory is within the extraterritorial jurisdiction of any other incorporated city or town; and

WHEREAS, to the extent that this ordinance would cause an unincorporated area to be entirely surrounded by the City's corporate limits, the City Council has found—and incorporates herein its finding—that surrounding the area is in the public interest; and

WHEREAS, a service plan providing for the extension of municipal services into the Territory, which was prepared prior to and made available at the aforementioned public hearings, is attached hereto as Exhibit B and incorporated herein for all purposes; and

WHEREAS, all procedures and proceedings related to this ordinance and to the annexation of the Territory have been undertaken and acted upon in accordance with the Texas Open Meetings Act, as applicable; and

WHEREAS, after hearing the arguments for and any arguments against the annexation of the Territory, the City Council finds that the Territory should be annexed;

NOW THEREFORE BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS:

Section 1. Incorporation of Recitals. The above-stated recitals are incorporated into this ordinance as if set forth in full here for all purposes.

Section 2. Territory Annexed.

(a) The Territory, described in Exhibit A attached hereto, which is hereby made an integral part of this ordinance, lying adjacent to and adjoining the present corporate boundaries of the City, is hereby added and annexed into the City, and the Territory shall hereafter be included within the corporate boundary limits of the City, and the present boundary limits of the City are altered and amended so as to include the Territory within the corporate limits of the City.

(b) From and after the passage of this ordinance, the Territory shall be a part of the City, and, subject to the municipal service plan referenced in Section 4 of this ordinance, the inhabitants thereof shall be entitled to all of the rights, privileges and immunities as all other similarly situated citizens of the City, and shall be bound by all of the ordinances and regulations enacted pursuant to and in conformity with the general laws of the State of Texas.

Section 3. Official City Map Amended.

(a) The official map and boundaries of the City's corporate limits are hereby amended so as to include the Territory.

(b) The City Manager is hereby directed and authorized to perform or cause to be performed all acts necessary to update the official map of the City to add the Territory hereby annexed as required by law, but any delay in or failure to update such map shall in no way impact or affect the validity of this ordinance or this annexation.

Section 4. Municipal Service Plan. The municipal service plan for the Territory, attached hereto as Exhibit B, was submitted in accordance with Chapter 43 of the Texas Local Government Code and is hereby approved as part of this ordinance.

Section 5. Filing of Ordinance. The City Secretary is hereby directed to file or cause to be filed a certified copy of this ordinance in the office of the County Clerk of Collin County, Texas, and any other necessary agencies, including the United States Department of Justice.

Section 6. Cumulative Repealer. This ordinance shall be cumulative of all other ordinances and shall not repeal any of the provisions of such ordinances except for those instances where there are direct conflicts with the provisions of this ordinance. Ordinances, or parts thereof, in force at the time this ordinance shall take effect and that are inconsistent with this ordinance are hereby repealed to the extent that they are inconsistent with this ordinance.

Section 7. Severability. If any section, article, paragraph, sentence, clause, phrase or word in this Ordinance, or application thereof to any person or circumstance, is held invalid or unconstitutional by a Court of competent jurisdiction, such holding shall not affect the validity of the remaining portions of the Ordinance, and the City Council hereby declares it would have passed such remaining portions of the Ordinance despite such invalidity, which remaining portions shall remain in full force and effect.

Section 8. Engrossment and Enrollment. The City Secretary of the City of Anna is hereby directed to engross and enroll this ordinance by copying the Caption in the minutes of the City Council of the City of Anna and by filing this ordinance in the ordinance records of the City.

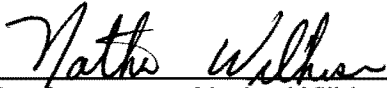
Section 9. Effective Date. This ordinance shall be in full force and effect from and after its date of passage.

PASSED by the City Council of the City of Anna, Texas, this 14th day of December, 2010, by the following vote of the members of the City Council as present:

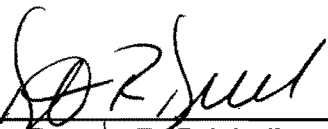
AYES	7	NAYS	0	ABSTAIN	0
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ATTEST:

APPROVED:



City Secretary, Natha Wilkison



Mayor, Darren R. Driskell



Exhibit A
Tract 1

Situated in Collin County, Texas and being part of the Hiram Brinlee Survey, Abstract No. 30, the David VanWinkle Survey, Abstract No. 937, the J. Serrel Survey, Abstract No. 858, and being more particularly described as follows:

BEGINNING in the east line of the Serrel Survey and the west line of the VanWinkle Survey, and being in the northwest right-of-way line of the Sam Rayburn Memorial Highway;

THENCE north 51 degrees 37 minutes 57 seconds east a distance of 271.95 feet to a point for corner;

THENCE north 01 degrees 04 minutes 59 seconds east a distance of 569.82 feet to a point for corner;

THENCE north 50 degrees 50 minutes 29 seconds east of 816.32 feet to a point for corner;

THENCE north 88 degrees 29 minutes 45 seconds east of 292.55 feet to a point for corner;

THENCE south 44 degrees 59 minutes 59 seconds east of 150.12 feet to a point for corner;

THENCE south 76 degrees 23 minutes 59 seconds east of 136.30 feet to a point for corner;

THENCE north 51 degrees 15 minutes 03 degrees 00 seconds east of 253.04 feet to a point for corner;

THENCE south 89 degrees 14 minutes 47 seconds east of 874.33 feet to a point for corner;

THENCE south 50 degrees 48 minutes 42 seconds west of 3,187.32 feet to a point for corner;

THENCE north 00 degrees 38 minutes 22 seconds east of 469.21 feet to a point for corner;

THENCE south 89 degrees 34 minutes 10 seconds west of 143.22 feet to a point for corner;

THENCE south 50 degrees 48 minutes 42 seconds west of 1,821.96 feet to a point for corner;

THENCE south 18 degrees 18 minutes 57 seconds east of 481.61 feet to a point for corner;

THENCE south 50 degrees 48 minutes 42 seconds 71 west of 3,401.28 to a point for corner;

THENCE north 00 degrees 43 minutes 03 seconds west of 554.26 feet to a point for corner;

THENCE south 51 degrees 06 minutes 17 seconds west of 1,093.06 feet to a point for corner;

THENCE south 53 degrees 22 minutes 55 seconds west of 1,001.53 feet to a point for corner;

THENCE south 00 degrees 21 minutes 03 seconds west of 555.56 feet to a point for corner;

THENCE south 53 degrees 39 minutes 51 seconds west of 1,016.70 feet to a point for corner;

THENCE north 88 degrees 13 minutes 50 seconds west of 1,620.46 feet to a point for corner;

THENCE north 53 degrees 39 minutes 51 seconds east of 3,019.60 feet to a point for corner in a curve to the left with a radius of 11,500 feet and a chord bearing of north 52 degrees 14 minutes 17 seconds a distance of 572.44 feet;

THENCE with said curve a distance of 572.50 feet;

THENCE north 50 degrees 48 minutes 42 seconds east of 1,827.32 feet to a point for corner;

THENCE south 27 degrees 07 minutes 05 seconds east of 441.32 feet to a point for corner;

THENCE north 47 degrees 50 minutes 19 seconds east of 162.13 feet to a point for corner;

THENCE north 53 degrees 48 minutes 04 seconds east of 106.99 feet to a point for corner;

THENCE north 22 degrees 18 minutes 01 seconds west of 448.06 feet to a point for corner;

THENCE north 50 degrees 48 minutes 42 seconds east of 418.34 feet to a point for corner;

THENCE south 11 degrees 29 minutes 28 seconds west of 219.79 feet to a point for corner;

THENCE south 03 degrees 50 minutes 54 seconds west of 394.84 feet to a point for corner;

THENCE north 53 degrees 48 minutes 08 seconds east of 348.61 feet to a point for corner;

THENCE north 40 degrees 06 minutes 17 seconds east of 202.48 feet to a point for corner;

THENCE north 51 degrees 46 minutes 59 seconds east of 28.13 feet to a point for corner;

THENCE north 62 degrees 35 minutes 57 seconds east of 159.85 feet to a point for corner;

THENCE north 50 degrees 11 minutes 40 seconds east of 1,281.05 feet to a point for corner;

THENCE north 53 degrees 24 minutes 32 seconds east of 518.17 feet to a point for corner;

THENCE north 50 degrees 03 minutes 48 seconds east of 1,751.40 feet to the PLACE OF BEGINNING and containing 173.68 acres of land more or less save and except areas that are already within the City Limits of Anna.

Tract 2

Situated in Collin County, Texas and being part of the David VanWinkle Survey, Abstract No. 937, and being more particularly described as follows:

BEGINNING in the most easterly intersection of the right-of-way line of F. M. Highway 455 and the south line of Wild Rose Farms Subdivision;

THENCE south 86 degrees 56 minutes 22 seconds east a distance of 388.23 feet to a point for corner;

THENCE south 175.53 feet to a point for corner;

THENCE east 262.60 feet to a point for corner;

THENCE south 299.84 feet to a point for corner;

THENCE west 227.42 feet to a point for corner in a non tangent curve to the left with a radius of 776.52 feet and a chord bearing of north 40 degrees 26 minutes 36 seconds west a distance of 651.86 feet;

THENCE northwesterly with said curve a distance of 672.70 feet to the PLACE OF BEGINNING and containing 3 acres of land more or less save and except areas that are already within the City Limits of Anna.

Tract 3

Situated in Collin County, Texas and being part of the David VanWinkle Survey, Abstract No. 937, and being more particularly described as follows:

BEGINNING in the southwesterly intersection of the right-of-way line of F. M. Highway 455 and the southeast right-of-way line the Sam Rayburn Memorial Highway;

THENCE north 46 degrees 41 minutes 05 seconds east a distance of 131.89 feet to a point for corner;

THENCE north 50 degrees 52 minutes 42 seconds east a distance of 1,111.73 feet to a point for corner;

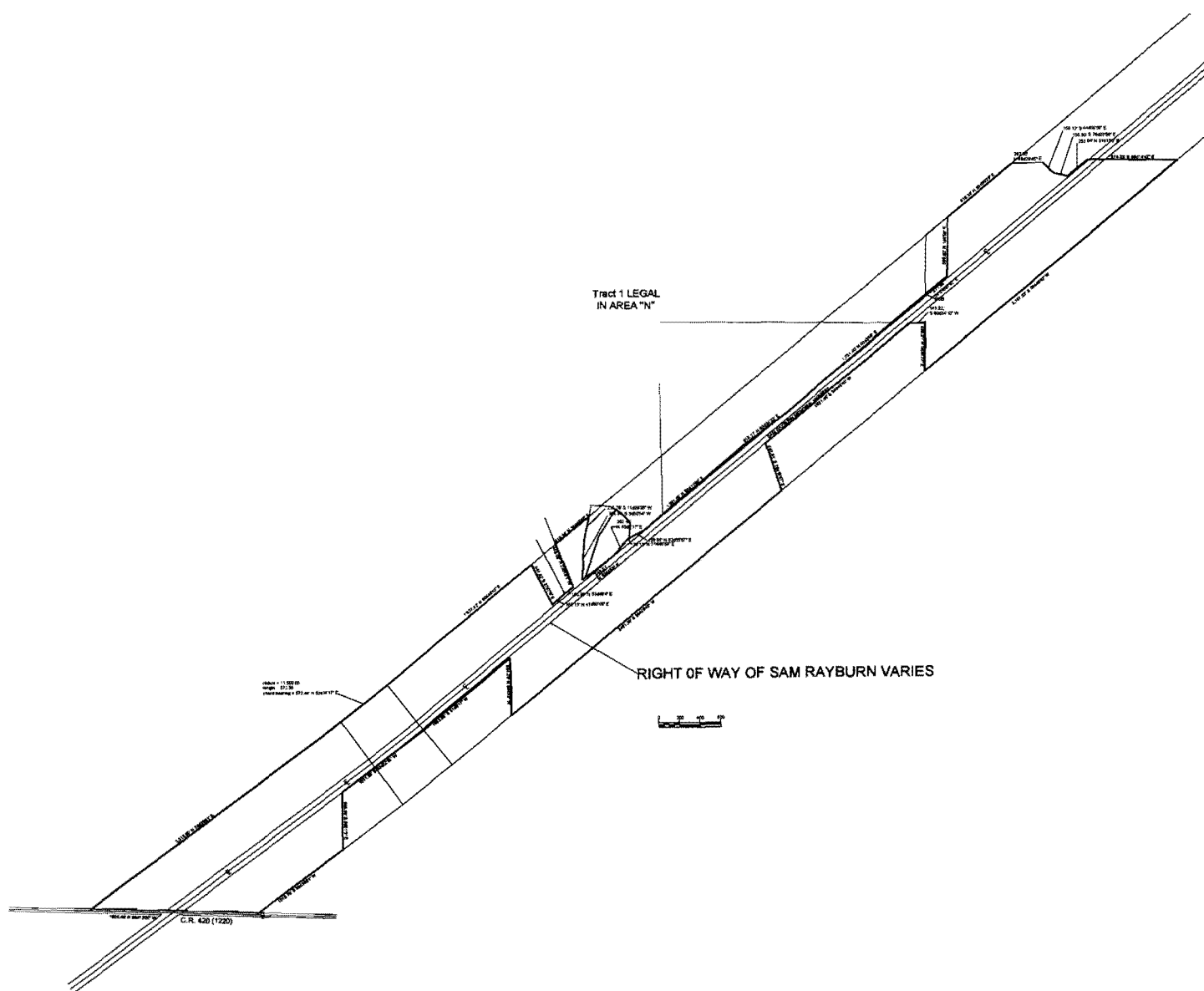
THENCE north 89 degrees 54 minutes 59 seconds east a distance of 694.26 feet to a point for corner;

THENCE south 50 degrees 48 minutes 42 seconds west a distance of 1,395.58 feet to a point for corner;

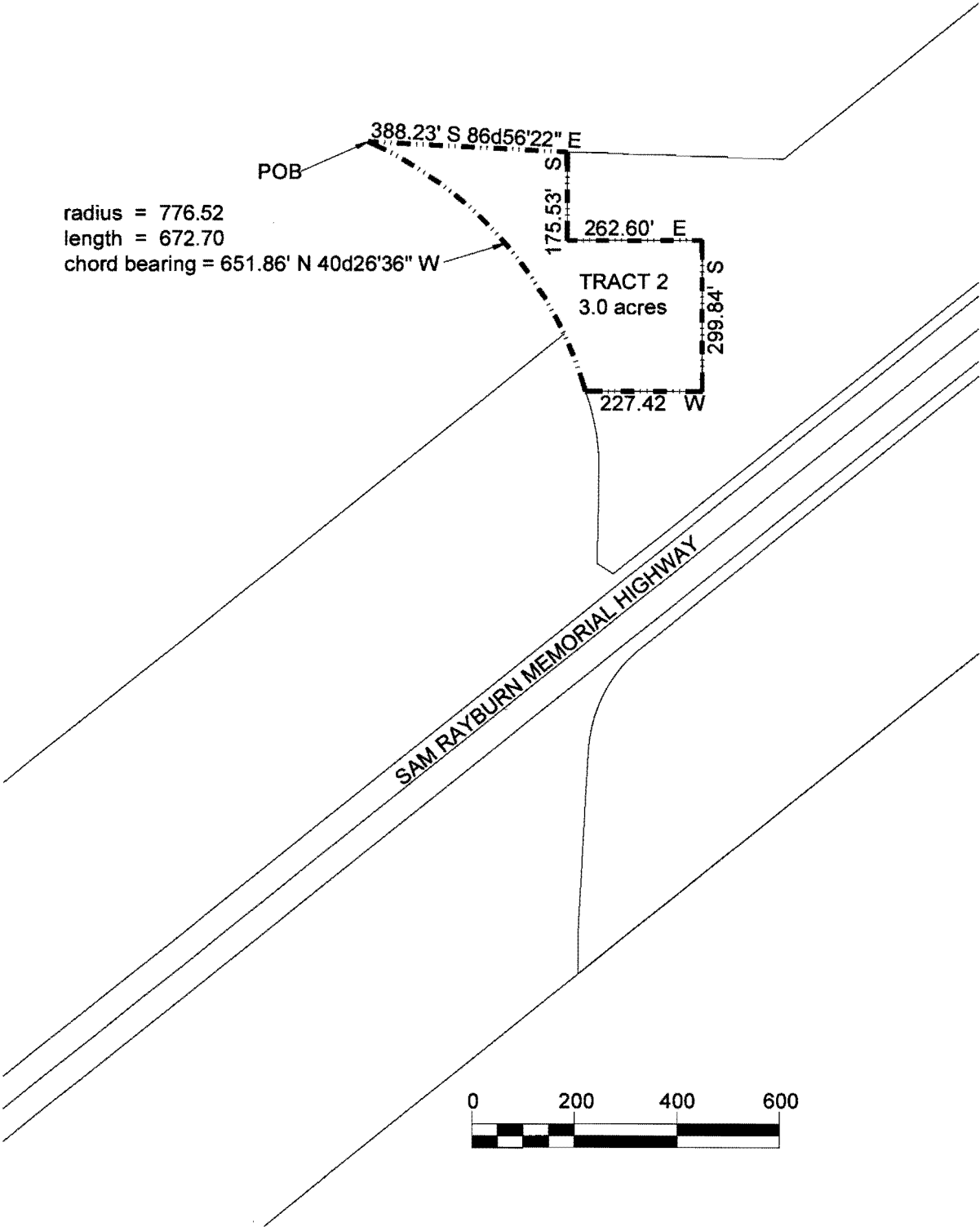
THENCE north 89 degrees 20 minutes 53 seconds west a distance of 334.24 feet to a point for corner;

THENCE north 77 degrees 22 minutes 23 seconds west a distance of 169.63 feet to a point for corner;

THENCE north 56 degrees 03 minutes 23 seconds west a distance of 85.93 feet to the PLACE OF BEGINNING and containing 13.7 acres of land more or less save and except areas that are already within the City Limits of Anna.



