

# SECTION 9. CITY OF STAFFORD

## 9.15 City of Stafford

This section presents the jurisdictional annex for the City of Stafford that provides resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions to reduce or eliminate damage to property and people that can be implemented prior to a disaster. Information presented includes a general overview of the municipality, the City of Stafford representatives who participated in the planning process, an assessment of the City of Stafford's risk and vulnerability, the different capabilities used in the City of Stafford, and an action plan that will be implemented to achieve a more resilient community.

## 9.15.1 Hazard Mitigation Planning Team

The City of Stafford identified primary and alternate points of contact and developed this plan over the course of several months with input from many City of Stafford departments, including the Fire Chief and Mayor. The Fire Chief represented the community on the Fort Bend County Hazard Mitigation Plan (HMP) Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

The following table summarizes municipal officials that participated in the development of the annex and in what capacity. Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Volume 1, Section 2 (Planning Process) and Appendix C (Meeting Documentation).

**Table 9.15-1. Hazard Mitigation Planning Team** 

Primary Point of Contact			Alternate Point of Contact		
Name/Title:	Larry D	i Camillo - Fire Chief	Name/Title:	AJ Honore – Mayor	
Address:	10210	Mula Road, Stafford, TX 77477	Address:	2610 South Main Street, Stafford, TX 77477	
Phone Number:	212-20	8-6983	Phone Number:	281-261-3900	
Email:	<u>ldcami</u>	lo@staffordtx.gov	Email:	Mayor@staffordtx.gov	
NFIP Floodplain Ad	ministrat	or			
Name/Title:	Depart	epartment of Emergency Management			
Address:	2610 S	outh Main Street, Stafford, TX 7747	7		
Phone Number:	-	-			
Email:	-				
Additional Contrib	utors:				
Name/Title:		Larry Di Camillo - Fire Chief			
Method of Participa	ipation: Provided key input in the planning process				
Name/Title: AJ Honore – Mayor					
Method of Participation: Provided key input in the planning process					

### 9.15.2 Municipal Profile



The City of Stafford is in the southwest corner of Fort Bend County and borders the southern shore of Lake Lyndon B. Johnson. Located 50 miles northwest of downtown Austin, the City of Stafford is known for its scenic golf courses, resorts, and hotels. The City of Stafford has a total area of 11.6 square miles, 11.4 square miles of land and 0.23 square miles of water.

According to the 2021 American Community Survey the population for the City of Stafford was 17,170. Data from the 2021 American Community Survey indicate that 6.1 percent of the population is 5 years of age or younger and 9.8 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

### 9.15.3 Jurisdictional Capability Assessment and Integration

The City of Stafford performed an inventory and analysis of existing capabilities, plans, programs, and policies that enhance its ability to implement mitigation strategies. Volume 1, Section 5 (Capability Assessment) describes the components included in the capability assessment and their significance for hazard mitigation planning. The jurisdictional assessment includes the following analyses:

- An assessment of legal and regulatory capabilities
- Development and permitting capabilities
- An assessment of administrative and technical capabilities
- An assessment of fiscal capabilities
- An assessment of education and outreach capabilities
- Classification under various community mitigation programs
- The community's adaptive capacity to withstand hazard events

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of the hazard mitigation analysis, planning/policy documents were reviewed, and each jurisdiction was surveyed to obtain a better understanding of their progress toward plan integration. The updated mitigation strategy provided an opportunity for the City of Stafford to identify opportunities for integration of mitigation concepts that can be incorporated into municipal procedures.

### Planning, Legal, and Regulatory Capability and Integration

The table below summarizes the regulatory tools that are available to the City of Stafford. The comment field provides information as to how the capability integrates hazard mitigation and risk reduction.

Table 9.15-2. Planning, Legal, and Regulatory Capability and Integration

	Jurisdiction has this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Individual / Department / Agency Responsible				
Codes, Ordinances, & Regulations	Codes, Ordinances, & Regulations							
Building Code	Yes	International Building Code	Local	Code Enforcement				
How does this reduce risk?  The City of Stafford adopted the 2015 International Building Code								
Zoning/Land Use Code	Yes	Chapter 102 - Zoning	Local	Mayor				
How does this reduce risk?  The City Zoning Ordinance established have been made for the purpose of promoting the public health, safety, morals, and general welfare within the city. They have been designed to lessen the congestion in the streets; to secure safety from fire, panic, and other								



