EXHIBIT "C"

2020

City of Keller

JURISDICTIONAL ANNEX WITHIN THE TARRANT COUNTY HAZARD MITIGATION ACTION PLAN

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Contents

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Chapter 1: Introduction

1.1 Planning Process Point of Contact

The point of contact during the Tarrant County Hazard Mitigation Action Plan (HazMAP) planning process for the City of Keller was the Fire Chief/Emergency Management Coordinator.

1.2 Annex Organization

This annex has five chapters that satisfy mitigation requirements in 44 CFR Part 201:

Chapter 1: Introduction
Chapter 2: Planning Process
Chapter 3: Hazard Identification and Risk Assessment
Chapter 4: Capabilities Assessment
Chapter 5: Mitigation Strategy

The information provided in this annex is for the City of Keller alone. All pertinent information that is not identified in this annex is identified in the other sections of this HazMAP or within the respective appendices.

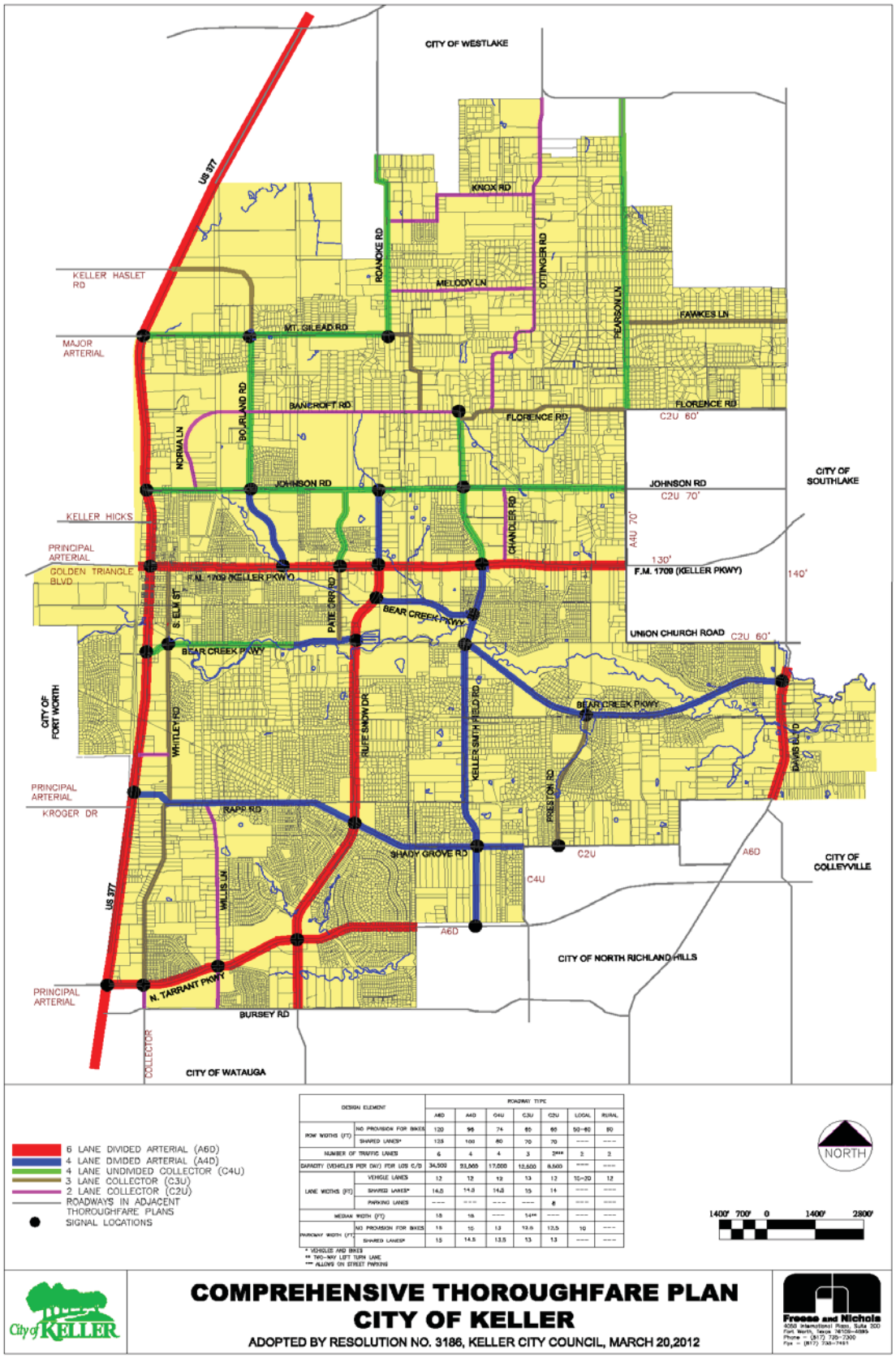
1.3 Hazard Mitigation Action Plan (HazMAP) Adoption

Once the Tarrant County HazMAP has received the designation "Approved Pending Local Adoption" from the Federal Emergency Management Agency (FEMA), the City of Keller will take the HazMAP to City Council for final public comment and local adoption. A copy of the resolution will be inserted into the HazMAP and held on file at the North Central Texas Council of Governments (NCTCOG).

1.4 Supporting Maps

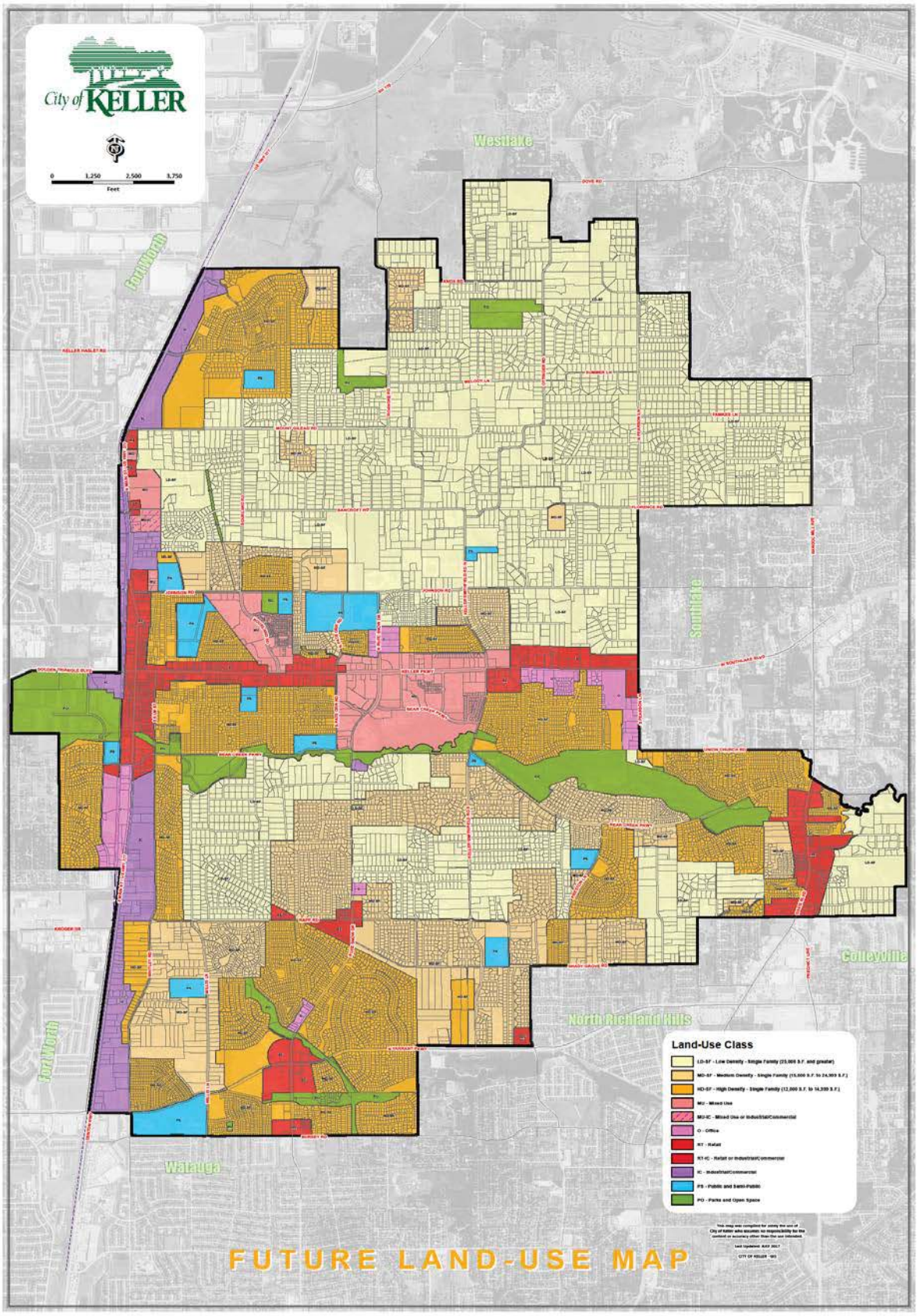
The following maps provide an overview of the City of Keller:

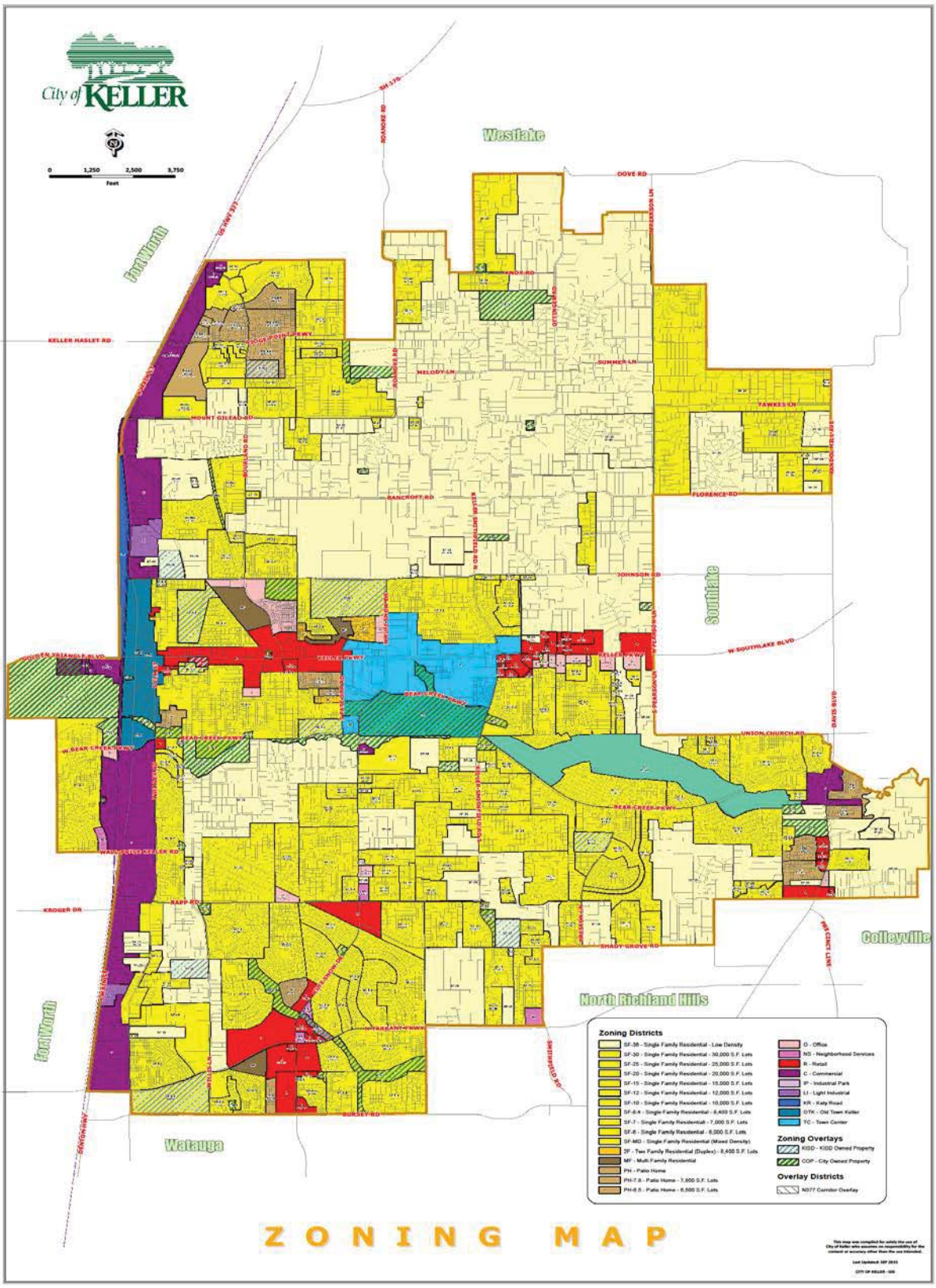
- Comprehensive Thoroughfare Plan Map
- Future Land Use Map
- Zoning Map
- FEMA Floodplain Map