Tract 2 LEGAL
IN AREA "N"



Tract 3 LEGAL
IN AREA "N"

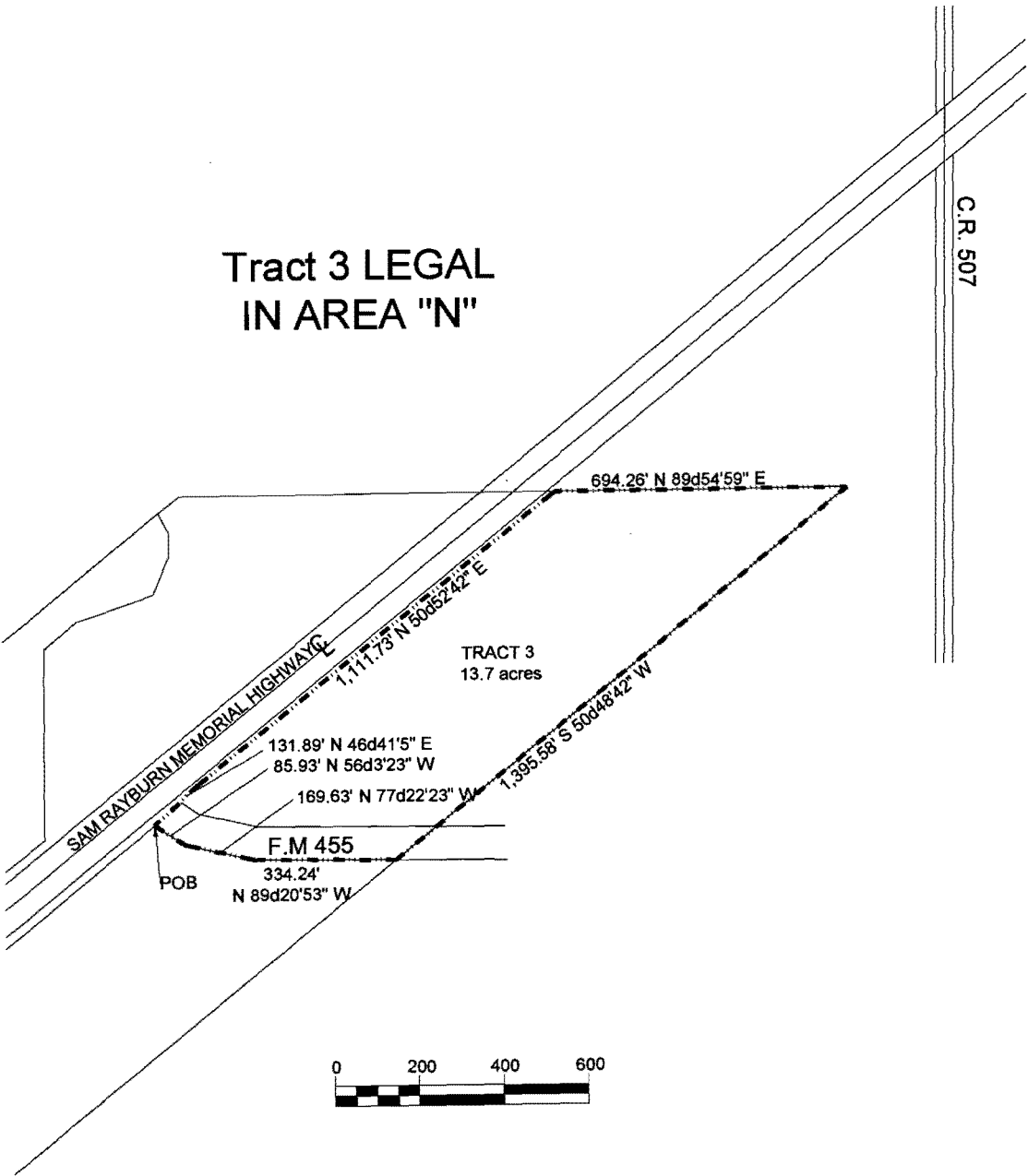


EXHIBIT B

ANNEXATION SERVICE PLAN

POLICE PROTECTION

On the effective date of annexation, the City of Anna, Texas and its Police Department will provide police protection to the newly annexed area at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

FIRE PROTECTION

On the effective date of annexation, the City of Anna, Texas and its Fire Department will provide fire protection to the newly annexed area at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

EMERGENCY MEDICAL SERVICES

On the effective date of annexation, the City of Anna, Texas, through its contract with Collin County or another service provider, will provide emergency medical services to the newly annexed area at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

SOLID WASTE COLLECTION

On the effective date of annexation, the City of Anna, Texas, through its contract with Bradshaw and Son or another service provider, will provide solid waste collection to residents and businesses in the newly annexed area (to the extent that the service provider has access to the area to be serviced) at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area. Such service will be provided in accordance with existing City policies and Ordinances, and only upon payment of any required deposits and the agreement to pay lawful service fees and charges for solid waste collection.

Residents and businesses of the newly annexed area that have existing contracts with solid waste service providers have two years from the date of annexation or until the termination date of the existing contract, whichever is sooner, to begin solid waste

collection service through the City. Solid waste collection is mandatory for City of Anna residents and businesses operating within the city limits.

WATER AND WASTEWATER FACILITIES

On the effective date of annexation, any and all water or waste water facilities owned by the City of Anna, Texas at the time of annexation shall be maintained and operated by the City of Anna, Texas. Of such facilities, the City will maintain the main water transmission and wastewater collection lines. All water and wastewater service lines (up to and including the service line connection with the City's main line, shall be maintained by the property owner served by the service connection.

Residents and owners of property in newly annexed areas that are located within the City's water or wastewater CCN will be offered water and wastewater service in accordance with City policies and ordinances in existence at the time of annexation or as may be amended from time-to-time by the City Council. Generally, these ordinances state that the land owner or customer must bear the cost of construction of water and wastewater system facilities to a point where suitable connection to the existing system can be made and service to the customer can be provided. All water and wastewater facilities designed to connect to the City's existing system must be approved by the City and meet all City zoning, subdivision, and other development ordinances and requirements.

ROADS AND STREETS

On the effective date of annexation, any and all existing public roads or streets in the newly annexed area which have been dedicated to Collin County, Texas or to the City of Anna, Texas, or which are owned by the City of Anna, Texas shall be maintained to the same degree and extent that other roads and streets are maintained in areas of the City with similar topography land use and population density. Specific maintenance activities are determined by available funding and the need for maintenance as determined by the City. The City is not obligated to maintain any portion of a private road or street. Any and all lighting of roads and streets which may be positioned in a public right of way, roadway or utility company easement shall be maintained by the applicable utility company servicing that area of the City of Anna, Texas pursuant to the rules regulations and fees of such utility.

An owner of land within the newly annexed area that desires to develop said property will be required pursuant to the ordinances of the City of Anna, Texas to provide internal and peripheral streets and to construct those streets in accordance with the specifications required by the City of Anna, Texas.

PARKS PLAYGROUNDS AND SWIMMING POOLS OR ANY OTHER PUBLICLY OWNED FACILITY BUILDING OR SERVICE

The City Council of the City of Anna, Texas is not aware of the existence of any public parks, public playgrounds, public swimming pools, or any other publicly owned facility, building or service now located in the area proposed for annexation. In the event any such parks, playgrounds, swimming pools, or any other public facilities, buildings or services do exist and are public facilities, the City of Anna, Texas will maintain such areas upon annexation to the same extent and degree that it maintains public parks, public playgrounds, public swimming pools, other public facilities buildings or services and other similar areas of the City now incorporated in the City of Anna, Texas.

To the extent that it becomes necessary because of development demands population growth or a bona fide need, the City Council of the City of Anna, Texas will undertake to provide any such facility which it deems necessary to adequately provide for the health and safety of the citizens of the newly incorporated area based upon the standard considerations of topography, land use and population density.

OTHER MUNICIPAL SERVICES

Following annexation by the City of Anna, Texas, the City will provide code enforcement, planning, and animal control services to the newly annexed area, to the extent such services are funded in the annual budget and provided by the City within its full-purpose boundaries. Such services will be provided to the newly annexed area at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

CONSTRUCTION OF CAPITAL IMPROVEMENTS

The City Council of the City of Anna, Texas finds and determines it to be unnecessary to acquire or construct specific capital improvements for the purposes of providing full municipal services to the newly annexed area. The City Council finds and determines that it has at the present time adequate facilities to provide the same type, kind and level of service which exists in and is presently being administered to other areas already incorporated in the City of Anna, Texas with the same or similar topography, land use and population density.

SPECIFIC FINDINGS

The City Council of the City of Anna, Texas finds and determines that this proposed Service Plan will not provide any fewer services and it will not provide a lower level of service in the area proposed to be annexed than were in existence in the proposed area at the time immediately preceding the annexation process. Furthermore the City Council of the City of Anna, Texas finds and determines that the rural nature of the area

is characteristically different from other more highly developed areas within the corporate limits of the City of Anna, Texas. Consequently because of the differing characteristics of topography, land use, and population density the service levels which may ultimately be provided in the newly annexed area may differ somewhat from services provided in other areas of the City of Anna, Texas. These differences are specifically dictated because of differing characteristics of the property. The City of Anna, Texas will undertake to perform consistent with this contract so as to provide this newly annexed area with the same type, kind and quality of service presently enjoyed by the citizens of the City of Anna, Texas who reside in areas of similar topography, land use and population density.

TERM

This Service Plan shall be valid for a term of ten (10) years. Renewal of the Service Plan shall be at the discretion of the City Council.

AMENDMENTS

This Service Plan may be amended if the City Council determines at a public hearing that changed conditions or subsequent occurrences make this Service Plan unworkable or obsolete. The City Council may amend the Service Plan to conform to the changed conditions or subsequent occurrences pursuant to Texas Local Government Code, Section 43.056.

AGREEMENT REGARDING SERVICES

This Agreement Regarding Services (this “Agreement” or “Service Plan”) is entered into this 26th day of July, 2022 by and between Paragon Realty Group, LLC, and the City of Anna, Texas a home rule municipality.

SUBJECT PROPERTY

The real property that is the subject of this Service Plan is described as follows:

4877 Sam Rayburn Highway. 0.02± acres. The northwestern point of the property, located on the north side of Sam Rayburn Memorial Highway (S.H. 121), 2,070± feet west of E Farm to Market Road 455

AGREEMENT CONDITIONED ON ANNEXATION

This Agreement is conditioned on the City of Anna City Council adopting an ordinance annexing the Subject Property described above on or before the 26th day of July, 2022. If the City Council does not adopt such ordinance on or before said date then this Agreement shall be null and void in its entirety. Nothing in this Agreement shall require the City Council to annex the Subject Property.

POLICE PROTECTION

On the effective date of annexation, the City of Anna, Texas and its Police Department will provide police protection to the newly annexed area at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

FIRE PROTECTION

On the effective date of annexation, the City of Anna, Texas and its Fire Department will provide fire protection to the newly annexed area at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

EMERGENCY MEDICAL SERVICES

On the effective date of annexation, the City of Anna, Texas, through its contract with Collin County or another service provider, will provide emergency medical services to the newly annexed area at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

SOLID WASTE COLLECTION

On the effective date of annexation, the City of Anna, Texas, through its contract with CARDS Dallas, Inc. or another service provider, will provide solid waste collection to residents and businesses in the newly annexed area (to the extent that the service provider has access to the area to be serviced) at the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area. Such service will be provided in accordance with existing City policies and Ordinances, and only upon payment of any required deposits and the agreement to pay lawful service fees and charges for solid waste collection. Solid waste collection through a subscription with the City's solid waste franchisee is mandatory for City of Anna residents and businesses operating within the city limits unless provided for otherwise by ordinance.

WATER AND WASTEWATER FACILITIES

On the effective date of annexation, any and all water or wastewater facilities owned by the City of Anna, Texas at the time of annexation shall be maintained and operated by the City of Anna, Texas. Of such facilities, the City will maintain the main water transmission and wastewater collection lines. All water and wastewater service lines from the building to the easement or right-of-way line, shall be maintained by the property owner served by the service connection.

Residents and owners of property in newly annexed areas that are located within the City's water or wastewater CCN will be offered water and wastewater service in accordance with City policies and ordinances in existence at the time of annexation or as may be amended from time-to-time by the City Council. Generally, these ordinances state that the landowner or customer must bear the cost of construction of water and wastewater system facilities to a point where suitable connection to the existing system can be made and service to the customer can be provided. All water and wastewater facilities designed to connect to the City's existing system must be approved by the City and meet all City zoning, subdivision, and other development ordinances and requirements.

ROADS AND STREETS

On the effective date of annexation, any and all existing public roads or streets in the newly annexed area which have been dedicated to Collin County, Texas or to the City of Anna, Texas, or which are owned by the City of Anna, Texas shall be maintained to the same degree and extent that other roads and streets are maintained in areas of the City with similar topography land use and population density. Specific maintenance activities are determined by available funding and the need for maintenance as determined by the City. The City is not obligated to maintain any portion of a private road or street. Any and all lighting of roads and streets which may be positioned in a public right of way, roadway or utility company easement shall be maintained by the applicable utility company servicing that area of the City of Anna, Texas pursuant to the rules regulations and fees of such utility.

An owner of land within the newly annexed area that desires to develop said property will be required pursuant to the ordinances of the City of Anna, Texas to provide internal and peripheral streets and to construct those streets in accordance with the specifications required by the City of Anna, Texas.

PARKS PLAYGROUNDS AND SWIMMING POOLS OR ANY OTHER PUBLICLY OWNED FACILITY BUILDING OR SERVICE

The City Council of the City of Anna, Texas is not aware of the existence of any public parks, public playgrounds, public swimming pools, or any other publicly owned facility, building or service now located in the area proposed for annexation. In the event any such parks, playgrounds, swimming pools, or any other public facilities, buildings or services do exist and are public facilities, the City of Anna, Texas will maintain such areas upon annexation to the same extent and degree that it maintains public parks, public playgrounds, public swimming pools, other public facilities buildings or services and other similar areas of the City now incorporated in the City of Anna, Texas.

To the extent that it becomes necessary because of development demands population growth or a bona fide need, the City Council of the City of Anna, Texas will undertake to provide any such facility which it deems necessary to adequately provide for the health and safety of the citizens of the newly incorporated area based upon the standard considerations of topography, land use and population density.

OTHER MUNICIPAL SERVICES

Following annexation by the City of Anna, Texas, the City will provide code enforcement, planning, and animal control services to the newly annexed area, to the extent such services are funded in the annual budget and provided by the City within its full-purpose boundaries. In addition, the City will provide other municipal services that the City may from time to time provide to other similarly situated areas within the City's corporate limits. The services referenced in this paragraph will be provided to the newly annexed area at

the same or similar level of service now being provided to other areas of the City of Anna, Texas with similar topography, land use, and population density within the newly annexed area.

CONSTRUCTION OF CAPITAL IMPROVEMENTS

The City Council of the City of Anna, Texas finds and determines it may be necessary to acquire or construct specific capital improvements for the purposes of providing full municipal services to the newly annexed area. These capital improvements shall be constructed as part of the development of the property and may be eligible for impact fee reimbursement. Subject to the foregoing, the City Council finds and determines that it has at the present time adequate facilities to provide the same type, kind and level of service which exists in and is presently being administered to other areas already incorporated in the City of Anna, Texas with the same or similar topography, land use and population density.

SPECIFIC FINDINGS

The City Council of the City of Anna, Texas finds and determines that this Service Plan will not provide any fewer services and it will not provide a lower level of service in the area proposed to be annexed than were in existence in the proposed area at the time immediately preceding the annexation process. Furthermore, the City Council of the City of Anna, Texas finds and determines that the rural nature of the area is characteristically different from other more highly developed areas within the corporate limits of the City of Anna, Texas. Consequently because of the differing characteristics of topography, land use, and population density the service levels which may ultimately be provided in the newly annexed area may differ somewhat from services provided in other areas of the City of Anna, Texas. These differences are specifically dictated because of differing characteristics of the property. The City of Anna, Texas will undertake to perform consistent with this contract so as to provide this newly annexed area with the same type, kind and quality of service presently enjoyed by the citizens of the City of Anna, Texas who reside in areas of similar topography, land use and population density.

AMENDMENTS

This Service Plan may be amended if the City Council determines at a public hearing that changed conditions or subsequent occurrences make this Service Plan unworkable or obsolete. The City Council may amend the Service Plan to conform to the changed conditions or subsequent occurrences pursuant to Texas Local Government Code, Section 43.056.

Owner(s):

Paragon Realty Group, LLC
a Texas Limited Liability Company

By: Paragon Realty Group, LLC
a Texas Limited Liability Company
Its Manager

By: _____
Name: Parham Ghassemi
Title: Manager

IN WITNESS WHEREOF:
STATE OF TEXAS

§
§
§

COUNTY OF TARRANT

This instrument was acknowledged before me on the ____ day of _____,
20____, by _____ as owner of _____.

Notary Public, State of Texas

City of Anna:

By: _____
Name: Jim Proce
Title: City Manager

IN WITNESS WHEREOF:
STATE OF TEXAS

§
§
§

COUNTY OF COLLIN

This instrument was acknowledged before me on the ____ day of _____, 2022, by
Jim Proce as representative of the City of Anna.

Notary Public, State of Texas



Item No. 7.c.

City Council Agenda
Planning Staff Report

Meeting Date: 7/26/2022
Staff Contact: Ross Altobelli

AGENDA ITEM:

Conduct a Public Hearing/Consider/Discuss/Action on an Ordinance to rezone 3.0± acres on the north side of Sam Rayburn Highway (S.H. 121), 2,070± feet west of E Farm-to-Market Road 455 from SF-E Single-Family Residential – Large Lot to C-2 General Commercial. (Director of Development Services Ross Altobelli)

SUMMARY:

Request to rezone 3.0± acres on the north side of Sam Rayburn Highway (S.H. 121), 2,070± feet west of E Farm to Market Road 455 from SF-E Single-Family Residential – Large Lot to C-2 General Commercial.

REMARKS:

The applicant is requesting to rezone the property in order to allow for commercial development. The General Commercial (C-2) district is intended to accommodate those uses that are of city-wide and regional significance. Within this district are permitted retail, service, and office uses characteristic of retailing and wholesaling markets.

The applicant has also submitted an annexation petition for the portion of the property that falls outside of the city limits. The Planning & Zoning recommendation is for the whole property.

Surrounding Land Use and Zoning

North Vacant land located in the ETJ

East Vacant land zoned C-2 General Commercial

South Across Sam Rayburn Memorial Highway, vacant land partially zoned SF-E Single-Family Residential – Large Lot and partially located in the ETJ

West Vacant land partially zoned SF-E Single-Family Residential – Large Lot and partially located in the ETJ

Future Land Use Plan – The Future Land Use Plan designates this property as Community Commercial.

Community Commercial development is typically characterized by small, freestanding buildings containing one or more businesses. Unlike larger shopping centers that may attract regional customers, Community Commercial developments primarily provide services for residents of surrounding neighborhoods. Business types may include

restaurants, local retail, medical offices, banks and other retail and services.

FINANCIAL IMPACT:

N/A

STRATEGIC CONNECTIONS:

Goal 1: Growing Anna Economy

Goal 2: Sustainable Anna Community Through Planned Managed Growth

STAFF RECOMMENDATIONS:

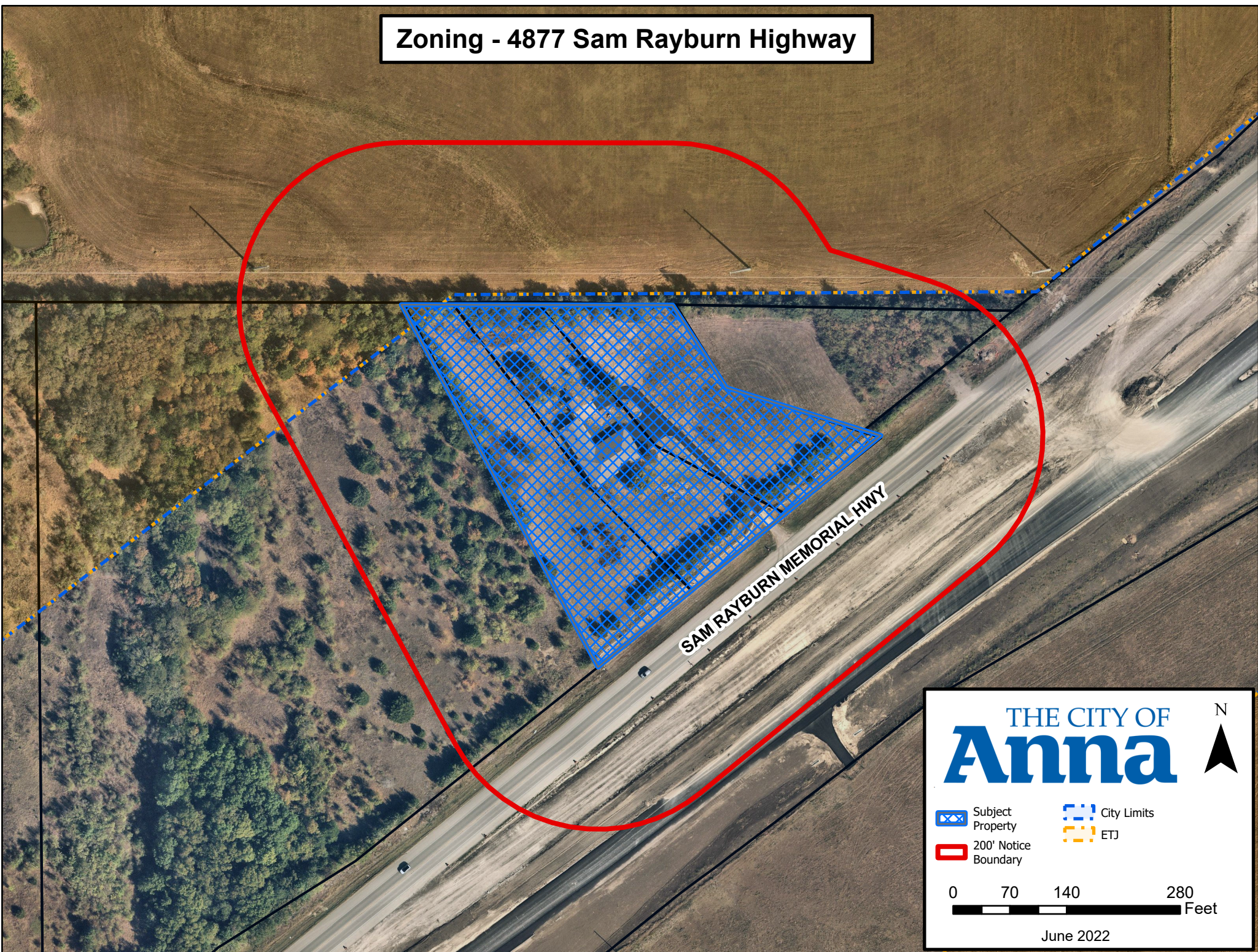
The request is in conformance with the preferred scenario diagram and comprehensive plan.