	Jurisdiction has this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Individual / Department / Agency Responsible
dangers; to ensure adequate light and air; to pre to facilitate the adequate provision of transporta				
Subdivision Ordinance	Yes	Chapter 82 – Subdivision – Ordinance No. 1123	Local	Development Services
How does this reduce risk? Subdivision Ordinance establishes all requirement extraterritorial jurisdictions.	nts needed in ord	der to develop any subdivisions w	ithin the City limits	and its
Site Plan Ordinance	Yes	Article V. – Applications and Amendments – Sec. 102-101- Site Plan Review Process	Local	Code Compliance
Site Plan Ordinance establishes a process for pro purpose of the review is to ensure efficient and s standards, safe and efficient vehicular and pedes and storm water management, sanitary facilities  Stormwater Management Ordinance	safe land develop strian circulation	pment, harmonious use of land, co , adequate parking and loading, a	ompliance with app	oropriate design
How does this reduce risk? Stormwater Pollution Protection Ordinance – Sul	bdivision Ordina	nce Chapter 35 Section 205-208; <sup>-</sup>	rceq	
Post-Disaster Recovery/ Reconstruction Ordinance	No	-	-	-
How does this reduce risk?				
Real Estate Disclosure  How does this reduce risk?  Real Estate Disclosure is implemented by Fort Be  Growth Management	rnd County Yes	- Code of Ordinances – Article	County	Fort Bend -
How does this reduce risk?		III Section 62		
Environmental Protection Ordinance	No	_	-	-
How does this reduce risk?				
Flood Damage Prevention Ordinance	Yes	Chapter 26 – Drainage and Flood Control – Article IV – Flood Damage Prevention	Local	Department of Emergency Management
How does this reduce risk?  It is the purpose of this Ordinance to promote the due to flood conditions in specific areas by provide To protect human life and health  To minimize expenditure of public more and responding the need for rescue and responding the need for rescue and responding to make the need for rescue and responding to minimize prolonged business interresponding to minimize damage to public facilities and bridges located in areas of special to help maintain a stable tax base by public minimize future flood blight areas  To ensure that potential buyers are not not ensure that those who occupy the answer.	sions designed: ney for costly flo- elief efforts asso- uptions and utilities suc- flood hazard providing for the	od control projects ciated with flooding and generally th as water and gas mains, electric sound use and development of ar	undertaken at the t, telephone and se leas of special flood	e expense of the ewer lines, streets
No ensure that those who occupy the a Wellhead Protection	No			-
How does this reduce risk?		<u> </u>		



	Jurisdiction has this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Individual / Department / Agency Responsible
Emergency Management Ordinance	Yes	Code of Ordinance Article II Section 22	Local	Department of Emergency Management
How does this reduce risk?				
Climate Change Ordinance	No	-	-	-
How does this reduce risk?				
Other	-	-	-	-
Planning Documents				
Comprehensive/Master Plan	Yes	City of Stafford Comprehensive Plan	Local	Planning & Zoning
The City Comprehensive Plan creates a blueprint in regard to land use, transportation, infrastructo  Capital Improvement Plan				es, and strategie Planning &
		Improvement Plan		Zoning
How does this reduce risk?				
The Capital Improvement Plan was revised in 202		T	1	
Disaster Debris Management Plan	No	-	-	-
How does this reduce risk?				
Floodplain Management or Watershed Plan	No	-	-	-
How does this reduce risk?				
Stormwater Management Plan	Yes	Stormwater Management Program	Local	Dept. Public Works
How does this reduce risk?  TCEQ requires all small Municipal Separate Storn established in General Permit TXR040000. This p  Reduces the discharge of pollutants to  Protects water quality  Satisfies the appropriate water quality  Manages Stormwater quality activities	ermit requires the maximum e	ne City of Stafford to establish a p xtent practicable (MEP) f the CWA		regulations
Open Space Plan	No	-	-	-
How does this reduce risk?				
Urban Water Management Plan How does this reduce risk?	No	-	-	-
Habitat Conservation Plan	No	-	-	
How does this reduce risk?				
Economic Development Plan	Yes	City of Stafford Comprehensive Plan	Local	Planning & Zoning
How does this reduce risk?				
The City Comprehensive Plan includes a section f	or Economic De	velopment.		
Shoreline Management Plan	No	-	-	-
How does this reduce risk?				
Community Wildfire Protection Plan	No	-	-	-