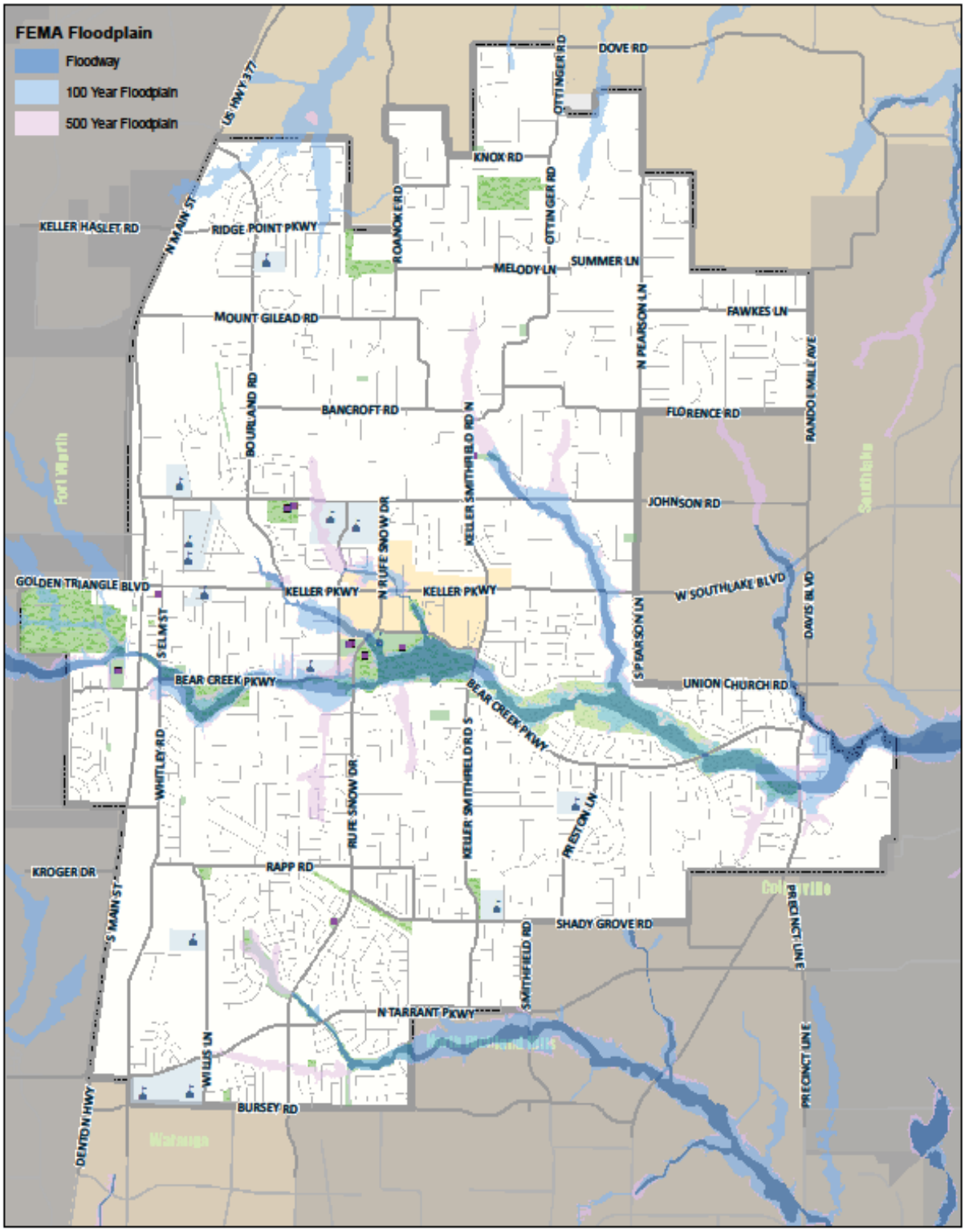


DESIGN ELEMENT		ROADWAY TYPE						
		A6D	A4D	C4U	C3U	C2U	LOCAL	RURAL
ROW WIDTHS (FT)	NO PROVISION FOR BIKES	120	96	74	60	60	50-60	80
	SHARED LANES*	128	100	80	70	70	----	----
NUMBER OF TRAFFIC LANES		6	4	4	3	2***	2	2
CAPACITY (VEHICLES PER DAY) FOR LOS C/D		34,500	23,000	17,000	12,500	8,500	----	----
LANE WIDTHS (FT)	VEHICLE LANES	12	12	12	13	12	10-20	12
	SHARED LANES*	14.5	14.5	14.5	15	14	----	----
	PARKING LANES	----	----	----	----	8	----	----
MEDIAN WIDTH (FT)		18	16	----	14**	----	----	----
PAVEMENT WIDTH (FT)	NO PROVISION FOR BIKES	76	52	52	52.0	32.5	30	----
	SHARED LANES*	76	54.5	53.5	53	33	----	----

* VEHICLES AND BIKES
** TWO-WAY LEFT TURN LANE
*** ALLOWS ON STREET PARKING


City of KELLER
0 1,250 2,500 3,750
Feet
Westlake
Southlake
Colleyville
North Richland Hills
Watauga
Fort Worth
Land-Use Class
FUTURE LAND-USE MAP


City of KELLER
0 1,250 2,500 3,750
Feet
Westlake
Fort Worth
Southlake
Colleyville
North Richland Hills
Watauga
Fort Worth
DOVE RD
KELLER HASLET RD
MELODY LN
SUMMER LN
TAWES LN
FLORENCE RD
RANCROFT RD
JOHNSON RD
W SOUTHLAKE BLVD
UNION CHURCH RD
BEAR CREEK PKWY
SHADY GROVE RD
KROGER DR
KAPP RD
BURSEY RD
Zoning Districts
SF-36 - Single Family Residential - Low Density
SF-30 - Single Family Residential - 30,000 S.F. Lots
SF-25 - Single Family Residential - 25,000 S.F. Lots
SF-20 - Single Family Residential - 20,000 S.F. Lots
SF-15 - Single Family Residential - 15,000 S.F. Lots
SF-12 - Single Family Residential - 12,000 S.F. Lots
SF-10 - Single Family Residential - 10,000 S.F. Lots
SF-8.4 - Single Family Residential - 8,400 S.F. Lots
SF-7 - Single Family Residential - 7,000 S.F. Lots
SF-6 - Single Family Residential - 6,000 S.F. Lots
SF-MD - Single Family Residential (Mixed Density)
2F - Two Family Residential (Duplex) - 8,400 S.F. Lots
MF - Multi-Family Residential
PH - Patio Home
PH-7.8 - Patio Home - 7,800 S.F. Lots
PH-6.5 - Patio Home - 6,500 S.F. Lots
O - Office
NS - Neighborhood Services
R - Retail
C - Commercial
IP - Industrial Park
LI - Light Industrial
KR - Katy Road
OTK - Old Town Keller
TC - Town Center
Zoning Overlays
KISD - KISD Owned Property
COP - City Owned Property
Overlay Districts
N377 Corridor Overlay
ZONING MAP



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FEMA Floodplain

City of Keller

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Chapter 2: Planning Process

(In compliance with 201.6(c)(1))

2.1 Development and Adoption Process

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 CRF Part 201.6. While the City of Keller has historically implemented measures to reduce vulnerability to some hazards, passage of DMA 2000 helped city officials recognize the benefits of a long-term approach to hazard mitigation. This approach is achieved by a gradual decrease of hazard-associated impacts through the implementation of a hazard mitigation action plan (HazMAP). The city's involvement in the Tarrant County HazMAP represents the collective efforts of the Hazard Mitigation Planning Team (HMPT) members, all participating Local Planning Team (LPT) members, the public, and stakeholders.

The city developed this annex in accordance with Part 201.6(c)(5) of DMA 2000. This HazMAP and annex identifies hazards and mechanisms to minimize damages associated with these hazards.

2.2 Organizing the Planning Effort

A comprehensive approach was taken in developing the HazMAP. An open involvement process was established for the public and all stakeholders, which provided an opportunity for everyone to be involved in the planning process and make their views known. The public meeting was advertised with notices in the local newsletter and on social media.

Two teams worked simultaneously on this Tarrant County HazMAP:

1. **Hazard Mitigation Planning Team (HMPT):** This team consisted of points of contact from each participating jurisdiction. The HMPT met to discuss county-wide topics, including hazards and mitigation strategies. The points of contact were the leads of their Local Planning Team (LPT).
2. **Local Planning Team (LPT):** Each jurisdiction had a LPT that consisted of the Emergency Management Coordinator for that jurisdiction as well as designated representatives from within the jurisdiction. This team met to assess capabilities, hazards, and mitigation strategies within the jurisdiction.

2.2.1 Local Planning Team (LPT)

This annex within the Tarrant County HazMAP was developed by the City of Keller's Local Planning Team (LPT), with support from the North Central Texas Council of Governments (NCTCOG). The efforts of the LPT were led by the city's Fire Chief/Emergency Management Coordinator.

The LPT was assembled in 2017 with representatives from the City of Keller. The city acted as the plan development consultant, providing hazard mitigation planning services.

City of Keller Local Planning Team (LPT) Members for the 2020 HazMAP

Jurisdiction	Agency/Organization	Position	Role in LPT
City of Keller	Office of Emergency Management	Fire Chief/Emergency Management Coordinator	Coordination of planning process, plan development
City of Keller	Public Services Department	Director	General oversight, hazard identification, and plan development
City of Keller	Police Department	Police Chief	Hazard identification, provide jurisdiction local knowledge, identify potential mitigation projects
City of Keller	Public Information Office	Public Information Officer	Hazard identification, provide jurisdiction local knowledge, identify potential mitigation projects
City of Keller	Geographic Information Systems (GIS) Department	GIS Manager	Hazard identification, provide jurisdiction local knowledge, identify potential mitigation projects
City of Keller	Community Development Department	Chief Building Official	Hazard identification, provide jurisdiction local knowledge, identify potential mitigation projects
City of Keller	Communications Department	North East Tarrant County Communications (NETCOM) Manager	Hazard identification, provide jurisdiction local knowledge, identify potential mitigation projects
City of Keller	Community Development Department	Planning Manager	Assist in coordinating public education and public meetings
City of Keller	Community Services Department	Director	Hazard identification, provide jurisdiction local knowledge, identify potential mitigation projects
City of Keller	Engineering Department	City Engineer	Hazard identification, provide jurisdiction local knowledge, identify potential mitigation projects

In addition, NCTCOG's Emergency Preparedness Department participated in the following activities associated with development, approval, and adoption of the plan:

1. Prepared, based on community input and LPT direction, the first draft of the plan and provided technical writing assistance for review, editing, and formatting.
2. Submitted proposed plan to the Texas Division of Emergency Management (TDEM) and the Federal Emergency Management Agency (FEMA) for review and approval and completed any edits requested by these organizations.
3. Coordinated plan adoption processes with the city, TDEM, and FEMA.

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Chapter 3: Hazard Identification and Risk Assessment

(In compliance with 201.6(c)(2)(i), 201.6(c)(2)(ii), 201.6(c)(2)(ii)(A), 201.6(c)(2)(ii)(B), 201.6(c)(2)(ii)(C), 201.6(c)(2)(iii), and 201.6(c)(3)(ii))

The following information serves to assist the city in determining and prioritizing appropriate mitigation action items to reduce losses from identified hazards.