The Planning and Zoning Commission recommended approval.

ATTACHMENTS:

1. 4877 Sam Rayburn Highway Locator Map
2. Ordinance 4877 Sam Rayburn Highway
3. Exhibit A Legal Description

Zoning - 4877 Sam Rayburn Highway



THE CITY OF
Anna

 Subject Property  City Limits

 200' Notice Boundary  ETJ

0 70 140 280
Feet

June 2022

N



CITY OF ANNA, TEXAS

(Property rezoned under this ordinance is located on the north side of Sam Rayburn Highway (S.H. 121), 2,070± feet west of E Farm-to-Market Road 455)

ORDINANCE NO. _____

AN ORDINANCE OF THE CITY OF ANNA, TEXAS AMENDING THE CITY'S COMPREHENSIVE PLAN, ZONING MAP, AND ZONING ORDINANCE AND CHANGING THE ZONING OF CERTAIN PROPERTY AS DESCRIBED HEREIN; PROVIDING FOR SAVINGS, REPEALING AND SEVERABILITY CLAUSES; PROVIDING FOR AN EFFECTIVE DATE; PROVIDING FOR A PENALTY CLAUSE NOT TO EXCEED \$2,000 OR THE HIGHEST PENALTY AMOUNT ALLOWED BY LAW, WHICHEVER IS LESS; AND, PROVIDING FOR THE PUBLICATION OF THE CAPTION HEREOF.

WHEREAS, the City of Anna, Texas ("City") has previously adopted ordinances, rules and regulations governing the zoning in the City; and

WHEREAS, the City has received a requested zoning change on Property described in Exhibit A ("Property") attached hereto and incorporated herein for all purposes as if set forth in full; and

WHEREAS, said Property located on the north side of Sam Rayburn Highway (S.H. 121), 2,070± feet west of E Farm-to-Market Road 455 from SF-E Single Family Residential-Large Lot zoning to C-2 General Commercial zoning; and

WHEREAS, the Planning and Zoning Commission of the City and the City Council of the City of Anna ("City Council") have given the requisite notices by publication and otherwise and have held the public hearings as required by law and afforded a full and fair hearing to all property owners and generally to all persons interested in and situated in the affected area and in the vicinity thereof, the City Council has concluded that the Zoning Ordinance of the City should be amended as set forth below.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS THAT:

Section 1. Recitals Incorporated

The above recitals are incorporated herein by reference for all purposes.

Section 2. Zoning Change

The Anna City Code of Ordinances are hereby amended by changing the zoning of the Property described in Exhibit A from Single-Family Estate (SF-E) to General Commercial (C-2) zoning.

Section 3. Official Zoning Map

The official Zoning Map of the City shall be corrected to reflect the change in zoning described herein.

Section 4. **Savings, Repealing and Severability Clauses**

It is hereby declared to be the intention of the City Council that the words, sentences, paragraphs, subdivisions, clauses, phrases, and provisions of this ordinance are severable and, if any phrase, sentence, paragraph, subdivision, clause, or provision of this ordinance shall be declared unconstitutional or otherwise invalid or inapplicable by the valid judgment or decree of any court of competent jurisdiction, such unconstitutionality, invalidity or inapplicability shall not affect any of the remaining words, sentences, paragraphs, subdivisions, clauses, phrases, or provisions of this ordinance, since the same would have been enacted by the City Council without the incorporation in this ordinance of any such unconstitutional, invalid or inapplicable words, sentences, paragraphs, subdivisions, clauses, phrases, or provisions. Further, all ordinances or parts of ordinances in force when the provisions of this ordinance become effective that are consistent and do not conflict with the terms and provisions of this ordinance are hereby ratified to the extent of such consistency and lack of conflict, and all ordinances or parts of ordinances in force when the provisions of this ordinance become effective that are inconsistent or in conflict with the terms and provisions contained in this ordinance are hereby repealed only to the extent of any such conflict.

Section 5. **Penalty**

Any violation of any of the terms of this ordinance, whether denominated in this ordinance as unlawful or not, shall be deemed a misdemeanor. Any person convicted of any such violation shall be fined in an amount not to exceed \$2,000 for each incidence of violation. Each day a violation exists is considered a separate offense and will be punished separately.

Section 6. **Publication of the Caption and Effective Date**

This ordinance shall be effective upon its passage by the City Council, approval by the Mayor, and posting and/or publication, if required by law, of its caption. The City Secretary is hereby authorized and directed to implement such posting and/or publication.

PASSED by the City Council of the City of Anna, Texas this 26th day of July 2022.

ATTESTED:

APPROVED:

Carrie L. Land, City Secretary

Nate Pike, Mayor

EXHIBIT "A"
FIELD NOTE DESCRIPTION

A 3.021 ACRE TRACT OF LAND THAT IS A PART OF THE DAVID VAN WINKLE SURVEY, ABSTRACT NO. 937, COLLIN COUNTY, TEXAS, BEING ALL OF TRACTS ONE (1), TWO (2) AND THREE (3) OF THE TRACT CONVEYED TO ALEX JOHNSON IN DOCUMENT NO. 20111208001327520 OF THE DEED RECORDS OF COLLIN COUNTY, TEXAS, BEING FURTHER DESCRIBED AS FOLLOWS:

BEGINNING AT A FOUND 1/2" IRON ROD WITH CAP AT THE SOUTHEASTERLY CORNER OF THAT TRACT CONVEYED TO RICHARD DZANSKI IN DOCUMENT NO. 20150826001080360 OF THE DEED RECORDS OF COLLIN COUNTY, TEXAS, BEING ALSO ON THE NORTHWESTERLY RIGHT OF WAY LINE OF SAM RAYBURN HIGHWAY;

THENCE NORTH 28°29'42" WEST ON THE EASTERLY LINE OF SAID DZANSKI TRACT, A DISTANCE OF 508.53 FEET TO A FOUND 5/8" IRON ROD ON THE SOUTHERLY LINE OF TRACTS OWNED BY WKG ENTERPRISES LTD;

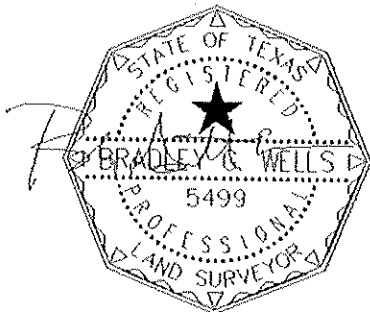
THENCE SOUTH 89°53'44" EAST ON A SOUTHERLY LINE OF SAID WKG TRACT, PASSING AT 55.57 FEET A FOUND 5/8" IRON ROD, A TOTAL DISTANCE OF 334.59 FEET TO A FOUND 5/8" IRON ROD AT THE NORTHWESTERLY CORNER OF THAT TRACT CONVEYED TO TREY SPYROPOULOS IN DOCUMENT NO. 20080606000688540 OF THE DEED RECORDS OF COLLIN COUNTY, TEXAS;

THENCE ON THE WESTERLY LINE OF SAID SPYROPOULOS TRACT THE FOLLOWING TWO COURSES:

SOUTH 33°02'03" EAST, A DISTANCE OF 121.41 FEET TO A FOUND 5/8" IRON ROD,

SOUTH 72°46'58" EAST, A DISTANCE OF 199.22 FEET TO A FOUND 3/8" IRON ROD WITH CAP AT THE SOUTHWESTERLY CORNER OF SAID SPYROPOULOS TRACT, BEING ON THE NORTHWESTERLY RIGHT OF WAY LINE OF SAM RAYBURN HIGHWAY;

THENCE SOUTH 50°39'52" WEST ON SAID RIGHT OF WAY LINE, PASING AT 149.91 FEET A FOUND 1/2" IRON ROD, AT 299.91 FEET A FOUND 5/8" IRON ROD, FOR A TOTAL DISTANCE OF 450.52 FEET TO THE POINT OF BEGINNING.



STREET ADDRESS	LEGAL DESCRIPTION									
4877 SAM RAYBURN HWY. ANNA, TX 75409	SEE ATTACHED EXHIBIT "A"									
WKG ENTERPRISES LTD DOCUMENT NO. 19990812001020770 ET AL DAVID VAN WINKLE SURVEY, ABSTRACT 931 TREY SPYROPOULOS DOCUMENT NO. 20080606000688540 ALEX JOHNSON DOCUMENT NO. 20111208001327520 3.021 ACRES RICHARD DZANSKI DOCUMENT NO. 20150826001080360 POINT OF BEGINNING SHED EXISTING RESIDENCE SAM RAYBURN HIGHWAY BASIS OF BEARING THE BEARINGS SHOWN HEREON ARE BASED ON THE NORTHWEST LINE OF SAM RAYBURN HIGHWAY, HAVING A GRID BEARING OF SOUTH 50°39'52\"/> CERTIFICATION THIS SURVEY IS THE RESULT OF AN ON-THE-GROUND SURVEY, AND THERE ARE NO DISCREPANCIES, CONFLICTS, SHORTAGES IN AREA, ENCROACHMENTS, OVERLAPPING OF IMPROVEMENTS, OR ROADWAYS, EXCEPT AS OTHERWISE SHOWN BY THE SURVEY, ALL MONUMENTS SHOWN EXIST AND THE LOCATION AND SIZE SHOWN ARE TRUE AND CORRECT. DATE: OCTOBER 4, 2021 STATE OF TEXAS REGISTERED PROFESSIONAL LAND SURVEYOR 5499 SYMBOL LEGEND ● MONUMENT FOUND AS NOTED ○ MONUMENT SET AS NOTED () RECORD VALUE PER DEED - NO () MEASURED VALUE 1" = 100' GRAPHIC SCALE 0 50 100										
SURVEY JOB #: 21-1189	CLIENT INFORMATION									
SURVEY INVOICE #: 239	SURVEYOR INFORMATION									
CERTIFIED TO:	BRAD WELLS, RPLS									
KELLER WILLIAMS PARAGON GROUP PARHAM GHASSEMI	315 FAIRLAND DRIVE WYLIE, TX 75098 (405) 305-8325 wellsbg@gmail.com									
THIS SURVEY IS PREPARED FOR THE EXCLUSIVE USE AND BENEFIT OF THE PARTIES LISTED HEREON. LIABILITY TO THIRD PARTIES MAY NOT BE TRANSFERRED OR ASSIGNED.	FLOOD ZONE ACCORDING TO FEMA F.I.R.M. MAP 48085C0180J WITH AN EFFECTIVE DATE OF 06/02/2009, THE SUBJECT PROPERTY LIES IN ZONE "X", AN AREA OF MINIMAL FLOOD HAZARD. <table border="1" style="width: 100%;"> <thead> <tr> <th>DATE</th> <th>REVISION 1</th> <th>DATE</th> <th>REVISION 2</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		DATE	REVISION 1	DATE	REVISION 2				
DATE	REVISION 1	DATE	REVISION 2							



Item No. 7.d.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022
Staff Contact: Ross Altobelli

AGENDA ITEM:

Consider/Discuss/Action on a Resolution regarding Salida Del Sol, Block A, Lot 1 Development Agreement. (Director of Development Services Ross Altobelli)

SUMMARY:

The intent of the development agreement is to ensure the use of high quality, durable materials for nonresidential and residential development within the city to create well designed and attractive architecture.

FINANCIAL IMPACT:

N/A

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

Goal 2: Sustainable Anna Community Through Planned Managed Growth

STAFF RECOMMENDATION:

Approving the development agreement in no way puts an obligation on the City Council to approve the rezoning request. It only puts in place development and design regulations should the decision be made to approve the rezoning request.

ATTACHMENTS:

1. Resolution - DA (Salida Del Sol)
2. Salida Del Sol - Development Agreement (building material and architectural standards)
3. Exhibit 1 - DA (Salida Del Sol, Bl A, Lt 1 - Concept Plan)

APPROVALS:

Ross Altobelli, Director of Development Services
Ross Altobelli, Director of Development Services
Jim Proce, City Manager

Created/Initiated - 7/19/2022
Approved - 7/20/2022
Final Approval - 7/21/2022

CITY OF ANNA, TEXAS
RESOLUTION NO. _____

A RESOLUTION OF THE CITY OF ANNA, TEXAS APPROVING A DEVELOPMENT AGREEMENT WITH INNOVATIVE INVESTMENTS INC., RELATING TO DEVELOPMENT AND DESIGN REGULATIONS FOR A TOWNHOME DEVELOPMENT GENERALLY LOCATED ON THE WEST SIDE OF N. RIGGINS STREET, 671± FEET NORTH OF ANTHONY STREET.

WHEREAS, Innovative Investments Inc. is the Property Owner of real estate generally located on the west side of N. Riggins Street, 671± feet north of Anthony Street; and

WHEREAS, Property Owners desire to amend the zoning for the subject property to allow a townhome development; and

WHEREAS, Property Owner has agreed to development and design regulations should the City approve rezoning the property.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS THAT:

Section 1. Recitals Incorporated.

The recitals above are incorporated herein as if set forth in full for all purposes.

Section 2. Approval

The City Council hereby approves the Development Agreement with Innovative Investment Inc. attached hereto as Exhibit A and ratifies and approves the City Manager's execution of the same. The City Manager is hereby authorized to execute all documents and take all other actions necessary to finalize, act under and enforce the Agreement.

PASSED by the City Council of the City of Anna, Texas, on this 26th day of July 2022.

ATTESTED:

APPROVED:

Carrie L. Land, City Secretary

Nate Pike, Mayor

EXHIBIT A

DEVELOPMENT AGREEMENT

This Development Agreement (this "Agreement") is entered effective as of July 26, 2022 ("Effective Date") between and among the City of Anna, Texas, a Texas home-rule municipality ("City") and Innovative Investments Inc. ("Owner") as follows:

RECITALS

WHEREAS, the Property, as depicted on Exhibit 1 (the "Property") is subject to City Regulations, including without limitation the City's zoning regulations; and,

WHEREAS, the current zoning classification of the Property is SF-1 Single-Family Residential District (SF-1) (the "Original Zoning Classification"); and,

WHEREAS, the Owner has applied to rezone the Property to allow for Planned Development-SF-TH Townhome District (PD-SF-TH) to allow for townhome units on one lot with modified development standards. (the "Zoning Change"); and,

WHEREAS, the City's Planning & Zoning Commission and City Council have given the requisite notices by publication and otherwise and have scheduled public hearings with respect to the rezoning of the Property as required by law; and,

WHEREAS, in the event that the Property is rezoned, the City and Owner desire to enter into a development agreement to establish development and design regulations to ensure that future multiple-family residence development is appropriate for the area and fits in well with adjacent properties; and,

WHEREAS, it is the Parties' mutual intent that this agreement shall govern only the subject matter specifically set forth herein and shall supersede City Regulations only to the extent that any such City Regulations directly conflict with the terms of this development agreement; and,

NOW, THEREFORE, in consideration of the above recitals and the mutual consideration as reflected in the covenants, duties and obligations contained herein, the sufficiency of which is hereby acknowledged, the Parties hereto agree as follows, effective as of the Effective Date:

SECTION 1. RECITALS INCORPORATED

The recitals set forth above are incorporated herein as if set forth in full to further describe the Parties' intent under this development agreement and said recitals constitute representations by Owner and the City.

SECTION 2. DEVELOPMENT STANDARDS / BUILDING MATERIALS.

- A. Development and use of the Property, including, without limitation, the construction, installation, maintenance, repair, and replacement of all buildings and all other improvements and facilities of any kind whatsoever on and within the Property, shall be in compliance with City Regulations unless expressly stated to the contrary in this Agreement. City Regulations shall apply to the development and use of the Property unless expressly set forth to the contrary in this Agreement. It is expressly understood and the Parties agree that City Regulations applicable to the Property and its use and development include but are not limited to City Code provisions, ordinances, design standards, uniform codes, zoning regulations not affected by this Agreement, and other policies duly adopted by the City including without limitation any such regulations or requirements that were affected by the passage of Texas H.B. 2439, 86(R), codified as Chapter 3000 of the Texas Government Code ("Materials and Methods Regulations"), which are collectively incorporated herein as if set forth in full for all purposes; provided, however, to the extent of any conflict between the requirements of Materials and Methods Regulations and the requirements of this Agreement, this Agreement shall control. For purposes of this Agreement, "City Regulations" mean the City's applicable development regulations in effect on the Effective Date, including without limitation City Code provisions, ordinances (including, without limitation, all development fees), design standards, and other policies duly adopted by the City; provided, however, that as it relates to public infrastructure for any given phase of the Project, the applicable construction standards (including, without limitation, uniform building codes) shall be those that the City has duly adopted at the time of the filing of an application for a preliminary plat for that phase unless construction has not commenced within two years of approval of such preliminary plat in which case the construction standards shall be those that the City has duly adopted at the time that construction commences.
- B. With respect to all structures/development within the PD-SF-TH Zoning District, Owner agrees to comply and/or to cause all other persons or entities to comply and any other successors or assigns to comply with all City Regulations and with the masonry material requirements and all other requirements of the Anna City Code of Ordinances, Article 9.04 Zoning Ordinance, Section 9.04.034 Supplementary District Regulations, Subsection (e) Architectural Design Standards, which are incorporated herein as if set forth in full for all purposes, and with the following standards (in the event of any conflict, the following listed standards shall govern). Notwithstanding the foregoing, a Subsequent Owner upon a Closing (as hereinafter defined) must agree in writing to assume Owner's responsibilities set forth herein. For purposes of this Agreement the term "Subsequent Owner" means any

person or entity that acquires all or any part of the Property from Owner or Owner's successor in title to the Property or any part thereof.

Townhome Unit Building

- A. The exterior walls (excluding windows and doors) on the first-floor front elevation, shall have a 36" faux stone wainscot along the bottom and batt on board on the remaining first floor elevation. The second and third floor front elevations shall consist of Hardie Plank Lap Siding and batt on board. The dormers shall have craftsman shaker style siding.
- B. Roofs:
 - i. Pitched roofs shall have an overhang at least 1' (one foot) beyond the building wall; however, the overhang shall not encroach into a setback more than one foot.
 - ii. Roofing materials in all residential districts may only consist of architectural asphalt shingles (including laminated dimensional shingles), clay and concrete tile, metal shingles, mineral-surfaced row roofing, slate and slate-type shingles, or better product as compared with said materials. Should architectural shingles be used as roofing material, said shingles shall be accompanied with a minimum 25-year warranty. Under no circumstance shall three-tab shingles be used as roofing material.
- C. Fenestration:
 - i. Windows shall be in harmony with and proportionate to the rest of the structure.
 - ii. The use of reflective glass on residential structures is prohibited. Reflective glass will be defined as having a visible light reflectance rating of 15% or greater.