3.1 Changes in Development since 2015

(In compliance with 201.6(d)(3))

Increasing Vulnerability
New development in hazard-prone areas: There has been no change since 2015.
Decreasing Vulnerability
Mitigation actions implemented to reduce risk or adopted codes to protect future development: A full list of completed mitigation action items are described in Chapter 5 of this annex.

Declared Disaster Code	Incident Period	Date Declared	Description	Impact
DR-4255	Dec. 26, 2015-Jan. 21, 2016	Feb. 9, 2016	Severe winter storms, tornadoes, straight-line winds, and flooding.	Flooding damaged a low water crossing on January 8, 2016; repair cost was $12,454.92.

3.2 Community Profile

The following tables reflect the community profile, vulnerable facilities in the jurisdiction, and the critical facilities and infrastructure that are exposed to the identified hazards and have the potential to be impacted. This information was gathered from the United States Census and from the City of Keller.

Community Profile from US Census Bureau Quick Facts (Source-www.census.gov)	
Population Estimates (V2016)	47,266
Persons under 5 years (%)	5.5
Persons 65 years and over (%)	11.6
Language other than English spoken at home (%)	11.6
With a disability, under age 65 (%)	4.7
Persons without health insurance, under age 65 (%)	6.4
Persons in poverty (%)	16.6
Median household income	$122,292
Households, 2012-2016	14,715
Median value of owner-occupied housing units, 2012-2016	$311,700

The taxable valuation of improved properties within the community is $5.4 billion. The critical and vulnerable facilities listed below are in the hazard area for all or some of the hazards identified in the City of Keller.

City of Keller Critical and Vulnerable Facility/Asset Inventory					
Facility/Asset Name or Description and Address	**Type of Asset**	**Capacity**	**Square Feet**	**Structure Value**	**Content Value**
City Hall/ Fire Administration 1100 Bear Creek Parkway	Administration Fire/Rescue	150 people	55,000	$12,500,000	$1,900,000
Municipal Service Center 151 Bear Creek Parkway West	Public Works Fueling Center	30 people	35,071	$3,500,000	$585,000
Police Department Regional Jail Regional Communications Center 330 Rufe Snow Drive	Law Enforcement Communication	30 people	11,700	$7,300,000	$1,300,000
Fire Station #2 737 Keller Smithfield Road	Fire/Rescue	10 people	4,800	$600,000	$400,000
Fire Station #3 1500 Rufe Snow Drive	Fire/Rescue	10 people	4,800	$600,000	$400,000
Fire Station #4 455 Keller Smithfield Road South	Fire/Rescue	10 people	7,516	$2,000,000	$400,000

City of Keller Critical and Vulnerable Facility/Asset Inventory					
Facility/Asset Name or Description and Address	**Type of Asset**	**Capacity**	**Square Feet**	**Structure Value**	**Content Value**
Public Library 640 Johnson Road	Education	100 people	15,700	$2,200,000	Unknown
Sports Park 265 Golden Triangle Boulevard	Recreation	600+ people	109 acres	Unknown	Unknown
Senior Activities Center 660 Johnson Road	Recreation	50 people	4,698	Unknown	Unknown
The Keller Pointe Recreation Center 405 Rufe Snow Drive	Recreation	300 people	43,296	$18,000,000	$500,000
Keller High School 601 North Pate-Orr Road	Education	2,860 people	367,000	$13,900,000	Unknown
Keller Independent School District (KISD) Athletic Complex 500 North Pate-Orr Road	Public Assembly Sports Stadium	8,000 people	270,000	$21,300,000	Unknown
Indian Springs Middle School 305 Bursey Road	Education	1,000 people	112,995	$4,200,000	Unknown
Keller Middle School 300 N. College	Education	1,005 people	196,407	$3,500,000	Unknown
Bear Creek Intermediate School 801 Bear Creek Parkway	Education	900 people	154,360	$2,700,000	Unknown
South Keller Intermediate School 201 Bursey Road	Education	890 people	119,850	$4,200,000	Unknown
Hidden Lakes Elementary School 900 Preston Lane	Education	590 people	77,634	$6,100,000	Unknown
Keller-Harvel Elementary School 635 Normal Lane	Education	520 people	141,050	$1,500,000	Unknown

City of Keller Critical and Vulnerable Facility/Asset Inventory					
Facility/Asset Name or Description and Address	**Type of Asset**	**Capacity**	**Square Feet**	**Structure Value**	**Content Value**
Ridgeview Elementary School 1601 Marshall Ridge Parkway	Education	565 people	82,414	$15,400,00	Unknown
Shady Grove Elementary School 1400 Sarah Brooks Drive	Education	565 people	74,555	$2,200,000	Unknown
Willis Lane Elementary School 1620 Willis Lane	Education	610 people	149,350	$4,200,000	Unknown
KISD Learning Center 250 College Street	Education	407 people	30,816	$2,200,000	Unknown
KISD Education Center 350 Keller Parkway	Administration	95 people	120,330	$2,700,000	Unknown
KISD Natatorium 1000 Bear Creek Parkway	Public Assembly Aquatic Center	755 people	31,460	Unknown	Unknown

3.3 Natural Hazard Profiles

The City of Keller's Local Planning Team (LPT) ranked potential hazards in order of risk, with 1 being the highest. Risk, for the purposes of hazard mitigation planning, is the potential for damage or loss created by the interaction of natural hazards with community assets. If a natural hazard does not and could not impact the City of Keller in any way, not applicable (N/A) is used as its rank and its reasoning is noted in the hazard profile section of this chapter.

Rank of Risk	Natural Hazard
1	Tornado
2	Thunderstorm (includes hail, wind, lightning)
3	Winter Storms
4	Flooding
5	Expansive Soils
6	Wildfire
7	Extreme Heat
8	Drought
9	Earthquake

The following terms are used to describe the geographic area affected, probability of future occurrence, and the maximum probable extent.

Geographic Area Affected

- Negligible: Less than 10 percent of planning area.
- Limited: 10 to 25 percent of planning area.
- Significant: 25 to 75 percent of planning area.
- Extensive: 75 to 100 percent of planning area.
    - Planning area refers to the entire City of Keller.

Probability of Future Occurrence

- Unlikely: Event possible in next 10 years.
- Occasional: Event possible in next 5 years.
- Likely: Event probable in next 3 years.
- Highly Likely: Event probable in next year.

Maximum Probable Extent (Magnitude/Strength of Hazard using the following extent scale)

- Minor: Limited classification on scientific scale, slow speed of onset or short duration of event.
- Medium: Moderate classification on scientific scale, moderate speed of onset or moderate duration of event.
- Major: Severe classification on scientific scale, fast speed of/immediate onset or long duration of event.

Extent Scale			
	Minor	**Medium**	**Major**
Drought	PDSI -1.99 to 1.99+	PDSI -2.00 to -2.99	PDSI -3.00 to -5.00
Earthquake	Mercalli Scale: I-V Richter Scale: 0-4.8	Mercalli Scale: VI-VII Richter Scale: 4.9-6.1	Mercalli Scale: VIII-XII Richter Scale: 6.2-8.1+
Expansive Soils	EI Expansion Potential: 21-50 (Low) EI Expansion Potential: 0-21 (Very Low)	EI Expansion Potential: 51-90 (Medium)	EI Expansion Potential: 91-130 (High) EI Expansion Potential: >130 (Very High)
Extreme Heat	Heat Index 80F-105F	Heat Index 105F-129F	Heat Index >130F
Flooding	Outside of 100yr and 500yr Flood Zones, Zone A, AE, X	500yr Flood Zone, Zone X	100yr Flood Zone, Zone AE, A
Thunderstorm	Hail: H0-H4, 5-40mm Wind Force: 0-3 Knots: <1-10 LAL: 1-2	Hail: H5-H6, 30-60mm Wind Force: 4-6 Knots: 11-27 LAL: 3-4	Hail: H7-H10, 50->100mm Wind Force: 8-12 Knots: 28-64+ LAL: 5-6
Tornado	EF0	EF1-EF2	EF3-EF5
Wildfire	KBDI 0-200	KBDI 200-400	KBDI 600-800
Winter Storms	Temperatures 40F to 35F Wind chill 36F to 17F	Temperatures 30F to 20F Wind chill 25F to -4F	Temperatures 15F to -45F Wind chill 7F to -98F

The full description of each hazard identified is provided in Section 3 of this HazMAP.

Location: Drought, earthquakes, expansive soils, extreme heat, thunderstorms, tornadoes, and winter storms do not have geographic boundaries and can impact the entire county equally, which includes all participating jurisdictions. Wildfires can be expected to threaten rural and urban jurisdictions with undeveloped land. Flooding is a severe threat to jurisdictions containing 100-year floodplains or bodies of water.

The following hazards are listed in alphabetical order and describe the location and extent of each hazard, details of previous occurrences, probability data on future events, and vulnerability to each hazard.

3.3.1 Drought

Hazard Profile: Drought	
Category	**Response**
Risk Ranking	8
Geographic Area Affected	Extensive
Probability of Future Occurrence	Occasional
Maximum Probable Extent	Minor
Potential Impact	Property damage Loss of water supply Increase of grassfire potential and intensity Negative impact on citizens, to include water restrictions and lack of drinkable water supply
Vulnerabilities	There is no historical data for drought damage in the city. All populations, economy, structures, improved property, critical facilities and infrastructure, and natural environments are exposed to this hazard, though impacts are considered minimal overall.

Jurisdiction's ground-water supply: No ground water supply. Water supply is from Fort Worth/Tarrant Regional Water District and is surface water. Local water storage capacity is 10 million gallons; pumping capacity is 21.7 million gallons.

Any zoning districts which allow for agricultural uses such as commercial stables and barns, farms, and animal lots, which could be impacted by drought: No.

Describe any water restrictions used in your jurisdiction: As a wholesale water customer of the City of Fort Worth, the City of Keller has adopted water conservation efforts by ordinance. Stage 1 allows twice-weekly outdoor watering. Stage 2 drops watering to once-weekly and Stage 3 restricts watering to hand, soaker, or drip-line only.

3.3.2 Earthquake

Hazard Profile: Earthquake	
Category	**Response**
Risk Ranking	9
Geographic Area Affected	Extensive
Probability of Future Occurrence	Unlikely
Maximum Probable Extent	Minor
Potential Impact	Injury or death Property and infrastructure damage Water contamination or loss via broken pipes Transportation and communication disruption or damage Increase in traffic accidents Building collapse Natural gas leak Misplaced residents Power outages Natural environments damage, to include protected species and critical habitats
Vulnerabilities	All populations, economy, structures, improved property, critical facilities and infrastructure, and natural environments are exposed to this hazard, though impacts are undetermined due the lack of historical data.

Past damage done to jurisdictional roads and critical infrastructure due to earthquakes, including where the damage occurred and how much it cost to fix: No prior earthquakes reported.

3.3.3 Expansive Soils

Hazard Profile: Expansive Soils	
Category	**Response**
Risk Ranking	8
Geographic Area Affected	Extensive
Probability of Future Occurrence	Likely
Maximum Probable Extent	Minor
Potential Impact	Property damage due to foundation damage Water contamination or loss via broken pipes Building and infrastructure damage Road damage Transportation delays due to road condition Damage to utility lines
Vulnerabilities	Because of the manner in which data for expansive soils is collected, the amount of damages in the city was unavailable. Expansive soils are a major consideration to all existing and future structures.

Past damage done to jurisdictional roads and critical infrastructure due to expansive soils, including in what part of your jurisdiction the damage occurred: Unknown. The Department of Public Works does not track the cause of road damage. New road construction over the past 10 years have been designed to minimize impact from expansive soils.

3.3.4. Extreme Heat

Hazard Profile: Extreme Heat	
Category	**Response**
Risk Ranking	7
Geographic Area Affected	Extensive
Probability of Future Occurrence	Highly Likely
Maximum Probable Extent	Medium
Potential Impact	Heatstroke or death Property damage Loss of water supply Increases grassfire potential and intensity Impact on logistics Power outages Road buckling Disruption in critical infrastructure operations Vehicle engine failure
Vulnerabilities	While extreme temperatures pose a serious threat to any population, the elderly, very young, and outdoor laborers need to take proper precautions. People should stay indoors to prevent heatstroke; elderly people who cannot afford air conditioning are at greatest risk.

Most vulnerable populations to extreme heat in your jurisdiction and their location within your jurisdiction: The most vulnerable population are residents of the residential care facilities located within the community. 11.6% of the community is age 65 and older.

Are there cases of extreme heat exposure resulting from special events held in your jurisdiction? The City of Keller requires all special events to submit for approval through a permitting process. Special events causing an exposure to extreme heat have not historically been approved.

Have any critical facilities in your jurisdiction experienced any impacts from extreme heat (e.g., power failure due to heat)? No, critical facilities, assisted-living facilities, and nursing homes have backup generators on site for temporary disruption.

3.3.5 Flooding

Hazard Profile: Flooding	
Category	**Response**
Risk Ranking	4
Geographic Area Affected	Significant
Probability of Future Occurrence	Likely
Maximum Probable Extent	Minor
Potential Impact	Loss of electricity Loss of, or contamination of, water supply Loss of property Structure and infrastructure damage – flooded structures and eroded roads Misplaced residents Snakes migrate and mosquitoes increase Fire – as a result of loss of water supply Debris in transportation paths Emergency response delays Disruption of traffic can lead to impacts to the economy Natural environments damage, to include protected species and critical habitats
Vulnerabilities	Based on historical data, flooding has caused zero injuries and fatalities per year and is expected to have the same results in the future. Commuters and any buildings in a floodplain are considered most at risk. Based on historical data and the geographic information system (GIS) data, 4.1% of the community is located within the 100-year floodplain. City requirements prevent future structures from being built within the 100-year floodplain. From historical data, no repetitive loss properties are located within the community.

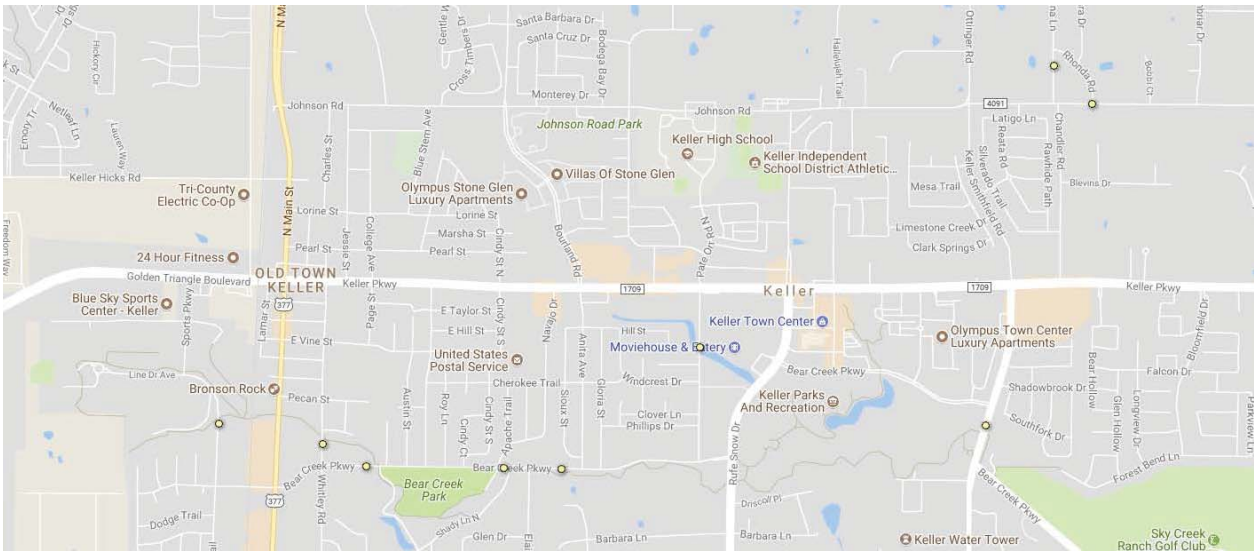
Past damage done to jurisdictional roads and critical infrastructure due to flooding, including where in your jurisdiction the damage occurred: On January 8, 2016, a failure occurred to the asphalt surface and guard rails of the low water crossing in Bear Creek Park. $12,454.92 was spent for road surface repair and guard rail replacement.

Does your jurisdiction require a permit for foundation repairs? If so, approximately how much money has been spent by citizens to repair properties damaged by flooding? No.

Intersections or traffic routes impacted by flooding: Low water crossings, one intersection, and two portions of Main Street (State Highway 377) have the potential to be impacted by a flooding event. The intersection consist of Bear Creek Parkway and Elm Street. The two portions of a roadway not at an intersection include: 1400 block of North Main Street (State Highway 377); and the 600 block of South Main Street (State Highway 377). See low water crossings below. These roads have the potential to flood.

Names of any creeks or rivers that flood: Big Bear Creek, Little Bear Creek, and Marshal Creek tributary.

Low Water Crossings: A low water crossing provides a type of bridge when water flow is low. Under high-flow conditions, water runs over the roadway and precludes vehicular and pedestrian traffic. These crossings can be dangerous when flooded. Crossings are identified with a yellow dot.



Road	Flooding Source	Low Water Crossing Type
County Road 4044 (Keller Smithfield Road)	Big Bear Creek	Bridge Class
Bear Creek Parkway	Big Bear Creek	Vented Ford
Bear Creek Parkway	Big Bear Creek	Vented Ford
Bear Creek Parkway	Big Bear Creek	Vented Ford
Whitley Road (Elm Street)	Big Bear Creek	Vented Ford
Sport Parkway	Big Bear Creek	Vented Ford
Johnson Road	Big Bear Creek, TRIB BB-10	Vented Ford
Dana Drive	Big Bear Creek, TRIB BB -10	Vented Ford
Pate Orr Drive	Big Bear Creek, TRIB BB -12	Vented Ford

Low Water Crossing Types Defined:

Bridges are open-bottom structures with elevated decks. They may be designed with one or several piers. Low water bridges generally have greater capacity and are able to pass higher flows underneath the driving surface than most vented and unvented fords.

Vented fords have a driving surface elevated some distance above the streambed with culverts (vents) that enable low flows to pass beneath the roadbed. The vents can be one or more pipes, box culverts, or open-bottom arches. In streams carrying large amounts of debris, the driving surface over the vent may be removable, permitting debris to be cleared after a large flow event.

There is only one critical facility, a school, located in the 100-year floodplain.

Land Cover Type	Total Area in Jurisdiction (Acres)	Total Area in the 100-year Floodplain (Acres)	Percentage (%) of Area in the 100-year Floodplain
Commercial	2,057	158.52	7.71%
Industrial	407	10.9	2.68%
Residential	9,330	314.5	3.37%
Total	**11,794**	**483.92**	**4.10%**

Source: City of Keller Geographic Information Systems (GIS) Department.

National Flood Insurance Program Compliance

Participation in the National Flood Insurance Program (NFIP) is based on a voluntary agreement between a community and the Federal Emergency Management Agency (FEMA). For communities that adopt a floodplain management ordinance to reduce flood risks to new construction, federally backed flood insurance is made available to property owners in the community. Compliance with the NFIP, however, extends beyond mere participation in the program. The three basic components of the NFIP include: 1) floodplain identification and mapping risk, 2) responsible floodplain management, and 3) flood insurance. The City of Keller is a participant in the NFIP and provides details about the community and their participation below. The following information was requested:

CID	480602#
Community Name	City of Keller
County	Tarrant County
Initial FHBM Identified	11/19/76
Initial FIRM Identified	9/30/82
Current Effective Map Date	9/25/09
Reg-Emer Date	9/30/82
Tribal	No

Source: http://www.fema.gov/cis/TX.html.

Who acts as your floodplain administrator/manager? Director of Public Works.

What specific flooding ordinances and plans does your jurisdiction have? Drainage Master Plan, Flood Hazard Prevention Ordinance, and FEMA NFIP.

What are the building requirements for properties located in a Special Flood Hazard Area (SFHA)? No new construction allowed in FEMA designated SFHA. Improved buildings in SFHA are required to be in compliance with the city's floodplain ordinance.

What building restrictions, in regards to floodplains, does your jurisdiction enforce? No new construction in a floodplain. Improved buildings in a floodplain are required to be in compliance with the city's floodplain ordinance.

Repetitive and Severe Repetitive Loss Properties: There are currently 6 residential repetitive loss properties and 0 severe repetitive loss properties within the City of Keller. **Repetitive loss properties** are those for which two or more losses of at least $1,000 each have been paid under the National Flood Insurance Program (NFIP) within any 10-year period since 1978. **Severe repetitive loss properties** are residential properties that have at least four NFIP payments over $5,000 each and the cumulative amount of such claims exceeds $20,000, or at least two separate claims payments with the cumulative amount exceeding the market value of the building.

The following National Flood Insurance Program (NFIP) questions were answered to the best of the City of Keller's ability.

Insurance Summary		
NFIP Topic	**Source of Information**	**Comments**
How many NFIP policies are in the community? What is the total premium and coverage?	State NFIP Coordinator or FEMA NFIP Specialist	Policies in-force: 178 Insurance in-force: $55,162,500 Written premium in-force: $83,474
How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	FEMA NFIP or Insurance Specialist	Since 1978: Around 53 claims have been filed, but 10 of the claims closed without payment. $1,137,017.37 has been paid.
NFIP Topic	**Source of Information**	**Comments**
How many structures are exposed to flood risk within the community?	Community Floodplain Administrator (FPA)	Around 178 structures are exposed to flood risks.
Describe any areas of flood risk with limited NFIP policy coverage	Community FPA and FEMA Insurance Specialist	No data available.
Staff Resources		
NFIP Topic	**Source of Information**	**Comments**
Is the Community FPA or NFIP Coordinator certified?	Community FPA	Yes.
Is floodplain management an auxiliary function?	Community FPA	Yes.

Provide an explanation of NFIP administration services (e.g. permit review, GIS, education or outreach, inspections, engineering capability)	Community FPA	Permit review, geographic information system, and inspections.
What are the barriers to running an effective NFIP program in the community, if any?	Community FPA	No data available.
Compliance History		
NFIP Topic	**Source of Information**	**Comments**
Is the community in good standing with the NFIP?	State NFIP Coordinator, FEMA NFIP Specialist, community records	Yes.
Are there any outstanding compliance issues (i.e. current violations)?		No.
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?		No data available.
Is a CAV or CAC scheduled or needed?		No.
Regulation		
NFIP Topic	**Source of Information**	**Comments**
When did the community enter the NFIP?	Community Status Book https://www.fema.gov/national-flood-insurance-program-community-status-book	11/19/76
Are the FIRMs digital or paper?	Community FPA	Digital and paper.
Do floodplain development regulations meet or exceed FEMA or state minimum requirements? If so, in what ways?	Community FPA	Yes. By building ordinance.
Provide an explanation of the permitting process.	Community FPA, State, FEMA NFIP	Permit conditions: 1. Contractor shall have City approved construction plans prior to commencing any site work.

		2. Contractor shall acquire all other applicable City permits prior to commencing construction including clearing and grubbing, earthwork, construction, building, mining, etc. 3. Flood study demonstrating that the requirements of the City of Hurst are met shall be approved prior to issuing a Floodplain Development Permit or Earthwork permit in all floodplains. Flood map revision shall be approved by FEMA prior to placing fill in FEMA floodplain. 4. Fill for new building construction shall be compacted to 95% standard proctor density at plus or minus 1. 3% of optimum moisture content, unless specified otherwise on City approved construction plans. 5. Adjoining property owners shall not be adversely affected by increased velocities, significantly increased flows, increased flood elevations, sediment, erosion, etc. 6. For excavation and/or mining, see Public Works' Senior Right-of-Way Agent for a Mining Permit and Road Use Permit. A Reclamation Plan will also have to be submitted to the Floodplain Administrator for approval. 7. For new residential structures, the lowest floor (including basement and garage) shall be at or above the minimum finished floor elevation specified on the plat. If there is not an elevation specified on the plat, the structure shall be elevated so as to be a minimum of one foot above the FEMA FIS 100-year base flood elevation. A building permit shall be acquired prior to commencing any work on structures. 8. For new non-residential structures, the building shall be elevated as specified above or flood-proofed to withstand the flood depths, pressures, velocities, impact and uplift forces associated with the FEMA FIS 100-year base flood. All utility lines

		shall be installed as to minimize damage from potential flooding. Upon completion of construction, submit an Elevation Certificate, Precise Grading Certificate, as-built plans, and certification from a Professional Engineer that flood proofing requirements have been met (if flood proofing is required).
Community Rating System (CRS)		
NFIP Topic	**Source of Information**	**Comments**
Does the community participate in CRS?	Community FPA, State, FEMA NFIP	No.