SECTION 3. NOTICES.

Any and all notices required to be given by either of the parties hereto must be in writing and will be deemed delivered upon personal service, if hand-delivered, or when mailed in the United States mail, certified, return receipt requested, addressed as follows:

To City: City Manager City of Anna
111 North Powell Parkway PO Box 776
Anna, Texas 75409

To Property Owner: Innovative Investments Inc.
140 W. Waters Edge Way
Oak Point, TX 75068
Attn: Charles R. Bridges

SECTION 4. DEADLINES, MODIFICATIONS OR TERMINATION.

- A. This Agreement may only be modified and/or terminated as follows: (a) by mutual written agreement of the City and Owner or, after a Closing (as hereinafter defined), by a Subsequent Owner instead of Owner; and/or (b) unilaterally by City upon default of the Owner or Subsequent Owner. Notwithstanding the foregoing or any other provision of this Agreement, this Agreement shall terminate and be null and void if the City does not approve the Zoning Change on or before the 26th day of July 2022. The parties acknowledge and agree that the rezoning of the Property is a legislative act and that this Agreement does not bind the City Council to approve any proposed rezoning of the Property.
- B. Owner or any Subsequent Owner shall be obligated under this Agreement to timely meet the following deadlines:
1. Within 120 days after City Council approval of the Zoning Change, Owner will have submitted a preliminary plat and tree preservation plan for the Property.
 2. Within 180 days after the City has approved the preliminary plat, Owner shall have submitted a site plan, landscaping plan, final plat (showing any/all easements required for the townhome development), and civil plans.
 3. A preconstruction meeting between Owner and City staff shall occur within 90 days of final approval of the civil plans.
 4. Site construction pursuant to final approved civil plans must commence within 120 days after the preconstruction meeting.
 5. Owner must submit plans and specifications for the buildings and other improvements not part of the civil plans (the "Building Plans") no later than 180 days after civil plans are approved by the City. After the last to occur of (a) approval of the Building Plans by the City of Anna, (b) completion of all construction pursuant to civil plans, (c) acceptance of all civil construction and public improvements by the City of Anna, and (d) recordation of the townhome development final replat, Owner must submit an application for a building permit within 60 days thereafter (including without limitation the payment of all fees due to the City as required to develop the Property).
 6. Recordation in the Official Records of Collin County, Texas of the townhome development final plat must occur within 90 days of commencement of site construction.

7. Vertical construction pursuant to the Building Plans for approved structures must commence within 120 days after the later to occur of the recordation of the townhome final plat and obtaining a building permit.
- C. Not by way of limitation as to other material terms and conditions, the deadlines stated above are material terms and conditions of this Agreement and any failure to meet any of the deadlines above (each, a “Deadline Default”) is a material default under this Agreement. In addition to all other remedies that the City may enforce under this Agreement or that is available to the City at law or in equity in the event of a Deadline Default, the City may in its sole discretion initiate and pursue a zoning case to change the zoning classification back to the Original Zoning Classification. In the event that the City initiates such a zoning case after a Deadline Default, the Owner shall not oppose the zoning case and shall be deemed to have fully and irrevocably released and waived any claim, cause of action, litigation or other challenge or proceeding to such zoning case on any legal basis or theory whatsoever.

SECTION 5. DEFAULT.

If Owner, its heirs, successors or assigns or any Subsequent Owner of the Property or any part thereof fails to comply with any of the material terms and conditions included in this Agreement (such defaulting owner referenced herein as “Defaulting Owner”), the City will have the following non-exclusive and cumulative remedies.

- A. Withholding of utilities or withholding or revocation of permits and other approvals required for development and use of the portion of the Property that is the subject of the default (but no other portions of the Property) including without limitation building permits and certificates of occupancy.
- B. The Defaulting Owner shall be liable to pay to the City the sum of \$10.00 for each failure to materially comply with the development standards set forth of this Agreement. The Defaulting Owner shall be liable to pay the City said \$10.00 sum per day for each day that such failure to comply occurs. The sums of money to be paid for such failure(s) is not to be considered as a penalty, but shall be deemed, taken and treated as reasonable liquidated damages that accrue per day that such a failure shall exist or occur. The said amounts are fixed and agreed upon by the parties because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the City in such event would sustain; and said amounts are agreed to be the amounts of damages which the City would sustain. In the event of a breach that is not timely cured as set forth below, the sum of liquidated damages shall be calculated to include each and every day of the occurrence of the breach beginning on the date that the City first provided written notice

of such breach under this paragraph and the City shall not be required to provide any subsequent written notices as to subsequent dates or times during which such breach is repeated or continues to occur

- C. The non-defaulting party will additionally have any and all remedies available to it at equity or in law.

Notwithstanding the foregoing, a Defaulting Owner shall not be liable for the remedies under this section unless there is a breach of any material term or condition of this Agreement and such breach remains uncured after forty-five (45) calendar days following receipt of written notice from the City provided in accordance with this Agreement describing said breach in reasonable detail (or, if the cure of the breach has diligently and continuously been undertaken but reasonably requires more than forty-five (45) calendar days to cure, then such additional amount of time as is reasonably necessary to effect the cure, as determined by both Parties mutually and in good faith but in no event shall such additional period exceed 120 days unless agreed to in writing by the parties to this Agreement).

SECTION 6. BINDING ON SUCCESSORS, AGREEMENT RUNS WITH THE LAND.

This Agreement will be binding upon and inure to the benefit of the parties' respective successors, assigns and personal representatives. This Agreement runs with the land and is binding on all subsequent owners of the Property or any portions thereof. This section shall be construed liberally to ensure the Parties' intent that this Agreement shall be enforceable regardless of any change of ownership of or interest in the Property. Notwithstanding anything to the contrary in this Section 6 or elsewhere in this Agreement, if the Owner or a Subsequent Owner (the "Transferor") conveys, assigns, or transfers its entire interest in the Property or a part thereof (the "transferred Property") to a Subsequent Owner (the "Transferee") who assumes Transferor's obligations under this Agreement with respect to the transferred Property, the Transferor shall be automatically released from its obligations under this Agreement relating to the transferred Property subsequent to the date of transfer.

SECTION 7. INDEMNIFICATION AND HOLD HARMLESS.

THE OWNER OR ANY SUBSEQUENT OWNER OF THE PROPERTY IN THE EVENT OF A CLOSING (THE "INDEMNIFYING PARTY"), HEREBY COVENANTS AND AGREES TO RELEASE, DEFEND, HOLD HARMLESS, AND INDEMNIFY THE CITY AND ITS OFFICIALS, OFFICERS, AGENTS, SERVANTS AND EMPLOYEES, FROM AND AGAINST ALL THIRD-PARTY CLAIMS, SUITS, JUDGMENTS, DAMAGES, AND DEMANDS AGAINST THE CITY, WHETHER REAL OR ASSERTED INCLUDING WITHOUT LIMITATION REASONABLE ATTORNEY'S FEES, RELATED EXPENSES, EXPERT WITNESS FEES, CONSULTANT

FEES, AND OTHER COSTS (TOGETHER, "CLAIMS"), ARISING OUT OF THE NEGLIGENCE OR OTHER WRONGFUL CONDUCT OF THE INDEMNIFYING PARTY, INCLUDING WITHOUT LIMITATION THE NEGLIGENCE OR OTHER WRONGFUL CONDUCT OF ANY OF ITS EMPLOYEES, CONTRACTORS, SUBCONTRACTORS, MATERIAL MEN, AND AGENTS, IN CONNECTION WITH THE DESIGN OR CONSTRUCTION OF ANY PUBLIC INFRASTRUCTURE, STRUCTURES, OR OTHER FACILITIES OR IMPROVEMENTS THAT ARE REQUIRED OR PERMITTED UNDER THIS AGREEMENT AND/OR CITY REGULATIONS AND/OR ANY APPLICABLE DEVELOPMENT STANDARDS AND/OR ANY OTHER GOVERNING REGULATIONS; AND IT IS EXPRESSLY UNDERSTOOD THAT SUCH CLAIMS SHALL, EXCEPT AS MODIFIED BELOW, INCLUDE CLAIMS EVEN IF CAUSED BY THE CITY'S OWN CONCURRENT NEGLIGENCE SUBJECT TO THE TERMS OF THIS SECTION. THE INDEMNIFYING PARTY SHALL NOT, HOWEVER, BE REQUIRED TO INDEMNIFY THE CITY AGAINST CLAIMS CAUSED BY THE CITY'S SOLE NEGLIGENCE OR BY THE CITY'S WILLFUL MISCONDUCT OR GROSS NEGLIGENCE. IF THE CITY INCURS CLAIMS THAT ARE CAUSED BY THE CONCURRENT NEGLIGENCE OF THE INDEMNIFYING PARTY AND THE CITY, THE INDEMNIFYING PARTY'S INDEMNITY OBLIGATION WILL BE LIMITED TO A FRACTION OF THE TOTAL CLAIMS EQUIVALENT TO THE INDEMNIFYING PARTY'S OWN PERCENTAGE OF RESPONSIBILITY. THE INDEMNIFYING PARTY FURTHER COVENANTS AND AGREES TO RELEASE, DEFEND, HOLD HARMLESS, AND INDEMNIFY, THE CITY AGAINST ANY AND ALL CLAIMS BY ANY PERSON CLAIMING AN OWNERSHIP INTEREST IN THE PROPERTY AS OF THE EFFECTIVE DATE WHO HAS NOT SIGNED THIS AGREEMENT IF SUCH CLAIMS RELATE IN ANY MANNER OR ARISE IN CONNECTION WITH: (1) THE CITY'S RELIANCE UPON ANY OF THE INDEMNIFYING PARTIES' REPRESENTATIONS IN THIS AGREEMENT; (2) THIS AGREEMENT OR OWNERSHIP OF THE PROPERTY; OR (3) THE CITY'S APPROVAL OF ANY TYPE OF DEVELOPMENT APPLICATION OR SUBMISSION WITH RESPECT TO THE PROPERTY. At no time shall the City have any control over or charge of the design, construction or installation of any of the improvements to the Property or related work or undertakings, nor the means, methods, techniques, sequences or procedures utilized for the design, construction or installation related to same. This Agreement does not create a joint enterprise or venture between the City and any of the Indemnified Parties. This section shall survive the termination of this Agreement.

SECTION 8. RECORDATION.

This document, including all Exhibits, shall be recorded in the Official Records of Collin County, Texas.

SECTION 9. ENTIRE AGREEMENT.

This Agreement is the entire agreement of the parties regarding the subject matter hereto.

SECTION 10. RECITALS AND EXHIBITS.

The recitals herein and exhibits attached hereto are hereby incorporated by reference.

SECTION 11. AUTHORITY.

Owner represents and warrants to the City that the Owner owns the Property and that this Agreement is binding and enforceable on the Property. Owner may sell the Property or a part thereof to a person or entity (the "Closing") prior to commencement of site construction on the property sold, and in such event the Subsequent Owner shall be required to acknowledge and assume all obligations, liabilities and indemnifications under this Agreement.

SECTION 12. INVALID PROVISIONS.

If any provision of this Agreement is held not valid, such provision will be deemed to be excised there from and the invalidity thereof will not affect any of the other provisions contained herein.

SECTION 13. ESTOPPEL.

On or before 45 days after receipt of a written request from an owner of the Property that desires to transfer its interest in the Property or borrow money secured by a mortgage or deed of trust against the Property or a prospective transferee of an owner's interest or an existing or prospective mortgagee, the City will execute and deliver an estoppel certificate stating that, to the best of the City's knowledge: (i) the transferring or borrowing owner is not in default under this Agreement; and (ii) this Agreement is in full force and effect and whether there are any amendments thereto.

SECTION 14. FORCE MAJEURE.

Whenever a period of time is prescribed in this Agreement for a Party (the "Acting Party") to take an action (other than a payment obligation), the Acting Party will not be liable or responsible for, and there will be excluded from the computation of any such time period, the period of time (the "Force Majeure Period") of delays caused by strikes, riots, acts of God, pandemic, enemy action, shortages of labor or materials, war, acts of terrorism, flood, fire, explosion, unavoidable casualty, or any other causes that are beyond the reasonable control of the Acting Party or any of its employees, agents, or contractors, but not any economic hardship, changes in market conditions, and insufficiency of funds ("Force Majeure"). However, a date will only be extended by a Force Majeure Period if the Acting Party gives notice to the other Party of the occurrence or commencement of the event that constitutes Force Majeure within ten days after the Acting Party knows of the existence or commencement of such event, and claims (in such notice) that such event constitutes Force Majeure. A Party that has claimed the right to temporarily suspend its

performance under this section shall provide written reports to the other Party at least once every week detailing: (i) the extent to which the force majeure event or circumstance continue to prevent the Party's performance; (ii) all of the measures being employed to regain the ability to perform; and (iii) the projected date upon which the Party will be able to resume performance, which projected date the Parties agree and acknowledge is only an estimate and not a binding commitment by the Party claiming force majeure.

SECTION 15. EFFECTIVE DATE.

This Agreement will be effective upon the Effective Date first stated herein.

[signature page follows]

CITY OF ANNA

By: _____
Jim Proce, City Manager

IN WITNESS WHEREOF: STATE OF TEXAS COUNTY OF COLLIN

Before me, the undersigned notary public, on the _____ day of _____, 2022, appeared Jim Proce, known to me (or proved to me) to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same in his capacity as City Manager of the City of Anna, Texas.

Notary Public, State of Texas

Innovative Investments Inc.
140 W. Waters Edge Way
Oak Point, TX 75068

By: _____
Charles R. Bridges

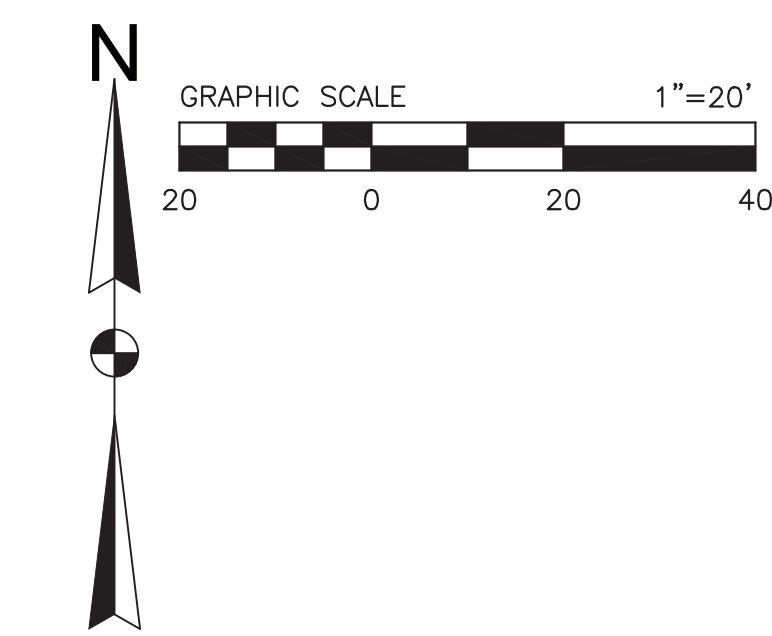
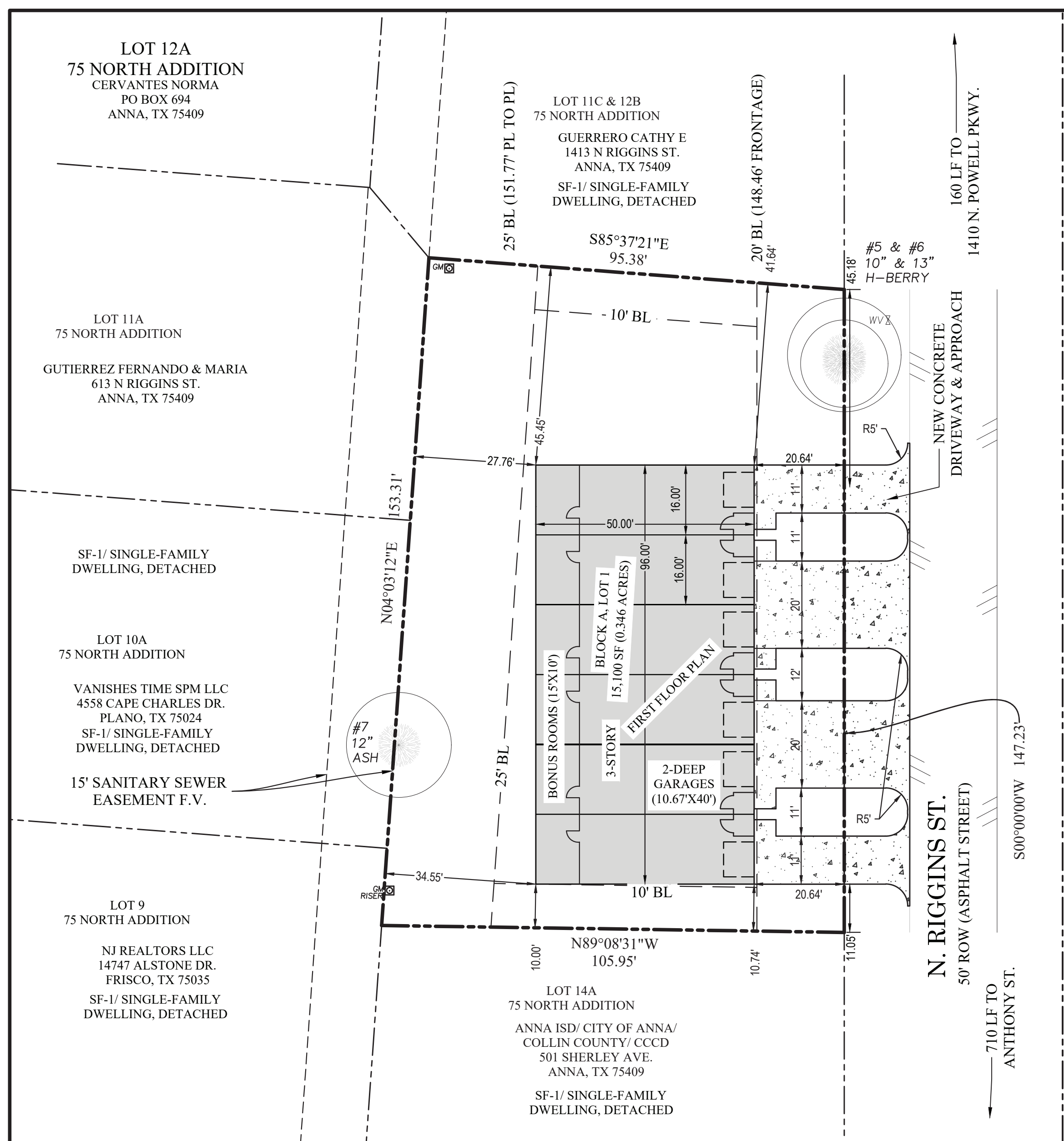
IN WITNESS WHEREOF: STATE OF TEXAS COUNTY OF DALLAS

Before me, the undersigned notary public, on the _____ day of _____, 2022, appeared _____, known to me (or proved to me) to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he/she executed the same in his/her capacity as property owner