The City of Keller will continue to address the gaps in data over the next five years and expand the capabilities of the NFIP program by implementing NFIP-related mitigation actions identified in Chapter 5 of this annex.

3.3.6 Thunderstorm

Hazard Profile: Thunderstorm	
Category	**Response**
Risk Ranking	2
Geographic Area Affected	Extensive
Probability of Future Occurrence	Highly likely
Maximum Probable Extent	Major
Potential Impact	Property damage to fences, vehicles, equipment, and roofs Transportation delays Injuries and deaths Debris from trees and damaged property Electrical grid problems Communication problems – phone and internet lines down Natural environments damage, to include protected species and critical habitats
Vulnerabilities	Given the dynamic nature of thunderstorms, all populations, economy, structures, improved property, critical facilities and infrastructure, and natural environments are exposed to this hazard.

Past damage due to thunderstorms, and specifically, which hazard within the thunderstorm (hail, high wind, and lightning): Since 2015, 34 structures have been damaged from lightning, with six structures sustaining damage from fire related to the lightning strike, and $178,000 worth of damage from hail and high wind has also occurred.

Number of homes lost due to lightning-induced fires: None, though six structures were damaged.

3.3.7 Tornado

Hazard Profile: Tornado	
Category	**Response**
Risk Ranking	1
Geographic Area Affected	Extensive
Probability of Future Occurrence	Likely
Maximum Probable Extent	Major
Potential Impact	Injury or death Power outage Blocked roadways from trees and damaged property Natural gas pipeline breaks – fire injuries, possible deaths Transportation disruption Rerouting traffic Loss of property Structure and infrastructure damage Misplaced residents Natural environments damage, to include protected species and critical habitats
Vulnerabilities	All populations, economy, structures, improved property, critical facilities and infrastructure, and natural environments are exposed to this hazard. One fire station and one school facility sustained damage from EF0 tornadoes in 2015 and 2017.

Past damage done to your jurisdiction's roads and critical infrastructure due to tornadoes, including where the damage occurred and how much it cost to repair: The southwest portion of Keller, with a line moving to the east/northeast, has experienced two EF0 tornadoes. The first occurred on November 17, 2015 with the second occurring on March 29, 2017. The area consists of commercial and residential properties and critical facilities. Damage to trees, fences, homes and cars, but no infrastructure or roadway damage. Damage to residential, commercial and critical facilities was estimated at $385,000.

3.3.8 Wildfire

Hazard Profile: Wildfire	
Category	**Response**
Risk Ranking	6
Geographic Area Affected	Significant
Probability of Future Occurrence	Occasional
Maximum Probable Extent	Minor
Potential Impact	Injury or death Property and fence damage Road closure Traffic accidents Loss of power – burning utility poles Loss of property Structure and infrastructure damage Misplaced residents Loss of resources Natural environments damage, to include protected species and critical habitats
Vulnerabilities	Given the dynamic nature of wildfires, all populations, economy, structures, improved property, critical facilities and infrastructure, and natural environments in the city are exposed to this hazard, but property within the Wildland Urban Interface is most at risk.

Most vulnerable location (North, East, South, West) of your jurisdiction? Based upon the Texas A&M Texas Wildfire Risk Assessment for Keller, approximately 56.1% of the population lives within the Wildland Urban Interface. The primary area is north of the community, extending to the southwest. Some pockets are indicated in the south and southwest portions of the city as well. Geographic information system (GIS) data indicates an approximate value of $3,264,939,891 of structures located within the Wildland Urban Interface, however the wildfire threat is moderate to low.

Assessed Value of Improvements	
In the WUI	**Percentage in the WUI**
$3,264,939,891	56.1%

Source: City of Keller Geographic Information Systems (GIS) Department.

Residential		Commercial		Industrial	
Residential Parcels Within WUI	Percentage (%) Within WUI	Commercial Parcels Within WUI	Percentage (%) Within WUI	Industrial Parcels Within WUI	Percentage (%) Within WUI
8,776	58.7%	609	56.8%	83	56.5%

Source: Texas A&M Forest Service; City of Keller Geographic Information Systems (GIS) Department.

3.3.9 Winter Storm

Hazard Profile: Winter Storm	
Category	**Response**
Risk Ranking	3
Geographic Area Affected	Extensive
Probability of Future Occurrence	Likely
Maximum Probable Extent	Medium
Potential Impact	Structural damage Injuries or death Power outages Loss of ability to use roads for driving Increased traffic accidents Loss of heat Stranded travelers / motels at full capacity Tree debris create fuel load for fire hazard Delayed emergency response time Frozen/ busted pipes leading to loss of water Disruption of traffic Impacts to the economy Communication capabilities decrease
Vulnerabilities	Given the dynamic nature of winter storms, all populations, economy, structures, improved property, critical facilities and infrastructure, and natural environments in the city are exposed to this hazard; however, the impact is primarily to roadways and parking lots with a minimal impact on existing and future structures.

Bridges and overpasses that can be impacted by a winter storm, including street names and their location within your jurisdiction: Although 18 bridges and low water crossings are located throughout the community, six have been identified as a treatment priority due to the impact of a winter storm: Bear Creek Bridge on Bear Creek Parkway; Bear Creek Bridge on Keller Smithfield Road South; Bear Creek Bridge on Rufe Snow Drive; Bear Creek Parkway and Rufe Snow Drive; Bear Creek Bridge on North Main (State Highway 377); and Bear Creek Bridge on Davis Boulevard.

What impacts are caused when these bridges and/or overpasses are impacted by winter storms? Minor traffic issues due to having to slow down to navigate iced over bridges, potential traffic accidents. Impact is minimal due to the City of Keller Public Works Winter Storm Plan.

3.4 Historical Events

The following, taken from the National Centers for Environmental Information, are natural hazard events that occurred within the City of Keller between 2015 and 2017. The material is organized by location and date.

Historical Events (Since 2015) from the National Centers for Environmental Information (www.ncdc.noaa.gov)								
Location	**Date**	**Event Type**	**Magnitude**	**Deaths**	**Injuries**	**Property Damage**	**Crop Damage**	**Magnitude Type**
Keller	11/17/2015	Tornado	EF0	0	0	$210,000	$0	
Keller	3/8/2016	Thunderstorm Wind	52	0	0	$3,000	$0	EG
Keller	3/23/2016	Hail	1	0	0	$0	$0	
Keller	3/29/2017	Thunderstorm Wind	70	0	0	$80,000	$0	EG
Keller	3/29/2017	Tornado	EF0	0	0	$175,000	$0	
Keller	3/29/2017	Thunderstorm Wind	54	0	0	$35,000	$0	EG
Keller	3/29/2017	Thunderstorm Wind	72	0	0	$60,000	$0	MG
Keller	4/2/2017	Hail	1	0	0	$0	$0	
Total				**0**	**0**	**$563,000**	**$0**	

*MG- Measured Wind Gusts

*EG-Wind Estimated Gusts

3.5 Overall Vulnerability

The City of Keller identified their greatest vulnerabilities and concerns:

- Two EF0 tornadoes have impacted the southern to southwestern portions of the community within a 16-month period, each causing damage to residential and commercial properties as well as a fire station and a school.
- Lightning historically causes damage and fire to structures within the whole community.
- While the potential for wildfire is low, 56.1% of the property in the community has been identified to lie within the Wildland Urban Interface and no planning has occurred to mitigate the impact from this hazard.

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Chapter 4: Capabilities Assessment

(In compliance with 201.6(c)(3))

The following capability assessment examines the ability of the city to implement and manage a comprehensive mitigation strategy. Strengths, weaknesses, and resources of the jurisdiction are identified as a means to develop an effective Hazard Mitigation Action Plan (HazMAP). The capabilities identified in this assessment were evaluated collectively to develop feasible recommendations, which support the implementation of effective mitigation activities.

A questionnaire was distributed to the City of Keller's Local Planning Team (LPT) to initiate this assessment. The survey included questions regarding existing plans, policies, and regulations that contribute to or hinder the ability to implement hazard mitigation activities, including: legal and regulatory capabilities; administrative and technical capabilities; and fiscal capabilities.

Planning and Regulatory Assessment		
Type of Plans	**Have capability?**	**Does the plan address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?**
Comprehensive/Master Plan	N/A	No formal plan
Capital Improvement Plan	Yes	Yes; Yes; Yes
Economic Development Plan	No	
Local Emergency Operations Plan	Yes	Yes; Yes; Yes
Continuity of Operations Plan	N/A	No formal plan
Transportation Plan	No	
Stormwater Management Plan	No	
Community Wildfire Protection Plan	No	
Other Plans (e.g., disaster recovery, climate change adaptation)	Yes	Drainage Master Plan: Yes; Yes; Yes Future Land Use Plan: Yes; Yes; Yes
Land Use Planning and Ordinances	**Have capability?**	**Is the ordinance an effective measure for reducing hazard impacts? Is the ordinance adequately administered and enforced?**
Zoning Ordinance	Yes	Yes; Yes
Subdivision Ordinance	Yes	Yes; Yes
Floodplain Ordinance	Yes	Yes; Yes
Flood Insurance Rate Maps	Yes	Yes; Yes
Natural Hazard Specific Ordinance (e.g., stormwater, wildfire)	Yes	Yes; Yes

Acquisition of land for open space and public recreation uses	Yes	Yes; Yes
Building Code, Permitting, and Inspections	**Have capability?**	
Building Code	Yes	**Version/Year:** ICC 2015
Building Code Effectiveness Grading Schedule (BGEGS) Score	No	
Fire Department ISO Rating	Yes	**Rating:** 2
Site Plan Review Requirements	Yes	Type(s) of requirement: Development Review Committee
Administrative and Technical Assessment		
Administration	**Have capability?**	**Describe capability. Is coordination effective?**
Planning Commission	Yes	Planning & Zoning; Yes
Mitigation Planning Committee	Yes	Planning and hazard analysis; Yes
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	Yes	Tree trimming, maintain & clear draining systems; Yes
Mutual Aid Agreements	Yes	Response and Assistance; Yes
Staff	**Have capability? FT/PT***	**Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?**
Chief Building Official	FT	Yes; Yes; Yes
Floodplain Administrator	FT	Yes; Yes; Yes
Emergency Manager	FT	Yes; Yes; Yes
Community Planner	FT	Yes; Yes; Yes
Civil Engineer	FT	Yes; Yes; Yes
GIS Coordinator	FT	Yes; Yes; Yes
Other:	No	
***Full-time (FT) or part-time (PT) position**		
Technical	**Have capability?**	**Describe capability. Has capability been used to assess or mitigate risk in the past?**
Warning Systems/Services (e.g., Reverse 911, outdoor warning signals)	Yes	Outdoor warning siren system, SirenGPS; Yes
Hazard data and information	Yes	Mapping, GIS Layers; Yes
Grant writing	Yes	As needed
HaZUS analysis	No	Do not use
Other	No	

Education and Outreach Assessment		
Program or Organization	**Have capability?**	**Describe program or organization and how it relates to disaster resilience and mitigation. Could the program or organization help implement future mitigation activities?**
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes	Community Emergency Response Team (CERT) assists with storm spotting, severe weather monitoring, and evacuations. Volunteers in Police Services (VIPS) assists with evacuations; Yes
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes	We promote fire safety and general preparedness via social media, the city's website, ad campaigns, and public events; Yes
Natural disaster or safety related school programs	Yes	Weather radios in all schools; Yes
StormReady certification	Yes	StormReady communities are better prepared to save lives from the onslaught of severe weather through advanced planning, education and awareness. To be officially StormReady, a community must: • Establish a 24-hour warning point and emergency operations center. • Have more than one way to receive severe weather warnings and forecasts and to alert the public. • Create a system that monitors weather conditions locally. • Promote the importance of public readiness through community seminars. • Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises. Yes
Firewise Communities Certification	No	
Public/private partnership initiatives addressing disaster-related issues	No	
Other	No	

Financial Assessment		
Funding Resources	**Have capability?**	**Has the funding resource been used in past? If yes, for what type of activities? Could the resource be used to fund future mitigation actions?**
Capital Improvements project funding	Yes	No
Authority to levy taxes for specific purposes	Yes	No
Fees for water, sewer, gas, and/or electric services	Yes	No
Impact fees for new development	Yes	No
Stormwater or Drainage utility fee	Yes	Yes, small drainage projects not included in CIP Project funds; Yes.
Incurrence of debt through general obligation bonds and/or special tax bonds	Yes	Yes; Funding for CIP draining projects; Yes
Incur debt through private activities	No	
Community Development Block Grant	Yes	No
Other federal funding programs	Yes	Yes, many of Keller's public safety programs are funded through federally administered grants; yes.
State funding programs	No	
Other	No	

How can any of these capabilities be expanded and improved to reduce risk?

Actions that can expand and improve existing authorities, plans, polices, and resources for mitigation include: budgeting for mitigation actions; passing policies and procedures for mitigation actions; adopting and implementing stricter mitigation regulations; approving mitigation updates; and additions to existing plans as new needs are recognized. The city could budget for mitigation actions; revise plans to include mitigation focus as applicable; develop and implement a formal Continuity of Operations Plan (COOP); review Firewise Community program criteria and consider developing a Community Wildfire Protection Plan; consider participating in the ISO Building Code Evaluation Grading program; continue public education and communication efforts; and update the Drainage Master Plan as planned for in fiscal year 2019.

Chapter 5: Mitigation Strategy

(In compliance with 201.6(c)(3)(i), 201.6(c)(3)(i), 201.6(c)(3)(ii), 201.6(c)(3)(iv), 201.6(c)(3)(iii), and 201.6(c)(4)(ii))

The mitigation strategy serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The Stafford Act directs local mitigation plans to describe hazard mitigation action and establish a strategy to implement those actions.[1] Therefore, all other requirements for a local mitigation plan (or hazard mitigation action plan) lead to and support the mitigation strategy.

5.1 Mitigation Goals

The Tarrant County Hazard Mitigation Planning Team (HMPT) collectively reviewed the extensive list of mitigation goals of the 2015 Hazard Mitigation Action Plan (HazMAP) and unanimously chose to streamline the mitigation goals for this update. Therefore, the new goals are to protect life and reduce bodily harm from natural hazards, and to lessen the impacts of natural hazards on property and the community through hazard mitigation.

5.2 2015 Action Items

The City of Keller's action items in the 2015 Tarrant County HazMAP were determined by the 2015 Local Planning Team (LPT). Below are the action items from the 2015 plan and the status of each action.

[1] Section 322(b), Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended, 42 U.S.C. 5165.

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
Severe Thunderstorms and High Winds, Tornadoes	Add an outdoor warning siren in the Big Bear Creek Park area in City of Keller.	Conduct a study to determine if an additional outdoor warning siren is warranted for Big Bear Creek Park.	2 months	Office of Emergency Management	$1,000	$4,000	City funds
		STATUS: Completed					
		Purchase and install an outdoor warning siren in Big Bear Creek Park.	12 months	Office of Emergency Management	$35,000	$140,000	Hazard Mitigation Grant Program, city funds
		STATUS: Deferred to 2020 HazMAP					
Severe Thunderstorms and High Winds, Tornadoes, Hail, Lightning, Winter Storms, Flooding, Dam Failure, Wildfires	Purchase and implement of a mass public notification system for cell phones and texting in the City of Keller.	Purchase mass notification system for residents to sign up for cell phone/text alerts.	12 months	Office of Emergency Management	$25,000	$100,000	Hazard Mitigation Grant Program, city funds
		STATUS: Completed					

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
Severe Thunderstorms and High Winds, Tornadoes, Hail, Lightning, Winter Storms, Flooding, Dam Failure, Wildfires	Implement a multijurisdictional Automatic Vehicle Location (AVL) system for both police and fire from Colleyville, Keller, Southlake, and Westlake (NETCOM).	Survey the eight departments and ascertain need and want as well as determine the number of users needed.	7 months	North East Tarrant County Communications (NETCOM)			
		STATUS: Deferred to 2020 HazMAP					
		Determine vendor for purchase.	1 year	NETCOM, with a representative from all cities	Unknown	Unknown	Unknown
		STATUS: Deferred to 2020 HazMAP					
		Purchase hardware for all jurisdictions.	16 months	NETCOM	$90,000	$360,000	Individual city budgets
		STATUS: Deferred to 2020 HazMAP					
		Purchase software for dispatch center and each unit.	2 years	NETCOM	$10,000	$40,000	Individual city budgets
		STATUS: Deferred to 2020 HazMAP					
Severe Thunderstorms and High Winds, Tornadoes, Hail, Lightning, Winter Storms, Flooding, Dam	Assist City of Keller citizens with funding for purchase of weather alert radios.	Develop and fund rebate program for residents purchasing weather alert radios.	18 months	Office of Emergency Management	$10,000	$40,000	Hazard Mitigation Grant Program, city funds, private foundations

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
Failure, Wildfires							
		STATUS: Deferred to 2020 HazMAP					
Flooding	Improve the drainage system of the City of Keller.	Robin Court Drainage Improvements Project.	12 months	Public Works Department	$600,000	$2,400,000	Hazard Mitigation Grant Program, city funds
		STATUS: Completed					
		Conduct study to reduce stream bank erosion impacts along Big Bear Creek, Little Bear Creek, and Marshall Branch.	3 years	Public Works Department	$100,000	$400,000	Hazard Mitigation Grant Program, city funds
		STATUS: Deferred to 2020 HazMAP					
Flooding	Develop effective flood mitigation public education in the City of Keller.	Develop informational brochure.	12 months	Office of Emergency Management	$2,500	$10,000	Hazard Mitigation Grant Program, city funds
		STATUS: Deferred to 2020 HazMAP					
Dam Failure	Educate citizens regarding risk for dam failure.	Complete inundation studies for dams located	1-2 years	Public Works and Transportation Department	To be determined	To be determined	To be determined

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
		within the City of Keller.					
		STATUS: Deleted- there are no dams in Keller					
Infectious Disease Outbreak	Prepare City of Keller first responders for mass prophylaxis distribution.	Train first responders in point of distribution (POD) procedures.	3 months	Office of Emergency Management	$1,500	$6,000	City funds
		STATUS: Deleted- no longer identifying technological hazards					
		Conduct a POD exercise to test plans and procedures.	6 months	Office of Emergency Management	$3,000	$12,000	City funds
		STATUS: Deleted- no longer identifying technological hazards					
Infectious Disease Outbreak	Ensure continuity procedures are in place to prepare for a long-term employee shortage at City of Keller facilities.	Review continuity of operations (COOP) plans and procedures for city employees and facilities.	12 months	Office of Emergency Management	$6,000	$24,000	City funds
		STATUS: Deleted- no longer identifying technological hazards					
		Provide COOP training for city employees.	3 months	Office of Emergency Management	$1,500	$6,000	City funds
		STATUS: Deleted- no longer identifying technological hazards					

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
Infectious Disease Outbreak	Develop a public information campaign to educate City of Keller public about infectious diseases.	Educate the public on pandemics, including isolation, quarantine, triage, and medical care.	12 months	Office of Emergency Management	$6,000	$24,000	City funds
		STATUS: Deleted- no longer identifying technological hazards					
Drought	Review City of Keller Water Conservation Plan and update as necessary to mitigate the effects of drought.	Review City of Keller Ordinance No. 1454, City of Keller Water Conservation Plan.	3 months	Environmental Services Department	$1,500	$6,000	City funds
		STATUS: Deferred to 2020 HazMAP					
		Update water conservation enforcement to ensure effective practices during periods of drought.	3 months	Environmental Services Department	$1,500	$6,000	City funds
		STATUS: Deferred to 2020 HazMAP					
Drought	Review Drought Contingency and Emergency Water Management Plan	Review current contingency plans.	6 months	Environmental Services Department	$3,000	$12,000	City funds
		STATUS: Deferred to 2020 HazMAP					

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
	for the City of Keller to ensure adequate power and water supply during prolonged periods of drought.	Develop or update potable water contingency plans.	12 months	Environmental Services Department	$6,000	$24,000	City funds
		STATUS: Deferred to 2020 HazMAP					
		Develop or update power supply contingency plans.	12 months	Environmental Services Department	$6,000	$24,000	City Funds
		STATUS: Deferred to 2020 HazMAP					
Drought	Develop landscape and irrigation system review plans to be included in the approval process planned developments to increase conservation efforts in the City of Keller.	Develop plan to institute landscape and irrigation system reviews for new developments.	6 months	Environmental Services Department	$3,000	$12,000	City funds
		STATUS: In progress					
Drought	Review and revise the City of Keller's drought awareness education program.	Review the drought awareness campaign to ensure it addresses current and future water conservation needs and revise as needed.	3 months	Environmental Services Department	$1,500	$6,000	City funds

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
		STATUS: Deferred to 2020 HazMAP					
Drought	Distribute drought awareness information to the citizen and business water customers within the City of Keller.	Provide drought awareness information to City of Keller citizens and business customers through a social media campaign.	6 months	Environmental Services Department	$3,000	$12,000	City funds
		STATUS: Deferred to 2020 HazMAP					
		Implement the use of public service announcement videos on the City of Keller cable access channel.	6 months	Environmental Services Department	$3,000	$12,000	City funds
		STATUS: Deferred to 2020 HazMAP					
		Develop water conservation packets for landscaping vendors to provide their customers with new system installations.	12 months	Environmental Services Department	$4,000	$16,000	City funds
		STATUS: Deferred to 2020 HazMAP					

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
Lightning	Mitigate against lightning damage in the City of Keller.	Ensure city critical infrastructure has adequate lightning mitigation in place and upgrade protection as necessary.	12 months	Office of Emergency Management	$5,000	$20,000	Hazard Mitigation Grant Program, city funds
		STATUS: Deferred to 2020 HazMAP					
		Provide lightning mitigation information with building permit packets.	6 months	Community Development Department	$2,500	$10,000	Hazard Mitigation Grant Program, city funds
		STATUS: Deferred to 2020 HazMAP					
Hazardous Materials Release	Identify potential hazard areas in the City of Keller associated with a railroad incident.	Identify materials commonly carried by the railroad that travels through the community.	3 months	Fire Department, Union Pacific Rail Road	$500	$2,000	Unknown
		STATUS: Completed					
		Develop hazard incident overlay for the small, medium, and worse-case incidents based upon materials	6 months	Fire Department, Geographic Information System Staff	$10,000	$40,000	City funds

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
		commonly carried on the railway.					
		STATUS: In Progress					
		Identify the roadway infrastructure, residences, commercial buildings, and open land/park areas located within the hazard incident overlay.	6 months	Fire Department, Geographic Information System (GIS) Department	$5,000	$20,000	City Funds
		STATUS: In Progress					
Hazardous Materials Release	Identify evacuation routes for areas in the City of Keller potentially affected by railroad incidents.	Identify roadways within the hazard areas to be used as potential egress points.	6 months	Fire Department, Public Works Department	$5,000	$20,000	City funds
		STATUS: In Progress					
		Develop map indicating egress routes out of the hazard area.	6 months	Fire Department, GIS Department	$10,000	$40,000	City funds
		STATUS: Deleted- no longer identifying technological hazards					

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
		Communicate egress/evacuation maps and information with residents and businesses located within the hazard overlay area through social media, online information, and brochures.	6 months	Fire Department, City Communications Specialist	$2,500	$10,000	City funds
		STATUS: Deleted- no longer identifying technological hazards					
Extreme Temperatures	Ensure the City of Keller has an extreme heat plan in place.	Review current plans and procedures related to extreme heat.	6 months	Office of Emergency Management	$3,000	$12,000	City funds
		STATUS: Deferred to 2020 HazMAP					
		Develop or update extreme heat plans and ensure they provide procedures for opening cooling centers and providing public information.	12 months	Office of Emergency Management	$6,000	$24,000	City funds
		STATUS: Deferred to 2020 HazMAP					