Notary Public, State of Texas

EXHIBIT “1”
CONCEPT PLAN

DRAFT



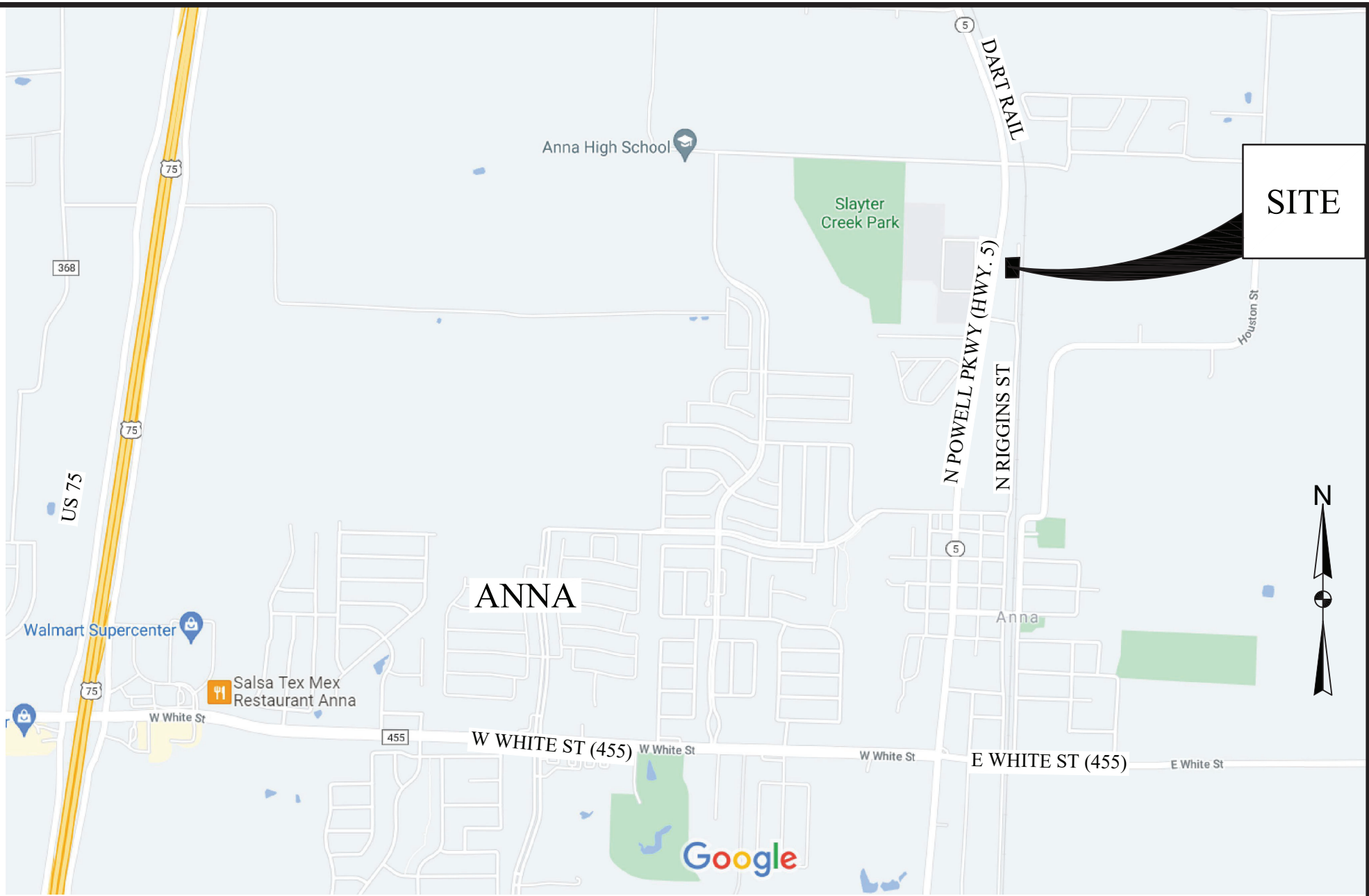
T AND O RAILROAD
ISLEWORTH MANAGEMENT INC
5900 WATERVIEW CT.
MCKINNEY, TX 75071

DART RAIL

ABS A0559
GUINN MORRISON SURVEY,
SHEET 1, TRACT 71, 7.82 ACRES

SITE PLAN

SITE DATA SUMMARY TABLE (1409 N. RIGGINS STREET)	
Item	Lot 1
General Site Data	
Existing Zoning (from Zoning Map)	SF-1
Proposed Zoning	PD-TH
Land Use (from Zoning Ordinance)	Townhouse
Lot Area (square feet & acres)	15,110
Building Footprint Area (square feet)	4,800
Total Building Area (square feet)	14,400
Building Height (# stories)	3
Building Height (feet - distance to tallest building element)	35 feet
Lot Coverage (percent - x.xx%) Bldg. only	32%
Lot Coverage (percent - x.xx%) Bldg., Lead Walk & Driveway	41%
Parking	
Parking Ratio (from Zoning Ordinance)	2/Dwelling
Required Parking (# spaces) - 6 Units (2/Unit)	12
Provided Parking (# spaces)	12
Accessible Parking Required (# spaces)	0
Accessible Parking Provided (# spaces)	0
Landscape Area (including turf areas)	
Required internal landscape area (8 sf/parking space)	96
Additional interior landscape area provided (sf)	411
Total Landscape Area (square feet)	8,898



SITE LOCATOR MAP



CITY APPROVAL STAMPS

NO.	DATE	REVISIONS
		APP.

CONCEPT PLAN

SALIDA DEL SOL
BLOCK A, LOT 1

Gwynn Morrison Survey, Abstract No. 559
Part of Lots 10, 11 & 14; (15,110 SF)
75 NORTH ADDITION, COLLIN CO.

J. S. Ground Engineering, LLC
4108 Dundee Court
Colleyville, Texas 76034
Firm Registration No. F-1276
(817) 320-5330 ph.
jsg@jsgroundengineering.com

SCALE: _____ DGN. BY: JSG
DATE: June 20, 2022 DWN. BY: WJW
JSGE NO. _____ DWG. NO. _____

STATE OF TEXAS
JEFFREY S. GROUND
82648
LICENSED PROFESSIONAL ENGINEER

6-20-22

SHEET NO.
C1

Exhibit 1

ENGINEER

J. S. Ground Engineering, LLC
4108 Dundee Court
Colleyville, Texas 76034
Firm Registration No. F-1276
Jeff Ground, PE, CFM (817) 320-5330
jsg@jsgroundengineering.com

BUILDER/OWNER

DSH CONSTRUCTION LLC
208 South Johnson, Suite 315
McKinney, TX 75069
Derek Humphreys (903) 357-3286
derek@dshbuild.com



Item No. 7.e.

City Council Agenda
Planning Staff Report

Meeting Date: 7/26/2022
Staff Contact: Ross Altobelli

AGENDA ITEM:

Conduct a Public Hearing/Consider/Discuss/Action on an Ordinance to rezone 0.4± acre located on the west side of N. Riggins Street, 670± north of Anthony Street from SF-1 Single-Family Residential District to Planned Development-SF-TH Townhome District with modified development standards. (Director of Development Services Ross Altobelli)

SUMMARY:

In October 2021 a similar Planned Development request was presented to the city for the subject property (SF-TH Townhome District with modified development standards). The request was associated with an 8-unit townhome development on one lot with modified development standards.

REMARKS:

The current zoning request is to allow a six (6) unit townhouse development with modified development standards. The SF-TH district is intended to provide for a medium density residential environment of attached townhome units.

A Planned Development (PD) district is intended to provide for combining and mixing of uses allowed in various districts with appropriate regulations and to permit flexibility in the use and design of land and buildings in situations where modification of specific provisions of this article is not contrary to its intent and purpose or significantly inconsistent with the planning on which it is based and will not be harmful to the community. A PD district may be used to permit new and innovative concepts in land utilization. While great flexibility is given to provide special restrictions which will allow development not otherwise permitted, procedures are established herein to insure against misuse of the increased flexibility.

A Concept Plan, Salida Del Sol, Block A, Lot 1, accompanies this rezoning request (Exhibit A).

Proposed Planned Development Stipulations

The applicant is proposing to modify existing development standards of the SF-TH zoning district. Townhouse units would be allowed by-right and subject to the following additional standards;

1. Minimum Lot Width (feet): 16

City Regulation: Lot width for a lot containing townhouse units shall be not less than 20 feet per ground floor unit plus side yard requirements.

2. Minimum Lot Depth (feet): 95

City Regulation: Min. lot depth (feet): 160

3. Min. Lot area/size (feet): 2,500 per unit

City Regulation: Minimum lot sizes for townhouses and zero lot line houses shall be 2,700 square feet per unit.

4. Rear Entry provision: (removed)

5. Driveway Parking Area: 45% of residential front yard

City Regulation: A single-width driveway running from the street access to a garage or other parking area shall not utilize more than 15% of any residential front yard.

6. General Landscape Standard Allow mature tree (25 feet or greater) within 25 feet of the nearest overhead utility.

Attached, Exhibit 1, is the applicants proposed justification associated with the modified standards request.

Conformance with the City of Anna Strategic Plan and Comprehensive Plan

Future Land Use Map – The Future Land Use Map designates this property within the Downtown Master Plan limits classified as “Intown Residential”

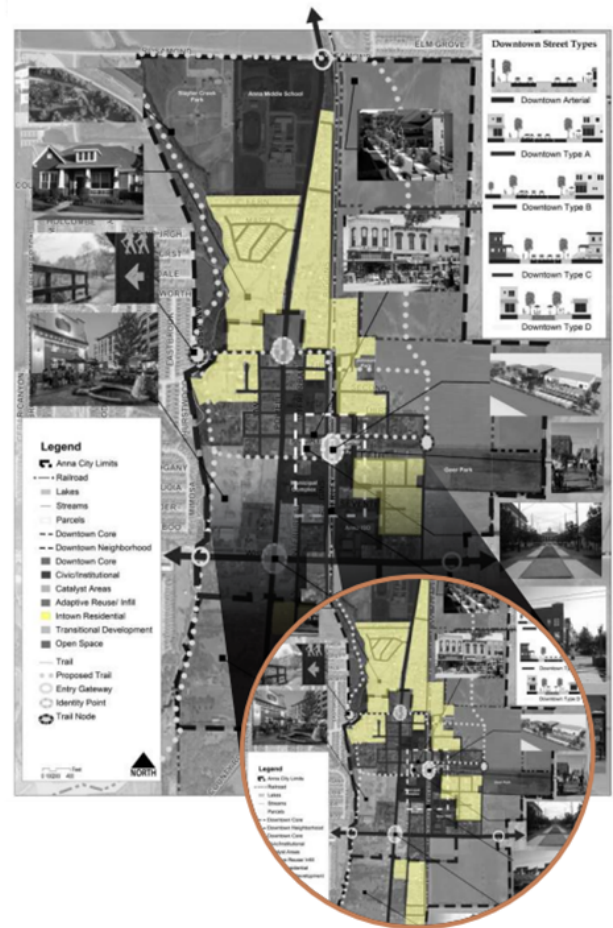
Intown Residential

Downtown Anna contains several pockets of historic residential fabric that surround the Downtown Core, defining the character of this area and supporting it as a unique and diverse district. As the community grows over time, reinvestment in the Intown Residential areas will remain essential in maintaining and elevating the quality of each neighborhood. These areas, along with surrounding undeveloped parcels, can provide the critical residential base necessary to support the businesses envisioned for Downtown. Additionally, there is an opportunity to provide a wide range of more urban housing products that could accommodate people at all stages of their lives. Future land use decisions in this area should emphasize sound neighborhood placemaking principles, such as walkable streets and amenitized open spaces, to reinforce civic life and allow neighbors to maintain connections throughout their community.

The following primary building types are appropriate in Intown Residential (Detached residential):



The following secondary building types are appropriate in Intown Residential (Churches, Civic Structures, Accessory Structures, Open Spaces):



Townhomes (although not listed as a primary building type) are shown in the illustrations as appropriate primary building types. The requested PD language would allow for an urban style of development within $\frac{3}{4}$ mile of the heart of the Downtown Core as identified in the Anna 2050 Downtown Master Plan. The proposed land use is consistent with the Master Plan due to providing the critical residential base necessary to support businesses envisioned for Downtown and providing for a more urban housing product that could accommodate people at all stages of their lives.

CONCLUSION:

Request to rezone 0.4± acre from Single-Family Residence-1 (SF-1) to Planned Development-Single-Family Residence – Townhome (PD-SF-TH) to allow from a townhouse unit development with modified development standards.

Attached is a copy of the complete staff report presented to the Planning & Zoning Commission.

FINANCIAL IMPACT:

N/A

STRATEGIC CONNECTIONS:

Goal 2: Sustainable Anna Community Through Planned Managed Growth

STAFF RECOMMENDATIONS:

The Planning & Zoning Commission recommended approval (4-3) with the following Planned Development stipulation

Restrictions:

1. The location of the planned development zoning district shall be in substantial conformance with the Concept Plan (Exhibit A).
2. Standards and Area Regulations: Development must comply with the development standards for use, density, lot area, lot width, lot depth, yard depths and widths, building height, building elevations, coverage, floor area ratio, parking, access, screening, landscaping, accessory buildings, signs, and lighting, set forth in the SF-TH Townhome District (SF-TH) and the Planning and Development Regulations except as otherwise specified herein.
 - i. Permitted land use: Townhouse
 - ii. Lot Area (feet): 2,500 per unit
 - iii. Min. Lot Width (feet): 16
 - iv. Min. Lot Depth (feet): 95
 - v. Removal of the miscellaneous provision requiring rear entry off-street parking.
 - vi. Single-width driveway allowed to utilize 45% of the residential front yard.
 - vii. Allow mature tree (25 feet or greater) within 25 feet of the nearest overhead utility.
3. Plats and/or site plans submitted for the development of the PD shall conform to the data presented and approved on the Concept Plan. Non-substantial changes of detail on the final development plan(s) that differ from the Concept Plan may be authorized by the City Council with the approval of the final development plan(s) and without public hearing.
4. The Concept Plan will expire after two (2) years of approval.

ATTACHMENTS:

1. Salida Del Sol Zoning Locator Map
2. Ordinance - (PD-SF-TH) - Salida Del Sol
3. Exhibit 1 - Ord. (Salida Del Sol, BI A, Lt 1 - Concept Plan)
4. PZ - STAFF REPORT (REZONING) Salida Del Sol - updated
5. Exhibit 1 - Salida Del Sol (PD justification UPDATED)
6. Exhibit 2 - Salida Del Sol 6 Plex rendering (updated)
7. Response 1 - Salida Del Sol Zoning

Zoning - Salida Del Sol, Block A, Lot 1



THE CITY OF
Anna



Subject
Property



City Limits



200' Notice
Boundary



ETJ

0 100 200 400
Feet

May 2022

CITY OF ANNA, TEXAS

(Property zoned under this ordinance is generally located on the west side of N. Riggins Street, 671± feet north of Anthony Street.)

ORDINANCE NO. _____

AN ORDINANCE OF THE CITY OF ANNA, TEXAS AMENDING THE CITY'S COMPREHENSIVE PLAN, ZONING MAP, AND ZONING ORDINANCE AND CHANGING THE ZONING OF CERTAIN PROPERTY AS DESCRIBED HEREIN; PROVIDING FOR SAVINGS, REPEALING AND SEVERABILITY CLAUSES; PROVIDING FOR AN EFFECTIVE DATE; PROVIDING FOR A PENALTY CLAUSE NOT TO EXCEED \$2,000 OR THE HIGHEST PENALTY AMOUNT ALLOWED BY LAW, WHICHEVER IS LESS; AND, PROVIDING FOR THE PUBLICATION OF THE CAPTION HEREOF.

WHEREAS, the City of Anna, Texas ("City") has previously adopted ordinances, rules and regulations governing the zoning in the City; and

WHEREAS, the City has received a requested zoning amendment from Innovative Investments Inc., on Property depicted in Exhibit 1 ("Property") attached hereto and incorporated herein for all purposes as if set forth in full; and

WHEREAS, said Property generally located on the west side of N. Riggins Street, 671± feet north of Anthony Street; and

WHEREAS, the Planning and Zoning Commission of the City and the City Council of the City of Anna ("City Council") have given the requisite notices by publication and otherwise and have held the public hearings as required by law and afforded a full and fair hearing to all property owners and generally to all persons interested in and situated in the affected area and in the vicinity thereof, the City Council has concluded that the Zoning Ordinance of the City should be amended as set forth below.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS THAT:

Section 1. Recitals Incorporated

The above recitals are incorporated herein by reference for all purposes.

Section 2. Zoning Change

The Anna City Code of Ordinances (the "Anna Code") are hereby amended by amending the zoning of the Property depicted in the Concept Plan on the attached Exhibit 1.

1. Purpose.

The purpose of this Planned Development District is to facilitate the development of a high-quality Townhouse project.

2. Definitions.

Except as otherwise provided herein, the definitions in Appendix 3 of the City's Zoning Ordinance shall apply.

3. Development Standards.

Development of the Property shall comply with the City of Anna Zoning Ordinance utilizing SF-TH Townhome District base zoning with the concept plan and variances listed below.

1. The location of the planned development zoning district shall be in substantial conformance with the Concept Plan (Exhibit 1).
2. Standards and Area Regulations: Development must comply with the development standards for use, density, lot area, lot width, lot depth, yard depths and widths, building height, building elevations, coverage, floor area ratio, parking, access, screening, landscaping, accessory buildings, signs, and lighting, set forth in the SF-TH Townhome District (SF-TH) and the Planning and Development Regulations except as otherwise specified herein.
 - A. Permitted land use: Townhouse
 - B. Lot Area (feet): 2,500 per unit
 - C. Min. Lot Width (feet): 16
 - D. Min. Lot Depth (feet): 95
 - E. Removal of the miscellaneous provision requiring rear entry off-street parking.
 - F. Single-width driveway allowed to utilize 45% of the residential front yard.
 - G. Allow mature tree (25 feet or greater) within 25 feet of the nearest overhead utility.
3. Plats and/or site plans submitted for the development of the PD shall conform to the data presented and approved on the Concept Plan. Non-substantial changes of detail on the final development plan(s) that differ from the Concept Plan may be authorized by the City Council with the approval of the final development plan(s) and without public hearing.
4. The Concept Plan will expire after two (2) years of approval.

Section 3. Official Zoning Map

The official Zoning Map of the City shall be corrected to reflect the change in zoning described herein.

Section 4. Savings, Repealing and Severability Clauses

It is hereby declared to be the intention of the City Council that the words, sentences, paragraphs, subdivisions, clauses, phrases, and provisions of this ordinance are severable and, if any phrase, sentence, paragraph, subdivision, clause, or provision of this ordinance shall be declared unconstitutional or otherwise invalid or inapplicable by the valid judgment or decree of any court of competent jurisdiction, such unconstitutionality, invalidity or inapplicability shall not affect any of the remaining words, sentences, paragraphs, subdivisions, clauses, phrases, or provisions of this ordinance, since the same would have been enacted by the City Council without the incorporation in this ordinance of any such unconstitutional, invalid or inapplicable words, sentences, paragraphs, subdivisions, clauses, phrases, or provisions. Further, all ordinances or parts of ordinances in force when the provisions of this ordinance become effective that are consistent and do not conflict with the terms and provisions of this ordinance are hereby ratified to the extent of such consistency and lack of conflict, and all ordinances or parts of ordinances in force when the provisions of this ordinance become effective that are inconsistent or in conflict with the terms and provisions contained in this ordinance are hereby repealed only to the extent of any such conflict. Notwithstanding any provision of this ordinance or the Anna Code, it is intended that this ordinance fully comply with Chapter 3000 of the Texas Government Code ("Chapter 3000") and this ordinance shall and the City Code shall be interpreted in a manner to comply with Chapter 3000. For the purposes of this ordinance, any provision of the City Code that does not comply with Chapter 3000 shall be deemed to have been excluded and not a part of this ordinance.

Section 5. Penalty

Any violation of any of the terms of this ordinance, whether denominated in this ordinance as unlawful or not, shall be deemed a misdemeanor. Any person convicted of any such violation shall be fined in an amount not to exceed \$2,000 for each incidence of violation. Each day a violation exists is considered a separate offense and will be punished separately.