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
Extreme Temperatures	Identify extreme heat plans for critical infrastructure in the City of Keller.	Evaluate the need for extreme heat plans for critical infrastructure to ensure essential functions continue in the event of high temperatures.	6 months	Office of Emergency Management	$3,000	$12,000	City funds
		STATUS: Deferred to 2020 HazMAP					
		Develop or update plans and procedures for critical infrastructure when high temperatures are present.	12 months	Office of Emergency Management	$3,000	$12,000	City funds
		STATUS: Deferred to 2020 HazMAP					
Extreme Temperatures	Develop an extreme heat preparedness education program for City of Keller citizens and visitors.	Evaluate the hazards posed by extreme heat in the City of Keller.	6 months	Office of Emergency Management	$3,000	$12,000	City funds
		STATUS: Deferred to 2020 HazMAP					
		Develop an extreme heat preparedness education program.	12 months	Office of Emergency Management	$6,000	$24,000	City funds

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
		STATUS: Deferred to 2020 HazMAP					
Extreme Temperatures	Distribute extreme heat preparedness information to City of Keller citizens.	Provide extreme heat preparedness information to the City of Keller citizens through a social media campaign.	6 months	Office of Emergency Management	$3,000	$12,000	City funds
		STATUS: Deferred to 2020 HazMAP					
		Provide extreme heat preparedness information through the City of Keller's website.	6 months	Office of Emergency Management	$3,000	$12,000	City funds
		STATUS: Deferred to 2020 HazMAP					
Expansive Soils	Mitigate against expansive soils in the City of Keller.	Improve construction techniques through building code enhancements.	12 months	Community Development Department	$5,000	$20,000	City funds, permit fees
		STATUS: Deferred to 2020 HazMAP					
		Educate construction contractors, home owners, and business owners	12 months	Community Development Department	$1,000	$4,000	Hazard Mitigation Grant Program,

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
		about mitigation techniques.					city funds, permit fees
		STATUS: Deferred to 2020 HazMAP					
Flooding	Develop effective hazard mitigation public education in the City of Keller related to flooding.	Develop informational brochure related to flooding and provide to the community.	12 months	Office of Emergency Management	$2,500	$10,000	City funds, grant source
		STATUS: Deferred to 2020 HazMAP					
Thunderstorms and High Wind	Increase shelter space at the city parks for people to seek protection when a storm arrives.	Build a shelter location at the baseball fields and soccer fields where people can seek shelter from severe storms.	3 Years	Parks Department	$100,000	$400,000	City funds, grants
		STATUS: Deferred to 2020 HazMAP					
Thunderstorms and High Wind	Ensure that city facilities have adequate safe locations for people to take shelter.	Evaluate each building owned by the City of Keller to locate shelter locations. If there is no safe location within the building install a safe room. Educate occupants	3 Years	Office of Emergency Management	$100,000	$400,000	Hazard Mitigation Grant Program, city funds

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
		of the building of the safe room locations.					
		STATUS: In progress					
Hail	Increase awareness to the citizens on how the can protect themselves and their property from the effects of hail.	Develop and provide educational materials on what type of roofs and windows stand up to hail the best. Use other forms of media to teach people how to protect themselves from hail.	12 months	Office of Emergency Management	$2,500	$10,000	Hazard Mitigation Grant Program, city funds
		STATUS: Deferred to 2020 HazMAP					
Winter Storm	Enhance the snow removal capability for the City of Keller.	Purchase one snow plow attachment for the public works department and outline its use within the city's winter weather protocol.	12 months	Public Works Department	$7,000	$28,000	City funds
		STATUS: Complete					
		Purchase one sand spreading unit for	12 months	Public Works Department	$13,000	$52,000	City funds

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
		the public works department and outline its use within the city's winter weather protocol					
		STATUS: Complete					
Winter Storm	Provide information to the citizens of Keller about road conditions and school and city office closings.	Utilize the city web site, emails, CodeRed, and social media to keep the citizens and visitors of Keller informed on how a winter storm is impacting city services.	6 months	Public Information Office, Office of Emergency Management	$1,000	$4,000	City funds
		STATUS: In progress					
Winter Storm	Conduct an assessment of the winter weather protocols for city departments.	Update current city-wide winter weather protocol to ensure it meets identified hazards and infrastructure priorities of the community.	6 months	Public Works Department	$1,000	$4,000	City funds
		STATUS: Complete					

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
		Provide training to all employees that work outside on the dangers of winter weather and ways that they need to protect themselves from the effects of the cold, wet, dark, and icy conditions.	12 months	Risk Management Department	$5,000	$20,000	City funds
		STATUS: In progress					
Wildfire	Reduce the amount of fuel available for the spread of a wildfire.	Reduce fuel load from high weed and grass through the use and enforcement of current city ordinance.	6 months	Code Enforcement	$2,500	$10,000	City funds
		STATUS: In progress					
		Develop and distribute public education material to reduce wildfire impact on residential properties.	12 months	Fire Department	$2,500	$10,000	City funds

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
		STATUS: Deferred to 2020 HazMAP					
Wildfire	Ensure the fire department's wildfire plan and personnel capabilities are current and match identified hazards of the community.	Update current policies and procedures related to wildfire response within the community.	6 months	Fire Department	$1,000	$4,000	City funds
		STATUS: Deferred to 2020 HazMAP					
		Provide annual training to first responders.	12 months	Fire Department	$3,000	$12,000	City funds
		STATUS: Deferred to 2020 HazMAP					
Extreme Temperatures	Ensure the City of Keller has an extreme heat mitigation plan in place.	Open cooling centers and provide public information.	12 months	Office of Emergency Management	$6,000	$24,000	City funds
		STATUS: Deferred to 2020 HazMAP					
Thunderstorms and High Wind	Develop effective hazard mitigation public education in the City of Keller related to thunderstorms and high wind incidents.	Develop informational brochure related to thunderstorms and high wind incidents and provide to the community.	12 months	Office of Emergency Management	$2,500	$10,000	City funds, grants
		STATUS: Deferred to 2020 HazMAP					

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
Tornadoes	Develop effective hazard mitigation public education in the City of Keller related to tornadoes.	Develop informational brochure related to tornadoes and provide to the community.	12 months	Office of Emergency Management	$2,500	$10,000	City funds, grants
		STATUS: Deferred to 2020 HazMAP					
Winter Storm	Develop effective hazard mitigation public education in the City of Keller related to winter storms.	Develop informational brochure related to winter storms and provide to the community.	12 months	Office of Emergency Management	$2,500	$10,000	City funds, grants
		STATUS: Deferred to 2020 HazMAP					
Wildfire	Develop effective hazard mitigation public education in the City of Keller related to wildfire threats.	Develop informational brochure related to wildfires and provide to the community.	12 months	Office of Emergency Management	$2,500	$10,000	City funds, grants
		STATUS: Deferred to 2020 HazMAP					
Extreme Temperatures	Develop effective hazard mitigation public education in the City of Keller related to extreme temperatures.	Develop informational brochure related extreme temperatures and	12 months	Office of Emergency Management	$2,500	$10,000	City funds, grants

Hazard Addressed	Objective	Action/Project Description	Projected Time to Completion	Department or Agency Responsible	Estimated Cost	Estimated Benefit	Funding Sources
		provide to the community.					
		STATUS: Deferred to 2020 HazMAP					

5.3 New Action Items

The City of Keller's action items were determined by the Local Planning Team for the 2020 Hazard Mitigation Action Plan (HazMAP). These actions include mitigation actions that qualify for mitigation funding as well as enforcement, maintenance, and response actions that the city has identified as opportunities to increase their resiliency to hazards.

During the capabilities assessment and hazard analysis, previously impacted assets and populations were analyzed to determine the highest probability of damage and potential of loss of life per hazard. As $1 spent in mitigation saves a community an average of $6 in recovery,[2] we used this data to develop a cost-benefit analysis: *Estimated Cost x 6* = **Estimated Benefit**.

Priority will go towards projects with the highest positive impact on community resilience, including life safety and property protection. Below are the action items for the HazMAP.

Hazard(s) Addressed	**Flooding, Thunderstorms, Tornadoes, Wildfire**
Purchase and install an outdoor warning siren in Big Bear Creek Park.	
Participating Jurisdiction:	City of Keller
Priority:	1
Estimated Cost:	$40,000
Estimated Benefit:	$240,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	12 months

Hazard(s) Addressed	**Earthquakes, Extreme Heat, Thunderstorms, Tornadoes**
Build a shelter location at the baseball fields and soccer fields where people can seek shelter from severe storms.	
Participating Jurisdiction:	City of Keller
Priority:	2
Estimated Cost:	$100,000
Estimated Benefit:	$600,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds
Lead Agency/Department Responsible:	Public Works Department
Implementation Schedule:	36 months

[2] Natural Hazard Mitigation Saves: 2017 Interim Report. National Institute of Building Science. < https://www.nibs.org/page/mitigationsaves>

Hazard(s) Addressed	Flooding
Conduct study to reduce stream bank erosion impacts along Big Bear Creek, Little Bear Creek, and Marshall Branch to improve drainage within the City of Keller.	
Participating Jurisdiction:	City of Keller
Priority:	3
Estimated Cost:	$6,000
Estimated Benefit:	$36,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	12 months

Hazard(s) Addressed	Drought, Earthquakes, Extreme Heat, Expansive Soils, Flooding, Thunderstorms, Tornadoes, Wildfire, Winter Storms
Develop and provide an integrated outreach program with public education material on the hazards in Keller and what mitigation techniques can be taken to reduce the impact from the identified hazards on residents and properties, to include the use of social media, the city cable access channel, and the city website.	
Participating Jurisdiction:	City of Keller
Priority:	4
Estimated Cost:	$5,000
Estimated Benefit:	$30,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	12 months

Hazard(s) Addressed	Extreme Heat, Winter Storms
Review current City of Keller plans and procedures related to extreme temperatures and enhance as needed.	
Participating Jurisdiction:	City of Keller
Priority:	5
Estimated Cost:	$0
Estimated Benefit:	$0
Potential Funding Source(s):	City funds for staff time
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	6 months

Hazard(s) Addressed	Extreme Heat, Winter Storms
Evaluate the hazards posed by extreme temperatures in the City of Keller.	
Participating Jurisdiction:	City of Keller
Priority:	6
Estimated Cost:	$0
Estimated Benefit:	$0
Potential Funding Source(s):	City funds for staff time
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	6 months

Hazard(s) Addressed	Wildfire
Ensure the fire department's wildfire plan and personnel capabilities are current and match identified hazards of the community by updating current policies and procedures related to wildfire response within the community.	
Participating Jurisdiction:	City of Keller
Priority:	7
Estimated Cost:	$1,000
Estimated Benefit:	$6,000
Potential Funding Source(s):	City funds
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	12 months

Hazard(s) Addressed	Drought
Review City of Keller Ordinance No. 1454, City of Keller Water Conservation Plan, and enhance as necessary to mitigate the effects of drought.	
Participating Jurisdiction:	City of Keller
Priority:	8
Estimated Cost:	$1,500
Estimated Benefit:	$9,000
Potential Funding Source(s):	City funds
Lead Agency/Department Responsible:	Environmental Services Department
Implementation Schedule:	3 months

Hazard(s) Addressed	Drought
Review current drought contingency plans to ensure adequate water supply during prolonged periods of drought and enhance as needed.	
Participating Jurisdiction:	City of Keller
Priority:	9
Estimated Cost:	$3,000
Estimated Benefit:	$18,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds
Lead Agency/Department Responsible:	Environmental Services Department
Implementation Schedule:	6 months

Hazard(s) Addressed	Drought
Develop or enhance potable water contingency plans to ensure adequate water supply during prolonged periods of drought.	
Participating Jurisdiction:	City of Keller
Priority:	10
Estimated Cost:	$6,000
Estimated Benefit:	$36,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds
Lead Agency/Department Responsible:	Environmental Services Department
Implementation Schedule:	12 months

Hazard(s) Addressed	Drought, Earthquakes, Extreme Heat, Thunderstorms, Tornadoes, Winter Storms
Develop or enhance power supply contingency plans to ensure power supply during prolonged periods of power outage caused by hazards.	
Participating Jurisdiction:	City of Keller
Priority:	11
Estimated Cost:	$6,000
Estimated Benefit:	$36,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds
Lead Agency/Department Responsible:	Environmental Services Department
Implementation Schedule:	12 months

Hazard(s) Addressed	Earthquakes
Conduct an earthquake risk assessment within the community using HaZUS data and geographic information system (GIS) mapping.	
Participating Jurisdiction:	City of Keller
Priority:	12
Estimated Cost:	$2,500
Estimated Benefit:	$15,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds
Lead Agency/Department Responsible:	Public Works Department, GIS Department, Office of Emergency Management
Implementation Schedule:	12 months

Hazard(s) Addressed	Earthquakes
Develop an inventory of public and commercial buildings that may be particularly vulnerable to earthquake damage, including pre-1940 homes.	
Participating Jurisdiction:	City of Keller
Priority:	13
Estimated Cost:	$5,000
Estimated Benefit:	$30,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds
Lead Agency/Department Responsible:	Public Works Department, Community Development Department, GIS
Implementation Schedule:	12 months

Hazard(s) Addressed	Wildfire
Provide annual wildfire training to first responders.	
Participating Jurisdiction:	City of Keller
Priority:	14
Estimated Cost:	$3,000
Estimated Benefit:	$18,000
Potential Funding Source(s):	City funds
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	12 months

Hazard(s) Addressed	Expansive Soils
Outside of the normal public education, educate construction contractors, home owners, and business owners about mitigation techniques for expansive soils.	
Participating Jurisdiction:	City of Keller
Priority:	15
Estimated Cost:	$1,000
Estimated Benefit:	$6,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds, city permit fees
Lead Agency/Department Responsible:	Community Development Department
Implementation Schedule:	12 months

Hazard(s) Addressed	Drought
Enhance water conservation enforcement to ensure effective practices during periods of drought.	
Participating Jurisdiction:	City of Keller
Priority:	16
Estimated Cost:	$1,500
Estimated Benefit:	$9,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds
Lead Agency/Department Responsible:	Environmental Services Department
Implementation Schedule:	3 months

Hazard(s) Addressed	Wildfire
To prevent wildfires, reduce the fuel load from high weed and grass through the use and enforcement of current city ordinance.	
Participating Jurisdiction:	City of Keller
Priority:	17
Estimated Cost:	$2,500
Estimated Benefit:	$15,000
Potential Funding Source(s):	City funds
Lead Agency/Department Responsible:	Code Enforcement
Implementation Schedule:	6 months

Hazard(s) Addressed	Earthquakes, Expansive Soils, Thunderstorms, Tornadoes, Wildfire
Improve construction techniques through building code enhancements in the City of Keller to mitigate future damage from hazards.	
Participating Jurisdiction:	City of Keller
Priority:	18
Estimated Cost:	$5,000
Estimated Benefit:	$30,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds, city permit fees
Lead Agency/Department Responsible:	Community Development Department
Implementation Schedule:	24 months

Hazard(s) Addressed	Thunderstorms
Provide thunderstorm mitigation information with building permit packets.	
Participating Jurisdiction:	City of Keller
Priority:	19
Estimated Cost:	$2,500
Estimated Benefit:	$15,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds
Lead Agency/Department Responsible:	Community Development Department
Implementation Schedule:	6 months

Hazard(s) Addressed	Drought
Outside of the normal public education program, develop water conservation packets for landscaping vendors to provide their customers with new system installations.	
Participating Jurisdiction:	City of Keller
Priority:	20
Estimated Cost:	$4,000
Estimated Benefit:	$24,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds
Lead Agency/Department Responsible:	Environmental Services Department
Implementation Schedule:	12 months

Hazard(s) Addressed	Thunderstorms
Ensure new and existing city critical infrastructure has adequate thunderstorm mitigation in place and upgrade protection as necessary.	
Participating Jurisdiction:	City of Keller
Priority:	21
Estimated Cost:	$5,000
Estimated Benefit:	$30,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	12 months

Hazard(s) Addressed	Extreme Heat, Flooding, Thunderstorms, Tornadoes, Wildfire, Winter Storms
Develop and fund a rebate program for City of Keller residents to purchase weather alert radios.	
Participating Jurisdiction:	City of Keller
Priority:	22
Estimated Cost:	$10,000
Estimated Benefit:	$60,000
Potential Funding Source(s):	Hazard Mitigation Grant Program, city funds, private foundation
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	18 months

Hazard(s) Addressed	Extreme Heat, Flooding, Thunderstorms, Tornadoes, Wildfire, Winter Storms
Survey the fire and police departments served by the joint NETCOM communications office and ascertain need and want as well as determine the number of users needed to implement a multijurisdictional Automatic Vehicle Location (AVL) system within Colleyville, Keller, Southlake, and Westlake.	
Participating Jurisdiction:	City of Keller
Priority:	23
Estimated Cost:	$0
Estimated Benefit:	$0
Potential Funding Source(s):	City funds for staff time
Lead Agency/Department Responsible:	North East Tarrant County Communications (NETCOM)
Implementation Schedule:	7 months

Hazard(s) Addressed	Extreme Heat, Flooding, Thunderstorms, Tornadoes, Wildfire, Winter Storms
Determine vendor for purchase of a multijurisdictional Automatic Vehicle Location (AVL) system for both police and fire from Colleyville, Keller, Southlake, and Westlake (NETCOM).	
Participating Jurisdiction:	City of Keller
Priority:	24
Estimated Cost:	$0
Estimated Benefit:	$0
Potential Funding Source(s):	Staff time
Lead Agency/Department Responsible:	North East Tarrant County Communications (NETCOM)
Implementation Schedule:	12 months

Hazard(s) Addressed	Extreme Heat, Flooding, Thunderstorms, Tornadoes, Wildfire, Winter Storms
Purchase hardware for participating jurisdictions to implement a multijurisdictional Automatic Vehicle Location (AVL) system for both police and fire from Colleyville, Keller, Southlake, and Westlake (NETCOM).	
Participating Jurisdiction:	City of Keller
Priority:	25
Estimated Cost:	$90,000
Estimated Benefit:	$540,000
Potential Funding Source(s):	Individual city budgets
Lead Agency/Department Responsible:	North East Tarrant County Communications (NETCOM)
Implementation Schedule:	16 months

Hazard(s) Addressed	Extreme Heat, Flooding, Thunderstorms, Tornadoes, Wildfire, Winter Storms
Purchase software for the NETCOM dispatch center and each participating jurisdiction fire and police unit to implement a multijurisdictional Automatic Vehicle Location (AVL) system within Colleyville, Keller, Southlake, and Westlake.	
Participating Jurisdiction:	City of Keller
Priority:	26
Estimated Cost:	$10,000
Estimated Benefit:	$60,000
Potential Funding Source(s):	Individual city budgets
Lead Agency/Department Responsible:	North East Tarrant County Communications (NETCOM)
Implementation Schedule:	24 months

Hazard(s) Addressed	Flooding
Schedule a Community Assistance Visit (CAV) by FEMA or a State agency on behalf of FEMA to assure that the city is adequately enforcing its floodplain management regulations.	
Participating Jurisdiction:	City of Keller
Priority:	27
Estimated Cost:	$1,000
Estimated Benefit:	$6,000
Potential Funding Source(s):	City general fund, hazard mitigation grants
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	24 months

Hazard(s) Addressed	Flooding
Work with the floodplain administrator to create a document to track progress on repetitive loss and severe repetitive loss properties.	
Participating Jurisdiction:	City of Keller
Priority:	28
Estimated Cost:	$100
Estimated Benefit:	$600
Potential Funding Source(s):	City general fund, hazard mitigation grants
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	24 months

Hazard(s) Addressed	Flooding
Conduct NFIP community workshops to provide information and incentives for property owners to acquire flood insurance.	
Participating Jurisdiction:	City of Keller
Priority:	29
Estimated Cost:	$500
Estimated Benefit:	$3,000
Potential Funding Source(s):	City general fund, hazard mitigation grants
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	24 months

Hazard(s) Addressed	Flooding
Remove existing structures from flood-prone areas to minimize future flood losses by acquiring and demolishing or relocating structures from voluntary property owners and preserving land subject to repetitive flooding.	
Participating Jurisdiction:	City of Keller
Priority:	30
Estimated Cost:	$1,000,000
Estimated Benefit:	$6,000,000
Potential Funding Source(s):	City general fund, hazard mitigation grants
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	24 months

Hazard(s) Addressed	Flooding
Use bioengineered bank stabilization techniques and revetments to protect against flooding along streams, creeks, rivers, and lakes.	
Participating Jurisdiction:	City of Keller
Priority:	31
Estimated Cost:	$1,000,000
Estimated Benefit:	$6,000,000
Potential Funding Source(s):	City general fund, hazard mitigation grants
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	24 months

Hazard(s) Addressed	Earthquakes, Thunderstorms, Tornadoes
Require construction of safe rooms in new schools, daycares, and nursing homes.	
Participating Jurisdiction:	City of Keller
Priority:	32
Estimated Cost:	$1,000,000
Estimated Benefit:	$6,000,000
Potential Funding Source(s):	City general fund, hazard mitigation grants
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	24 months

Hazard(s) Addressed	Wildfires
Promote conservation of open space or wildland-urban interface boundary zones to separate developed areas from high-hazard areas.	
Participating Jurisdiction:	City of Keller
Priority:	33
Estimated Cost:	$100
Estimated Benefit:	$600
Potential Funding Source(s):	City general fund, hazard mitigation grants
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	24 months

Hazard(s) Addressed	Flooding, Thunderstorms, Tornadoes, Wildfires, Winter Storms
To protect power lines, either bury overhead power lines, ensure ordinances for proper vegetation management practices, replace wood poles with steel or composite ones, or reinforce utility poles with guy wires.	
Participating Jurisdiction:	City of Keller
Priority:	34
Estimated Cost:	$300,000,000
Estimated Benefit:	$1,200,000,000
Potential Funding Source(s):	City general fund, hazard mitigation grants
Lead Agency/Department Responsible:	Office of Emergency Management
Implementation Schedule:	24 months

5.4 Plan Incorporation into Existing Planning Mechanisms

Based on Requirement 201.6(c)(4(ii) and the State of Texas Mitigation Plan, the vulnerability and capabilities assessment for the city were carefully reviewed and considered when developing the mitigation actions for this plan. The Local Planning Team (LPT) will establish a process in which the mitigation strategy, goals, objectives, and actions outlined in this plan will be incorporated into the existing local planning strategies.

Once the plan is adopted, the LPT will coordinate implementation with the responsible parties in the city, as well as external stakeholders as needed.

The following steps will be taken in implementing this HazMAP into local plans:

1. Change is proposed by an elected official or other interested party.
2. Proposal is placed on the local agenda of the governing body.
3. Agenda is published at least 10 days in advance of the meeting at which it will be discussed, so members of the public have an opportunity to attend the discussion meeting. Publication may be made by posting the agenda on the city's website, in the city newsletter, or on a public bulletin board.
4. Proposal is discussed at the public meeting, including any comments by members of the public attendance.

5. Proposal is voted on by the governing body.
6. If the proposal is passed, the change is implemented by the appropriate local authority.

Existing planning mechanisms in which the HazMAP will be integrated are listed below.

Type of Plan or Activity	Department Responsible	Update Schedule	Actions to be Integrated	Integration Method
Capital Improvement Plan	City Administration	Annually	Drainage improvement projects, Outdoor Warning Sirens, and shelter areas within city parks.	When reviewing the Capital Improvement Plan, the leadership team will review the HazMAP to see which action items can be addressed with the fiscal and administrative capabilities of the city.
Future Land Use Plan	City Administration	As needed	Land use	The contractor and city leadership will review the HazMAP for its impact on plan revisions and implementation.
Drainage Master Plan	Public Works Department	As needed	Notations of potential drainage concerns.	City leadership and public works staff will review identified mitigation action items and consider plan revision as necessary to address them.
Flood Hazard Prevention Ordinance (2009)	Public Works Department	As needed	Flood hazard prevention activities and processes.	City leadership and public works staff will review identified mitigation action items and consider plan revision as necessary to address them.

Although it is recognized that there are many possible benefits to integrating components of this Hazard Mitigation Action Plan (HazMAP) into other planning mechanisms, the LPT considers this HazMAP, including development and maintenance, to be the primary vehicle to ensure implementation of local hazard mitigation actions.

This completes the annex for the City of Keller. For additional information, see Appendices A and B.

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