Section 6. Publication of the Caption and Effective Date

This ordinance shall be effective upon its passage by the City Council, approval by the Mayor, and posting and/or publication, if required by law, of its caption. The City Secretary is hereby authorized and directed to implement such posting and/or publication.

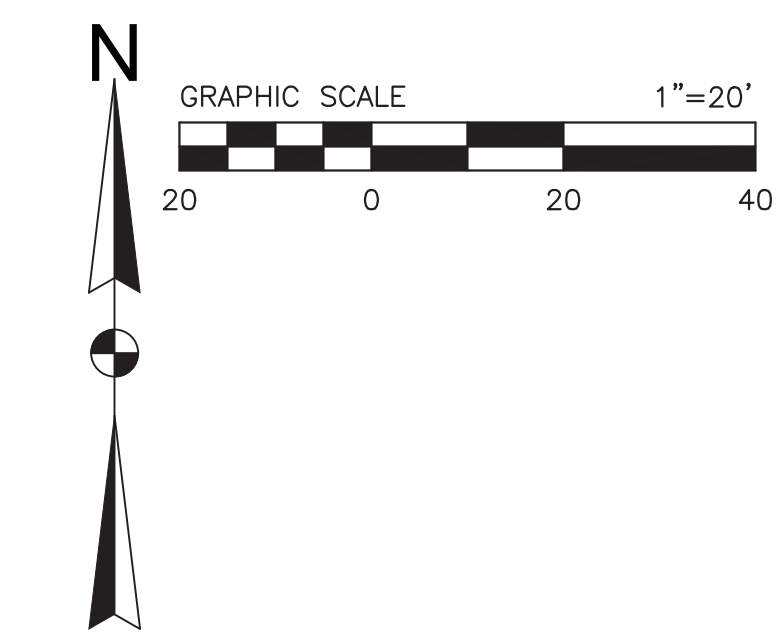
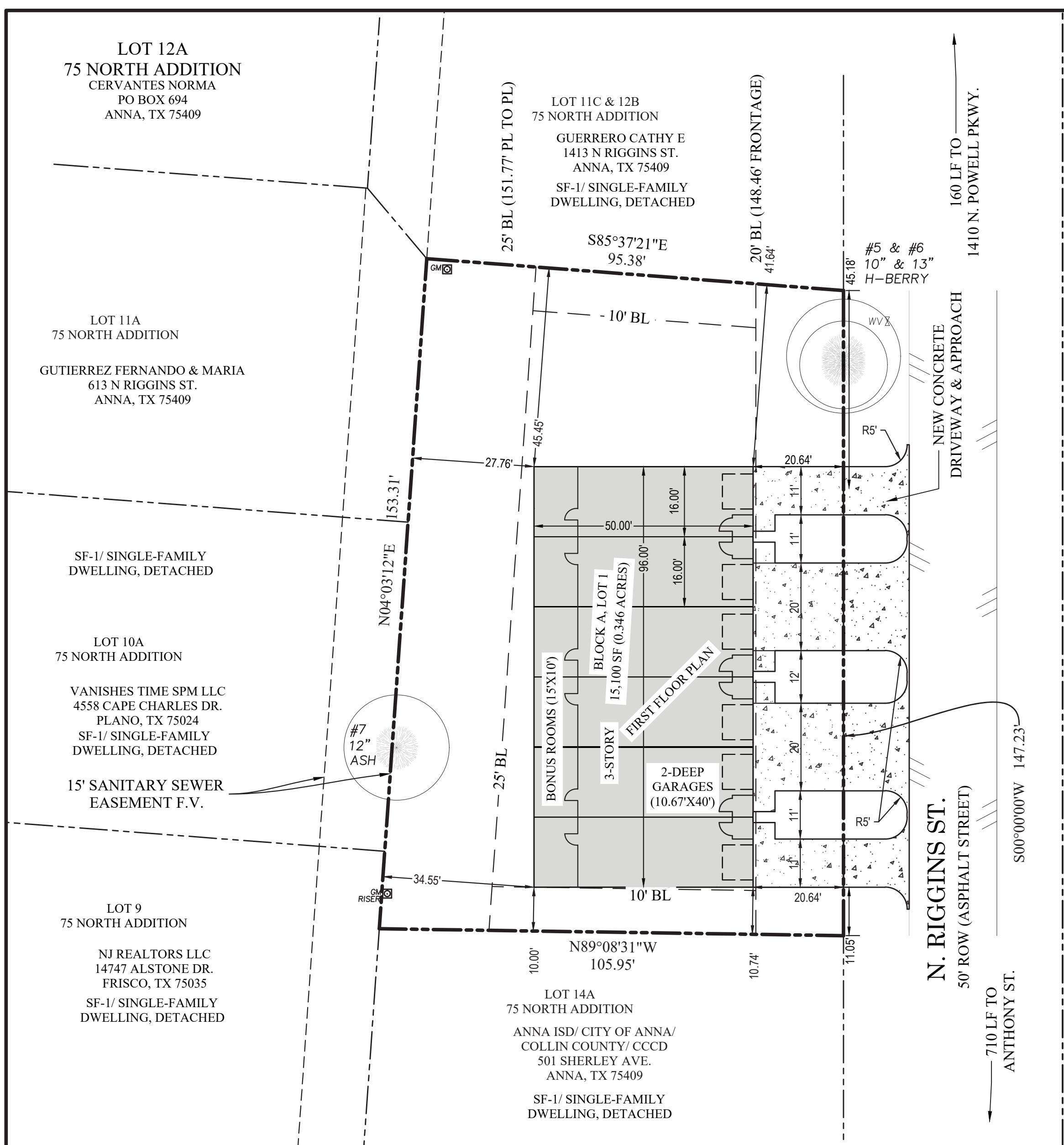
PASSED by the City Council of the City of Anna, Texas this 26h day of July 2022.

ATTESTED:

APPROVED:

Carrie L. Land, City Secretary

Nate Pike, Mayor



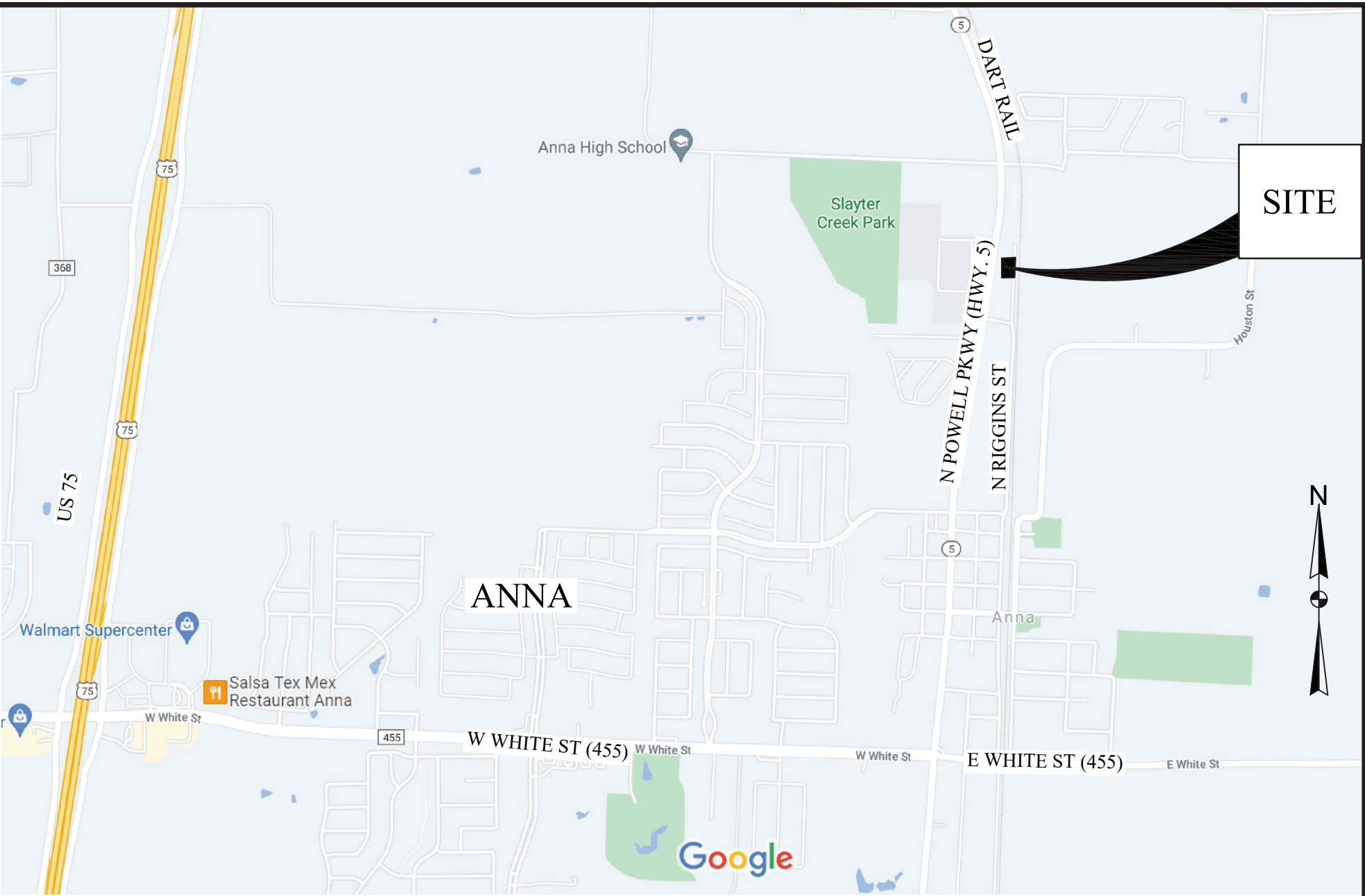
T AND O RAILROAD
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5900 WATERVIEW CT.
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DART RAIL

ABS A0559
GUINN MORRISON SURVEY,
SHEET 1, TRACT 71, 7.82 ACRES

SITE PLAN

SITE DATA SUMMARY TABLE (1409 N. RIGGINS STREET)	
Item	Lot 1
General Site Data	
Existing Zoning (from Zoning Map)	SF-1
Proposed Zoning	PD-TH
Land Use (from Zoning Ordinance)	Townhouse
Lot Area (square feet & acres)	15,110
Building Footprint Area (square feet)	4,800
Total Building Area (square feet)	14,400
Building Height (# stories)	3
Building Height (feet - distance to tallest building element)	35 feet
Lot Coverage (percent - x.xx%) Bldg. only	32%
Lot Coverage (percent - x.xx%) Bldg., Lead Walk & Driveway	41%
Parking	
Parking Ratio (from Zoning Ordinance)	2/Dwelling
Required Parking (# spaces) - 6 Units (2/Unit)	12
Provided Parking (# spaces)	12
Accessible Parking Required (# spaces)	0
Accessible Parking Provided (# spaces)	0
Landscape Area (including turf areas)	
Required internal landscape area (8 sf/parking space)	96
Additional interior landscape area provided (sf)	411
Total Landscape Area (square feet)	8,898



SITE LOCATOR MAP



CITY APPROVAL STAMPS

NO.	DATE	REVISIONS
		APP.

CONCEPT PLAN

SALIDA DEL SOL
BLOCK A, LOT 1

Gwynn Morrison Survey, Abstract No. 559
Part of Lots 10, 11 & 14; (15,110 SF)
75 NORTH ADDITION, COLLIN CO.

J. S. Ground Engineering, LLC
4108 Dundee Court
Colleyville, Texas 76034
Firm Registration No. F-1276
(817) 320-5330 ph.
jsg@jsgroundengineering.com

SCALE: _____ DGN. BY: JSG
DATE: June 20, 2022 DWN. BY: WJW
JSGE NO. _____ DWG. NO. _____

STATE OF TEXAS
JEFFREY S. GROUND
82648
LICENSED PROFESSIONAL ENGINEER

6-20-22

SHEET NO.
C1

Exhibit 1

ENGINEER

J. S. Ground Engineering, LLC
4108 Dundee Court
Colleyville, Texas 76034
Firm Registration No. F-1276
Jeff Ground, PE, CFM (817) 320-5330
jsg@jsgroundengineering.com

BUILDER/OWNER

DSH CONSTRUCTION LLC
208 South Johnson, Suite 315
McKinney, TX 75069
Derek Humphreys (903) 357-3286
derek@dshbuild.com

CITY OF ANNA
PLANNING & ZONING COMMISSION

July 5, 2022 (updated)

Public Hearing: Zoning – PD-SF-TH (Salida Del Sol)

Applicant: Innovative Investments Inc.

DESCRIPTION:

Request to rezone 0.4± acre located on the west side of N. Riggins Street, 671± feet north of Anthony Street.

The rezoning request is from SF-1 Single-Family Residential District (SF-1) to Planned Development-SF-TH Townhome District (PD-SF-TH).

HISTORY:

At the June 6, 2022 Planning & Zoning Commission meeting the commission tabled and held open the public hearing in order for the applicant to provide a rendering of the townhouse product being proposed.

In October 2021 a similar rezoning request was presented to the city for the subject property (SF-TH Townhome District with modified development standards). The request was associated with an 8-unit townhome development on one lot with modified development standards.

REMARKS:

The current zoning request is to allow a six (6) unit townhouse development with modified development standards. The SF-TH district is intended to provide for a medium density residential environment of attached townhome units.

A Planned Development (PD) district is intended to provide for combining and mixing of uses allowed in various districts with appropriate regulations and to permit flexibility in the use and design of land and buildings in situations where modification of specific provisions of this article is not contrary to its intent and purpose or significantly inconsistent with the planning on which it is based and will not be harmful to the community. A PD district may be used to permit new and innovative concepts in land utilization. While great flexibility is given to provide special restrictions which will allow

development not otherwise permitted, procedures are established herein to insure against misuse of the increased flexibility.

A Concept Plan, Salida Del Sol, Block A, Lot 1, accompanies this rezoning request (Exhibit A).

Surrounding Land Use and Zoning

The area of the request is currently developed as a single-family residence, detached neighborhood. The surrounding zoning is Single-Family Residential District - 1 (SF-1). The SF-1 zoning is designed to accommodate the standard single-family residential development. The typical lot size within this neighborhood is 7,500 square feet, which is larger than most existing/proposed single-family residential subdivisions. The properties to the north, south, and west are developed as single-family residences detached and to the east, across N. Riggins Street is the DART rail line.

Proposed Planned Development Stipulations

The applicant is proposing to modify existing development standards of the SF-TH zoning district. Townhouse units would be allowed by-right and subject to the following additional standards;

1. Minimum Lot Width (feet): 16

City Regulation: Lot width for a lot containing townhouse units shall be not less than 20 feet per ground floor unit plus side yard requirements.

2. Minimum Lot Depth (feet): 95

City Regulation: Min. lot depth (feet): 160

3. Min. Lot area/size (feet): 2,500 per unit

City Regulation: Minimum lot sizes for townhouses and zero lot line houses shall be 2,700 square feet per unit.

4. Rear Entry provision: (removed)

5. Driveway Parking Area: 45% of residential front yard

City Regulation: A single-width driveway running from the street access to a garage or other parking area shall not utilize more than 15% of any residential front yard.

6. General Landscape Standard Allow mature tree (25 feet or greater) within 25 feet of the nearest overhead utility.

Attached, Exhibit 1, is the applicants proposed justification associated with the modified standards request.

Conformance with the City of Anna Strategic Plan and Comprehensive Plan

Future Land Use Map – The Future Land Use Map designates this property within the Downtown Master Plan limits classified as “Intown Residential”

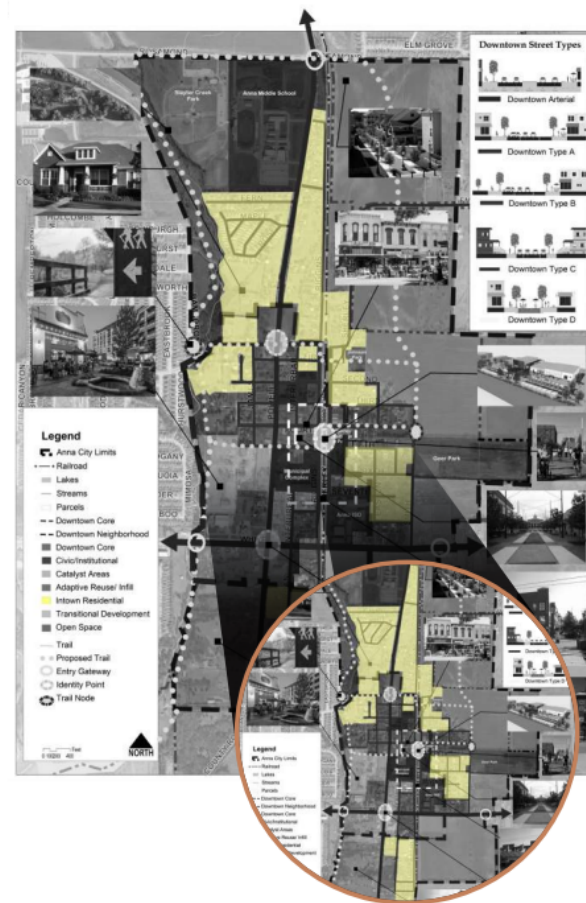
Intown Residential

Downtown Anna contains several pockets of historic residential fabric that surround the Downtown Core, defining the character of this area and supporting it as a unique and diverse district. As the community grows over time, reinvestment in the Intown Residential areas will remain essential in maintaining and elevating the quality of each neighborhood. These areas, along with surrounding undeveloped parcels, can provide the critical residential base necessary to support the businesses envisioned for Downtown. Additionally, there is an opportunity to provide a wide range of more urban housing products that could accommodate people at all stages of their lives. Future land use decisions in this area should emphasize sound neighborhood placemaking principles, such as walkable streets and amenitized open spaces, to reinforce civic life and allow neighbors to maintain connections throughout their community.

The following primary building types are appropriate in Intown Residential (Detached residential):



The following secondary building types are appropriate in Intown Residential (Churches, Civic Structures, Accessory Structures, Open Spaces):



Townhomes (although not listed as a primary building type) are shown in the illustrations as appropriate primary building types. The requested PD language would allow for an urban style of development within $\frac{3}{4}$ mile of the heart of the Downtown Core as identified in the Anna 2050 Downtown Master Plan. The proposed *land use* is consistent with the

Master Plan due to providing the critical residential base necessary to support businesses envisioned for Downtown and providing for a more urban housing product that could accommodate people at all stages of their lives.

ISSUES:

The city's zoning regulations were adopted to promote health, safety, morals, and general welfare of the community. They're made in accordance with the spirit of the comprehensive plan and designed to lessen congestion in the streets; to secure safety from fire, panic, and other dangers; to promote health and the general welfare, to provide adequate light and air; to prevent overcrowding of land; to avoid undue concentration of population; [and] to facilitate the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements. These regulations are made with reasonable consideration, among other things, to the character of the district and its peculiar suitability for particular uses, and with a view to conserving the value of buildings and encouraging the most appropriate use of land throughout the city.

While the proposed SF-TH land use is supported by the Downtown Master Plan, the zoning request is seeking to modify adopted standards which are intended to provide for the orderly, safe, health, and uniform development within the city.

There are two (2) regulations the applicant is seeking relief that would not be needed if the development was reduced by one (1) townhouse unit.

1. Minimum lot area (2,700 per unit).
2. Minimum lot width (20 feet per unit plus side yard requirements).

When considering planned development zoning requests City officials need to identify what benefits the particular request brings to the city as well as benefits to the surrounding area/neighborhoods.

The applicants general statement citing the reason for the reduced lot area and lot width provides no justification behind the variance request other than identifying a land use:

"The variance will allow for units to be developed on this site which complement the Anna 2050 Downtown Master Plan; specifically, Intown Residential"

SUMMARY:

Request to rezone 0.4± acre from Single-Family Residence-1 (SF-1) to Planned Development-Single-Family Residence – Townhome (PD-SF-TH) to allow from a townhouse unit development with modified development standards.

RECOMMENDATION:

Below are recommended restrictions if the Commission votes in favor of the zoning request:

Restrictions:

1. The location of the planned development zoning district shall be in substantial conformance with the Concept Plan (Exhibit A).
2. Standards and Area Regulations: Development must comply with the development standards for use, density, lot area, lot width, lot depth, yard depths and widths, building height, building elevations, coverage, floor area ratio, parking, access, screening, landscaping, accessory buildings, signs, and lighting, set forth in the SF-TH Townhome District (SF-TH) and the Planning and Development Regulations except as otherwise specified herein.
 - i. Permitted land use: Townhouse
 - ii. Lot Area (feet): 2,500 per unit
 - iii. Min. Lot Width (feet): 16
 - iv. Min. Lot Depth (feet): 95
 - v. Removal of the miscellaneous provision requiring rear entry off-street parking.
 - vi. Single-width driveway allowed to utilize 45% of the residential front yard.
 - vii. Allow mature tree (25 feet or greater) within 25 feet of the nearest overhead utility.
3. Plats and/or site plans submitted for the development of the PD shall conform to the data presented and approved on the Concept Plan. Non-substantial changes of detail on the final development plan(s) that differ from the Concept Plan may be authorized by the City Council with the approval of the final development plan(s) and without public hearing.
4. The Concept Plan will expire after two (2) years of approval.

Density: Density is only stated as "Medium" Density per Sec. 9.04.015 SF-TH; a specific number of units per acre is not provided. High Density is defined as a maximum of 25 units per gross acre in Sec. 9.04.020 (j), MF-2 Multiple-Family Residential - High Density (Miscellaneous Provisions). Medium Density is defined as a maximum of 12 units per gross acre in Sec. 9.04.019 (j), MF-1 Multiple-Family Residential - Medium Density (Miscellaneous Provisions).

Salida Del Sol calculates at 17 units per gross acre; however, only 6 units are proposed for this project. Each unit will be sprinklered for fire protection with two (2) points of entry and exit for safety. The variance for this density will allow for units to be developed on this site which complement the **Anna 2050 Downtown Master Plan**; specifically, Intown Residential (ref. page 21). This project is within the identified "Intown residential" area.

Lot area (feet): Appendix 1 shows zoning SF-TH to have a lot area of 2,700 sf per unit.

Salida Del Sol calculates at 2,518 sf per unit. The lot depth is less than 160' and the width varies as the shape is not uniform. This project is a three-story structure under the 35' maximum height and the building covers 32% of the lot. The variance for lot area per unit will allow for units to be developed on this site which complement the **Anna 2050 Downtown Master Plan**; specifically, Intown Residential (ref. page 21). This project is within the identified "Intown residential" area.

Minimum lot depth (feet): Appendix 1 shows zoning SF-TH to have a minimum lot depth of 160 feet.

Salida Del Sol has a minimum lot depth of 95.38' and the proposed project is within the front and rear setbacks. The variance for minimum lot depth will allow for a project to be developed on this site which complements the **Anna 2050 Downtown Master Plan**; specifically, Intown Residential (ref. page 21). This project is within the identified "Intown residential" area.

Sec. 9.04.015(d)(2), SF-TH Townhome District (Height & Area Requirements; Lot Area): This section specifies minimum lot sizes for townhouses shall be 2,700 square feet per dwelling unit.

Salida Del Sol calculates at 2,518 sf per unit. This project is a three-story structure under the 35' maximum height and the building covers 32% of the lot. The variance for minimum lot size per dwelling unit will allow for units to be developed on this site which complement the **Anna 2050 Downtown Master Plan**; specifically, Intown Residential. This project is within the identified "Intown residential" area.

Sec. 9.04.015(g)(1), SF-TH Townhome District (Miscellaneous provisions, rear entry off-street parking): This section specifies rear entry off-street parking shall be provided.

Salida Del Sol has a wide shallow lot and to provide rear entry parking does not complement the adjacent single-family residents to the rear. The present site layout respects the vegetative green space all the properties in this area share at the rear of their lots. The variance for rear entry off-street parking will allow for units to be developed on this site which complement the adjacent zoning and properties as there is not an alley way along the rear property lines in this neighborhood.

Sec. 9.06.006(a)(5), LANDSCAPE REGULATIONS (Minimum landscaping requirements; General, horizontal location to nearest overhead utility line): This section specifies no trees with a maximum mature height of 25 feet or greater may be planted within 25 feet measured horizontally from the nearest overhead utility line.

Salida Del Sol is a shallow lot of 95.38' depth. There are overhead utility lines along the front and rear of the lot. The variance for horizontal spacing from overhead utility lines will allow for this project to plant trees within the 20' front yard setback.



THE CITY OF Anna

Please circle one:

In favor of request

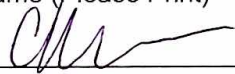
Neutral to request

Opposed to request

Comments:

By signing this letter, I declare I am the owner or authorized agent of the property at the address written below.

Charles R Bridges
Name (Please Print)


Signature

140 Winkedge Way, Oakport TX 75068
Address

6-1-2022
Date

Please return form to:

USPS Mail:

City of Anna
Planning and Development Department
P.O. Box 776
Anna, TX 75409

Hand Delivery:

Planning and Development Department
Public Works Building
3223 N. Powell Parkway
Anna, TX 75409

Or by e-mail to LMECKE@annatexas.gov
Subject: Zoning Response



Item No. 7.f.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022
Staff Contact: Ross Altobelli

AGENDA ITEM:

Consider/Discuss/Action on a Resolution regarding Salida Del Sol, Block A, Lot 1, Concept Plan. (Director of Development Services Ross Altobelli)

SUMMARY:

Townhouse residences on 0.4± acre located on the west side of N. Riggins Street, 670± feet north of Anthony Street.

This concept plan is associated with the zoning request to amend adopted standards for a single-family townhome development and is contingent upon approval of the zoning case.

The purpose for the concept plan is to show the future townhouse development and related site improvements. The concept plan complies with the zoning district area regulations as requested by the zoning case.

FINANCIAL IMPACT:

N/A

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

Goal 2: Sustainable Anna Community Through Planned Managed Growth

STAFF RECOMMENDATION:

The Concept Plan is in conformance with the proposed Planned Development standards and with the city's Subdivision Regulations and Zoning Ordinances.

The Planning & Zoning Commission recommended approval of the Concept Plan subject to City Council approval of the zoning request.

ATTACHMENTS:

1. Salida Del Sol Concept Plan Locator Map
2. RESOLUTION (CP) Salida Del Sol, BI A, Lt 1
3. Exhibit A - Salida Del Sol, BI A, Lt 1 - Concept Plan

APPROVALS:

Ross Altobelli, Director of Development Services
Lauren Mecke, Planning Manager
Ross Altobelli, Director of Development Services
Jim Proce, City Manager

Created/Initiated - 7/19/2022
Approved - 7/19/2022
Approved - 7/20/2022
Final Approval - 7/21/2022

Concept Plan - Salida Del Sol, Block A, Lot 1



THE CITY OF
Anna

N

Subject Property

City Limits

ETJ

0 100 200 400 Feet

May 2022

CITY OF ANNA, TEXAS

RESOLUTION NO. _____

A RESOLUTION OF THE CITY OF ANNA, TEXAS APPROVING A CONCEPT PLAN FOR SALIDA DEL SOL, BLOCK A, LOT 1.

WHEREAS, In order to provide for the orderly development of land within the Anna city limits and extraterritorial jurisdiction, the City Council of the City of Anna, Texas (the "City Council") has adopted Article 9.02 (Subdivision Regulations") and Article 9.04 (Zoning Ordinance) of the Anna City Code of Ordinances; and

WHEREAS, Innovative Investment Inc., has submitted an application for the approval of the Concept Plan for Salida Del Sol, Block A, Lot 1; and

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS, THAT:

Section 1. Recitals Incorporated.

The recitals above are incorporated herein as if set forth in full for all purposes.

Section 2. Approval of Concept Plan

The City Council hereby approves the Concept Plan for Salida Del Sol, Block A, Lot 1 attached hereto as Exhibit A.

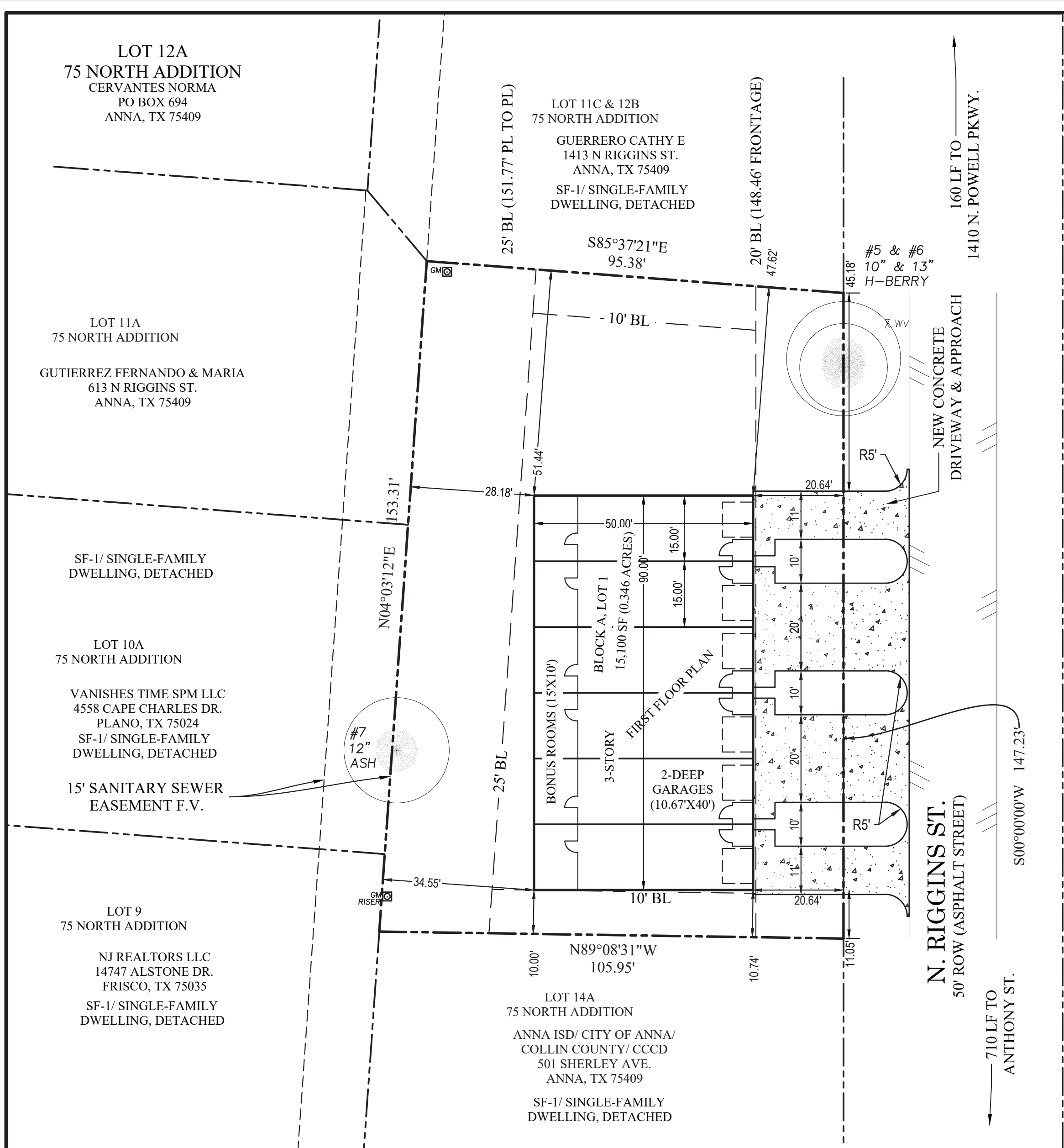
PASSED AND APPROVED by the City Council of the City of Anna, Texas, on this 26th day of July 2022.

ATTEST:

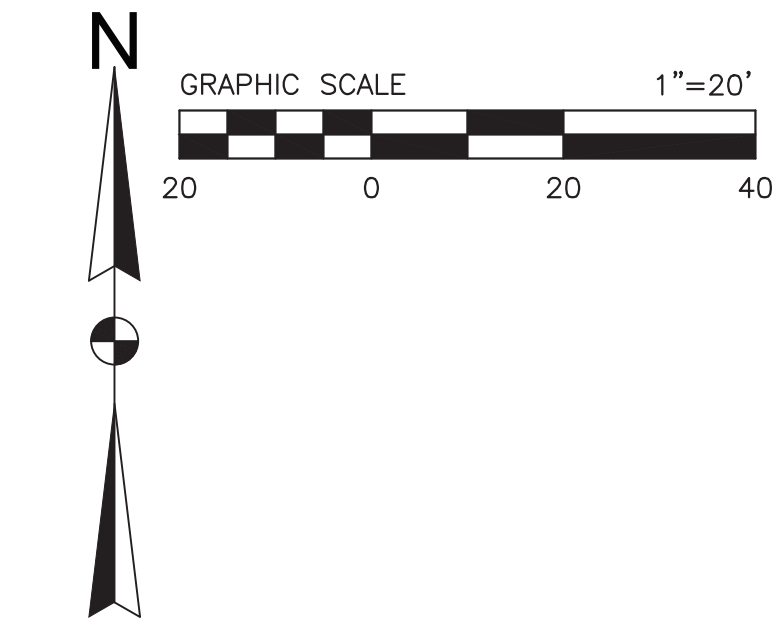
APPROVED:

City Secretary, Carrie L. Land

Mayor, Nate Pike



SITE PLAN

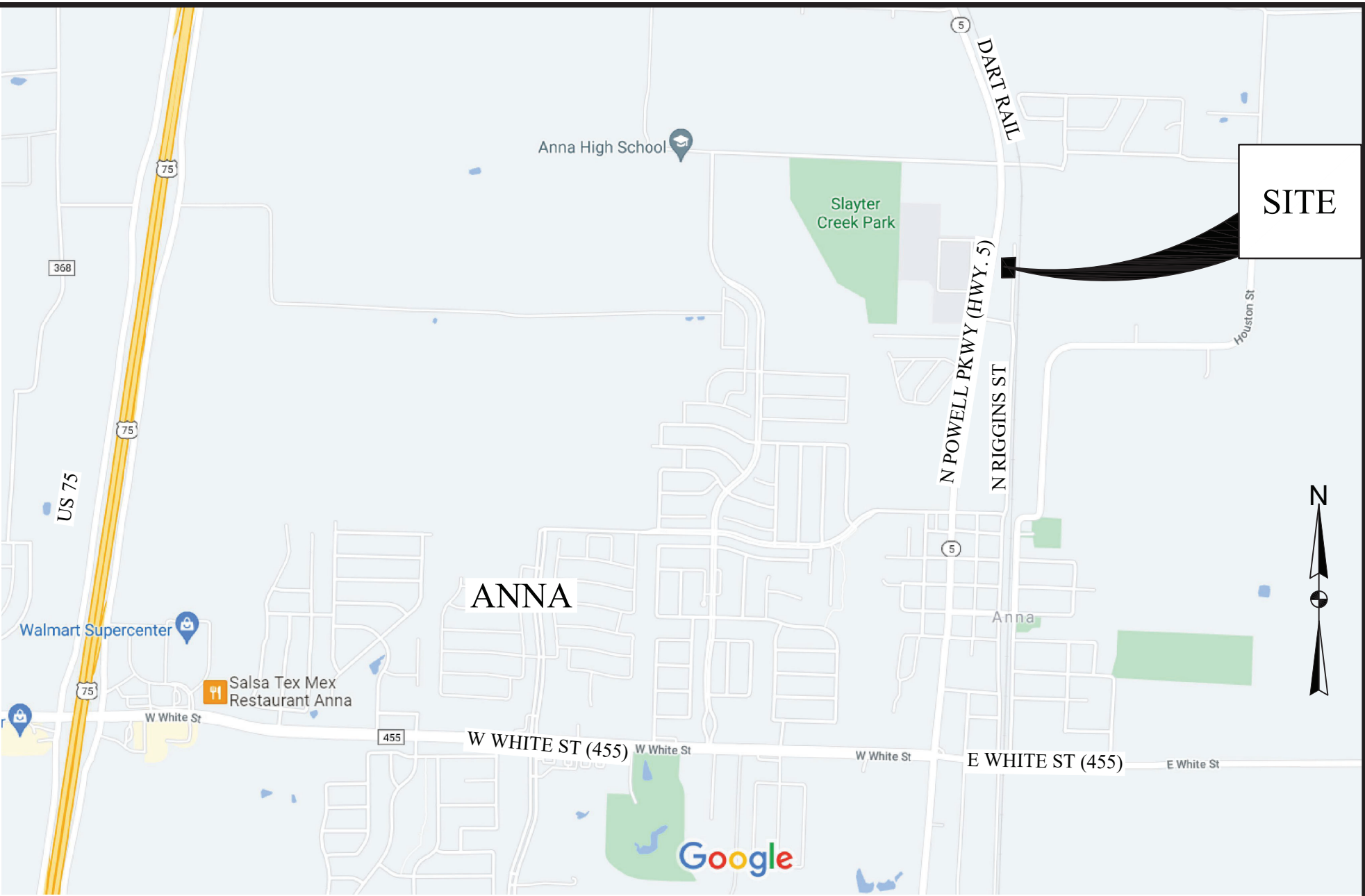


T AND O RAILROAD
ISLEWORTH MANAGEMENT INC
5900 WATERVIEW CT.
MCKINNEY, TX 75071

DART RAIL

ABS A0559
GUINN MORRISON SURVEY,
SHEET 1, TRACT 71, 7.82 ACRES

SITE DATA SUMMARY TABLE (1409 N. RIGGINS STREET)	
Item	Lot 1
General Site Data	
Existing Zoning (from Zoning Map)	SF-1
Proposed Zoning	PD-TH
Land Use (from Zoning Ordinance)	Townhouse
Lot Area (square feet & acres)	15,110
Building Footprint Area (square feet)	4,500
Total Building Area (square feet)	13,500
Building Height (# stories)	3
Building Height (feet - distance to tallest building element)	35 feet
Lot Coverage (percent - x.xx%) Bldg. only	30%
Lot Coverage (percent - x.xx%) Bldg., Lead Walk & Driveway	39%
Parking	
Parking Ratio (from Zoning Ordinance)	2/Dwelling
Required Parking (# spaces) - 6 Units	12
Provided Parking (# spaces)	12
Accessible Parking Required (# spaces)	0
Accessible Parking Provided (# spaces)	0
Landscape Area (including turf areas)	
Required internal landscape area (square feet - 8 sf/parking space)	96
Additional interior landscape area provided (sf)	411
Total Landscape Area (square feet)	9,218



SITE LOCATOR MAP



CITY APPROVAL STAMPS

NO.	DATE	REVISIONS
		APP.

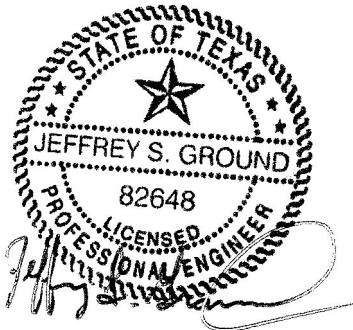
CONCEPT PLAN

SALIDA DEL SOL
BLOCK A, LOT 1

Gwynn Morrison Survey, Abstract No. 559
Part of Lots 10, 11 & 14; (15,110 SF)
75 NORTH ADDITION, COLLIN CO.

J. S. Ground Engineering, LLC
4108 Dundee Court
Colleyville, Texas 76034
Firm Registration No. F-1276

SCALE: _____ DGN. BY: JSG
DATE: JANUARY 31, 2022 DWN. BY: WJW
JSGE NO. _____ DWG. NO. _____



SHEET NO.

C1

1-31-22

Exhibit A

ENGINEER

J. S. Ground Engineering, LLC
4108 Dundee Court
Colleyville, Texas 76034
Firm Registration No. F-1276
Jeff Ground, PE, CFM (817) 320-5330
jsg@jsgroundengineering.com

BUILDER/OWNER

DSH CONSTRUCTION LLC
208 South Johnson, Suite 315
McKinney, TX 75069
Derek Humphreys (903) 357-3286
derek@dsbuild.com



Item No. 7.g.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022

Staff Contact:

AGENDA ITEM:

Consider/Discuss/Action on filling a vacancy to the Parks Advisory Board. (City Secretary Carrie Land)

SUMMARY:

Staci Martin was removed from the Parks Advisory Board and placed on the Planning and Zoning Commission. This item is to fill that vacancy created.

It is for Place 7, expiring May 2023.

FINANCIAL IMPACT:

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

STAFF RECOMMENDATION:

ATTACHMENTS:

APPROVALS:

Carrie Land, City Secretary
Jim Proce, City Manager

Created/Initiated - 7/6/2022
Final Approval - 7/6/2022



Item No. 7.h.

City Council Agenda
Staff Report

Meeting Date: 7/26/2022
Staff Contact: Gregory Peters

AGENDA ITEM:

Discuss/Consider/Approve a resolution authorizing the City Manager to execute a payment not to exceed \$62,977 to DGNO Railroad, their subsidiaries, or partners, for the purchase of signal pre-emption equipment for the proposed traffic signal located at State Highway 5 and Finley Boulevard. (Director of Public Works, Greg Peters, P.E.)

SUMMARY:

The City of Anna completed a traffic study of the intersection of State Highway 5 and Finley Boulevard in the fall of 2021 to determine if the intersection warranted a traffic signal. The study was submitted to TxDOT and approved by TxDOT, with the finding that a new signal is required due to traffic volume during peak traffic times. The existing DART/DGNO rail line running parallel to State Highway 5 requires additional equipment to be installed with the traffic signal, in order to coordinate the signal with oncoming trains.

The typical timeline for TxDOT to install a new traffic signal when a railroad crossing is adjacent is 2 years. The process began in January of 2022, leading to an anticipated completion date of January 2024.

The City has been working with TxDOT to identify ways the City could participate in the process to compress the project timeline, as the City is desiring for the signal to be installed as fast as possible. On Friday, July 22nd, City staff was able to hold a meeting with TxDOT staff in Collin County and Austin, along with DGNO's engineer to discuss the project timeline and options available to compress the project schedule. It was determined that if the City were to fund the purchase of the signal pre-emption equipment, the coordination and agreements between DGNO Railroad and TxDOT would be significantly decreased, resulting in a time savings of approximately 3 months. The equipment cost is anticipated to not exceed \$62,977.00. As TxDOT and DGNO are starting the coordination process, time is of the essence in making the decision on whether the City will fund the purchase of the equipment. The City is not required to make this purchase, as the intersection is in the TxDOT right-of-way, and the signal is their responsibility.

If this item is approved, the scheduled completion of the project would move from January 1, 2024 to October 1, 2023, based on current estimates of construction time and material/supply arrival. The City will continue to work with TxDOT and DGNO's representatives to identify any additional ways to compress the project schedule.

FINANCIAL IMPACT:

The cost will be \$62,977, with funding from Roadway Impact Fees.

STRATEGIC CONNECTIONS:

This item supports the City of Anna Strategic Plan, specifically advancing:

Goal 3: Anna – Great Place to Live**STAFF RECOMMENDATION:**

Staff recommends approval.

ATTACHMENTS:

1. Resolution -Purchase Railroad Pre-Emption Equipment
2. Email from DGNO Engineer

APPROVALS:

Gregory Peters, Director of Public Works
Jim Proce, City Manager

Created/Initiated - 7/22/2022
Final Approval - 7/22/2022

CITY OF ANNA, TEXAS

RESOLUTION NO. _____

A RESOLUTION OF THE CITY OF ANNA, TEXAS AUTHORIZING THE CITY MANAGER TO EXECUTE PAYMENT NOT TO EXCEED \$62,977 TO DALLAS, GARLAND, & NORTHEASTERN RAILROAD, THEIR SUBSIDIARIES OR PROJECT PARTNERS, FOR THE PURCHASE OF RAILROAD SIGNAL PRE-EMPTION EQUIPMENT FOR THE PROPOSED TxDOT TRAFFIC SIGNAL LOCATED AT STATE HIGHWAY 5 AND FINLEY BOULEVARD, ANNA, TEXAS 75409; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, The City of Anna conducted a traffic signal warrant study for the intersection of State Highway 5 and Finley Boulevard in the fall of 2021; and,

WHEREAS, TxDOT accepted and concurred with the findings of the traffic study, which demonstrated that a traffic signal was warranted for the intersection of State Highway 5 and Finley Boulevard; and,

WHEREAS, TxDOT is responsible for the funding of the design and construction of the traffic signal improvements for the intersection; and,

WHEREAS, there is a DGNO Railroad line which parallels State Highway 5 and is located approximately 165 feet east of the intersection of State Highway 5 and Finley Boulevard; and,

WHEREAS, the standard timeline for the installation of TxDOT traffic signals at intersections adjacent to rail lines is typically 2-years; and,

WHEREAS, the City is seeking to work with TxDOT and DGNO to find ways to compress the project schedule and complete the signal project as quickly as possible for the benefit of Anna neighbors; and,

WHEREAS, DGNO's consultant has determined that the purchase of the railroad/signal pre-emption equipment by the City would likely result in a reduced coordination schedule by and between TxDOT and DGNO Railroad, resulting in an approximate 3-month time savings for the project; and,

WHEREAS, the estimated cost of the railroad/signal pre-emption equipment is \$62,977.00; and,

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ANNA, TEXAS THAT:

Section 1. **Recitals Incorporated**

The recitals above are incorporated herein as if set forth in full for all purposes.

Section 2. **Authorization of Agreement and Funding.**

That the City Council of the City of Anna hereby authorizes the City Manager to execute payment in an amount not to exceed \$62,977 to DGNO Railroad, their subsidiaries, or project partners for the purchase of railroad/signal pre-emption equipment.

That funding for the purchase shall come from Roadway Impact Fees.

PASSED AND APPROVED by the City Council of the City of Anna, Texas on this ____ day of July 2022.

ATTEST:

APPROVED:

City Secretary, Carrie Land

Mayor, Nate Pike

Greg Peters

From: Darfus, Tod <tdarfus@Wabtec.com>
Sent: Friday, July 22, 2022 2:09 PM
To: Greg Peters; Jennifer Vorster
Cc: David Loggans
Subject: RE: [EXTERNAL]: RE: City of Anna Signal at SH 5/Finley - for CSJ 0918-00-351- 765318M

Dallas, Garland & Northeastern Railroad Inc. \$62,977.00

From: Greg Peters <gpeters@annatexas.gov>
Sent: Friday, July 22, 2022 2:51 PM
To: Jennifer Vorster <Jennifer.Vorster@txdot.gov>
Cc: David Loggans <David.Loggans@txdot.gov>; Darfus, Tod <tdarfus@Wabtec.com>
Subject: RE: [EXTERNAL]: RE: City of Anna Signal at SH 5/Finley - for CSJ 0918-00-351- 765318M

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All,

I made a few calls. Our Council wants it on Tuesday's agenda – so I am writing the agenda item now. I will just need to know who to make the check payable to, so I can include that information in the approval. Thanks!

Greg Peters, P.E.

Director of Public Works
City of Anna, Texas
972-924-4510



Visit: AnnaTexas.gov. Like us on [Facebook](https://www.facebook.com/annatexas).



Visit: opportunityannatx.com

From: Greg Peters
Sent: Friday, July 22, 2022 1:24 PM
To: Jennifer Vorster <Jennifer.Vorster@txdot.gov>

Cc: David Loggans <David.Loggans@txdot.gov>; tdarfus@Wabtec.com

Subject: RE: [EXTERNAL]: RE: City of Anna Signal at SH 5/Finley - for CSJ 0918-00-351- 765318M

Signal info

Greg Peters, P.E.

Director of Public Works

City of Anna, Texas

972-924-4510



Visit: AnnaTexas.gov. Like us on [Facebook](https://www.facebook.com/annatexas).



Visit: opportunityannatx.com

From: Jennifer Vorster <Jennifer.Vorster@txdot.gov>

Sent: Tuesday, July 19, 2022 8:47 AM

To: Greg Peters <gpeters@annatexas.gov>

Subject: FW: [EXTERNAL]: RE: City of Anna Signal at SH 5/Finley - for CSJ 0918-00-351- 765318M

Let me know if you would like me to set this up, thanks.

From: Darfus, Tod <tdarfus@Wabtec.com>

Sent: Tuesday, July 19, 2022 5:51 AM

To: Jennifer Vorster <Jennifer.Vorster@txdot.gov>; David Loggans <David.Loggans@txdot.gov>; Brandi Bush <Brandi.Bush@txdot.gov>

Cc: Byron Stephens <Byron.Stephens@txdot.gov>; Bahman Afsheen <Bahman.Afsheen@txdot.gov>; Robert Travis <Robert.Travis@txdot.gov>; Richard Polansky <Richard.Polansky@txdot.gov>; Keith Richard <krichard@gwrr.com>; XJA - GW-PM <GW-PM@xorail.com>; Paul, Matt <MPaul@Wabtec.com>; Greg Breaston <greg.breaston@gwrr.com>; Ayala, Juanita <JAyala@Wabtec.com>

Subject: Re: [EXTERNAL]: RE: City of Anna Signal at SH 5/Finley - for CSJ 0918-00-351- 765318M

This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Yes, if you wish to speak about the project, please set something up so my team and I can give you the particulars.

Thank you

From: Jennifer Vorster <Jennifer.Vorster@txdot.gov>

Sent: Monday, July 18, 2022 5:05 PM

To: Darfus, Tod <tdarfus@Wabtec.com>; David Loggans <David.Loggans@txdot.gov>; Brandi Bush

<Brandi.Bush@txdot.gov>

Cc: Byron Stephens <Byron.Stephens@txdot.gov>; Bahman Afsheen <Bahman.Afsheen@txdot.gov>; Robert Travis <Robert.Travis@txdot.gov>; Richard Polansky <Richard.Polansky@txdot.gov>; Keith Richard <krichard@gwrr.com>
Subject: RE: [EXTERNAL]: RE: City of Anna Signal at SH 5/Finley - for CSJ 0918-00-351- 765318M

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Tod,

I think the City of Anna would just like to speak with someone about what this would look like, how much it would cost, and if it would accelerate the schedule. Are you the correct person to answer these types of questions?

From: Darfus, Tod <tdarfus@Wabtec.com>

Sent: Monday, July 18, 2022 10:51 AM

To: Jennifer Vorster <Jennifer.Vorster@txdot.gov>; David Loggans <David.Loggans@txdot.gov>; Brandi Bush <Brandi.Bush@txdot.gov>

Cc: Byron Stephens <Byron.Stephens@txdot.gov>; Bahman Afsheen <Bahman.Afsheen@txdot.gov>; Robert Travis <Robert.Travis@txdot.gov>; Richard Polansky <Richard.Polansky@txdot.gov>; Keith Richard <krichard@gwrr.com>

Subject: Re: [EXTERNAL]: RE: City of Anna Signal at SH 5/Finley - for CSJ 0918-00-351- 765318M

This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Jennifer: I f you would like to pursue the moving forward with the City being the funding source, please let me know and I can set up something to discuss.

Thank you

From: David Loggans <David.Loggans@txdot.gov>

Sent: Wednesday, July 13, 2022 10:00 AM

To: Jennifer Vorster <Jennifer.Vorster@txdot.gov>; Brandi Bush <Brandi.Bush@txdot.gov>

Cc: Byron Stephens <Byron.Stephens@txdot.gov>; Bahman Afsheen <Bahman.Afsheen@txdot.gov>; Robert Travis <Robert.Travis@txdot.gov>; Richard Polansky <Richard.Polansky@txdot.gov>; Darfus, Tod <tdarfus@Wabtec.com>; Keith Richard <krichard@gwrr.com>

Subject: [EXTERNAL]: RE: City of Anna Signal at SH 5/Finley - for CSJ 0918-00-351- 765318M

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Jennifer,

I spoke to Tod Darfus about this project this morning and he is copied. He said that if the city of Anna would like to pay for the project materials that is acceptable and he would provide them with an estimate.

I'm not sure I have the correct contact information for the city of ANNA, so if it's something they are interested in doing, please have them contact Tod for details:

Tod J. Darfus
Project Manager II
5011 Gate Parkway
Building 100, Suite 400
Jacksonville, FL 32256
Mobile: 740-877-6735
E-Mail: tdarfus@wabtec.com

Thanks,

David

From: Jennifer Vorster <Jennifer.Vorster@txdot.gov>
Sent: Monday, June 27, 2022 7:03 PM
To: Orlando Jamandre Jr <Orlando.Jamandre@txdot.gov>; David Loggans <David.Loggans@txdot.gov>; Brandi Bush <Brandi.Bush@txdot.gov>
Cc: Byron Stephens <Byron.Stephens@txdot.gov>; Bahman Afsheen <Bahman.Afsheen@txdot.gov>; Robert Travis <Robert.Travis@txdot.gov>; Richard Polansky <Richard.Polansky@txdot.gov>
Subject: RE: City of Anna Signal at SH 5/Finley

Regarding the email chain below, the City of Anna has followed up requesting a contact at DGNO to purchase this equipment proactively. Is there anyone we could recommend he talk to? Can I direct him to Tod Darfus?

From: Orlando Jamandre Jr <Orlando.Jamandre@txdot.gov>
Sent: Friday, June 10, 2022 9:04 AM
To: David Loggans <David.Loggans@txdot.gov>; Jennifer Vorster <Jennifer.Vorster@txdot.gov>; Brandi Bush <Brandi.Bush@txdot.gov>
Cc: Byron Stephens <Byron.Stephens@txdot.gov>; Bahman Afsheen <Bahman.Afsheen@txdot.gov>; Robert Travis <Robert.Travis@txdot.gov>; Richard Polansky <Richard.Polansky@txdot.gov>
Subject: RE: City of Anna Signal at SH 5/Finley

Correct, once TRF approves preemption form I'll forward that along with the Exhibit A to DGNO. Railroad's force account estimate may change once we provide our proposed preemption timing sheet and crossing layout to them. I'll have a preliminary engineering agreement for Robert to review and approve when he returns from vacation on Monday.

Orlando

From: David Loggans <David.Loggans@txdot.gov>
Sent: Friday, June 10, 2022 8:01 AM
To: Jennifer Vorster <Jennifer.Vorster@txdot.gov>; Brandi Bush <Brandi.Bush@txdot.gov>
Cc: Orlando Jamandre Jr <Orlando.Jamandre@txdot.gov>; Byron Stephens <Byron.Stephens@txdot.gov>; Bahman Afsheen <Bahman.Afsheen@txdot.gov>; Robert Travis <Robert.Travis@txdot.gov>; Richard Polansky <Richard.Polansky@txdot.gov>
Subject: RE: City of Anna Signal at SH 5/Finley

Hey Jennifer,

The Exhibit A was finished and along with Preemption form 2304 was sent to Rail Division on 5/27/2022. Currently the Preemption form 2304 is being reviewed by Traffic Division.

When TRF has finished their review, Rail Division sends the Exhibit A and preemption form to the Railroad. I have attached the preliminary Force Account Estimate from Tod Darfus, with Xorail. This is not the official estimate, just preliminary.

Orlando - That's the last I have on it, do we have any updates? Also, the RR provides the official estimate when Exhibit A has been approved, correct?

Jennifer -You are correct about how RR work is paid. They complete the work and then I receive an invoice from the railroad.

As far as the city paying the force account, I believe the person to contact would be Tod Darfus with Xorail, but we need to make sure Rail Division knows about it.

I have copied Richard Polansky and Robert Travis. Richard/Robert – as far as the city contacting the RR, do we have examples of that being done in the past?

Thanks,

David

From: Jennifer Vorster <Jennifer.Vorster@txdot.gov>

Sent: Thursday, June 9, 2022 5:34 PM

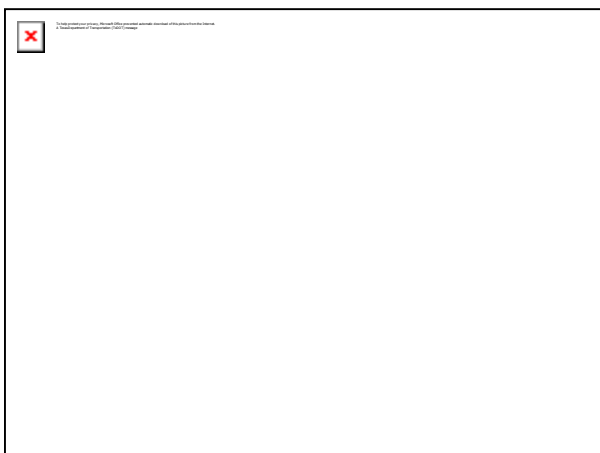
To: Brandi Bush <Brandi.Bush@txdot.gov>

Cc: David Loggans <David.Loggans@txdot.gov>

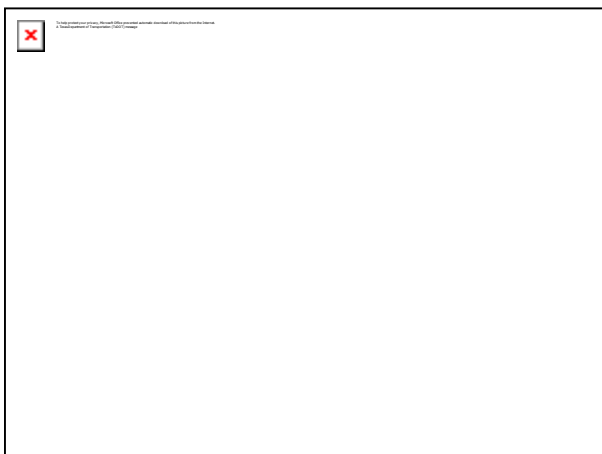
Subject: City of Anna Signal at SH 5/Finley

Hi Brandi,

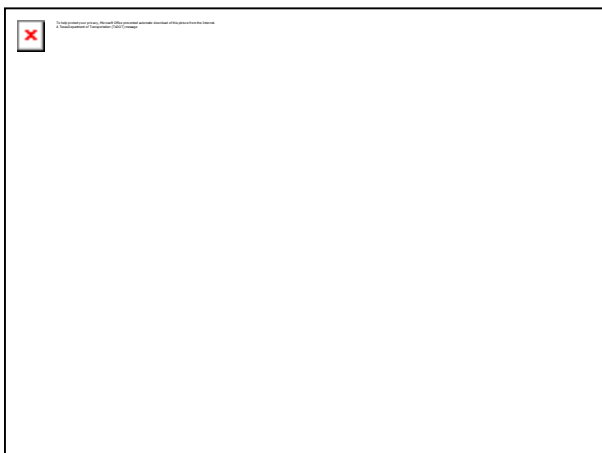
Checking in on the design of the SH 5 at Finley signal. We originally estimated it would be sent to the railroad for review by the end of May. Did we get it sent? Also, the City of Anna is interested in proactively purchasing the pre-emption equipment. Would they need to talk to DGNO about that? The way I understand the preemption equipment is that the railroad buys it and then we just reimburse them their expense. Who would I direct Anna to at DGNO.



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