	Jurisdiction has this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal)	Individual / Department / Agency Responsible
How does this reduce risk?				
Community Forest Management Plan	No	-	-	-
How does this reduce risk?				
Transportation Plan	No	-	-	-
How does this reduce risk?				
Agriculture Plan	No	-	-	-
How does this reduce risk?				
Climate Action/ Resiliency/Sustainability Plan	No	-	- 1	
How does this reduce risk?		l		
Tourism Plan	No	-	-	-
How does this reduce risk?				
Business/ Downtown Development Plan	No	-	-	-
How does this reduce risk?				
Other	-	-	-	-
Response/Recovery Planning				
Comprehensive Emergency Management Plan	Yes	Fort Bend County Emergency Management Plan	County	Fort Bend County
How does this reduce risk?				
The City of Stafford utilizes the Fort Bend County	<b>Emergency Acti</b>	on Plan for guidance during and p	oost hazard events.	
Continuity of Operations Plan	Yes	City of Stafford Continuity of Operations Plan	Local	Planning &
How does this reduce risk? The City Continuity of Operations Plan outlines the event.	ne procedure an	<u>'</u>	ing operations dur	Zoning ing a hazard
Strategic Recovery Planning Report	No	-	-	-
How does this reduce risk?				
Threat & Hazard Identification & Risk Assessment (THIRA)	No	-	-	-
How does this reduce risk?				
Post-Disaster Recovery Plan	No	-	-	-
How does this reduce risk?				
Public Health Plan	Yes	The Fort Bend County Health and Human Services Department (FBHHS) provides public health services for the city. FBHHS has public health plans as part of Annex H of the Fort Bend County Emergency Operations Plan.	County	FBHHS

FBHHS has plans in place to prevent public health issues through regular inspections of regulated facilities, as well as prepare for and respond to public health emergencies.



Other	Jurisdiction has this? (Yes/No)	Code Citation and Date (code chapter, name of plan, date of plan)	Authority (local, county, state, federal) -	Individual / Department / Agency Responsible
How does this reduce risk?				

## **Development and Permitting Capability**

The table below summarizes the capabilities of the City of Stafford to oversee and track development.

Table 9.15-3. Development and Permitting Capability

Indicate if your jurisdiction implements the following	Yes/No	Comment:
Do you issue development permits?  • If yes, what department is responsible?	Yes	Department of Public Works – Development Services
If you do not issue development permits, what is your process for tracking new development?	N/A	-
Are permits tracked by hazard area? (For example, floodplain development permits.)	No	-
Do you have a buildable land inventory?  • If yes, please describe	No	-
Describe the level of build-out in your jurisdiction.	N/A	-

### **Administrative and Technical Capability**

The table below summarizes potential staff and personnel resources available to the City of Stafford and their current responsibilities that contribute to hazard mitigation.

Table 9.15-4. Administrative and Technical Capabilities

Comments Available? (available staff, responsibilities		Comments (available staff, responsibilities, support of hazard
Resources	(Yes/No)	mitigation)
Administrative Capability		
	Yes	Planning and Zoning reviews all submitted plats, site plans,
		and zoning cases for ordinance compliance and to ensure
Planning Board		they meet all technical requirements. The Commission is
		also responsible for ensuring that development and
		redevelopment comply with all approved plans such as the
		City Comprehensive Plan and the Major Thoroughfare Plan.
	Yes	Zoning Board of Adjustment is a five-member committee
Zoning Board of Adjustment		appointed by the Mayor. The ZBA has the authority to
		grant variances, special exceptions, administrative review.
	Yes	The City Planning and Zoning Division oversees current and
		long-range planning functions. This includes site plan
		applications, specific use permits, variances, re-zonings and
Planning Department		zoning, and comprehensive plan amendments. The Division
		coordinates with various public reviewing agencies such as
		Engineering, Public Works, Building, Fire, Utilities, and
		Health Department.



<u></u>		Comments
	Available?	Comments (available staff, responsibilities, support of hazard
Resources	(Yes/No)	mitigation)
Mitigation Planning Committee	No	- initigation)
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	Yes	Stafford Economic Development Corporation
Economic Development Commission/Committee	Yes	The Public Works Department is responsible for
Public Works/Highway Department	ies	maintaining the streets, drainage, parks, buildings, vehicles, landscaped and non-landscaped rights-of-way, and properties owned by the City of Stafford and the Stafford Municipal School District. The rights-of-way typically encompass the area from sidewalk to sidewalk, including the roadway.
Construction/Building/Code Enforcement Department	Yes	Development Services provide orderly growth, development, and redevelopment by enforcing adopted codes and ordinances. The department includes Building and Inspection Services, Civil Engineering, and Planning and Zoning.
Emergency Management/Public Safety Department	Yes	The City of Stafford Department of Emergency Management (DEM) serves the citizens of Stafford by directing and coordinating emergency management and homeland security programs to prevent/mitigate, prepare for, respond to, and recover from emergencies and disasters.
Warning Systems / Services	No	-
(mass notification system, outdoor warning signals, etc.)		
Maintenance programs to reduce risk (stormwater maintenance, tree trimming, etc.)	Yes	Stormwater Management Program
Mutual aid agreements	No	-
Human Resources Manual	No	-
Other	-	-
Technical/Staffing Capability		
Planners or engineers with knowledge of land development and land management practices	Yes	Public Works – City Planner
Engineers or professionals trained in building or infrastructure construction practices	Yes	Contract Support
Planners or engineers with an understanding of natural hazards	Yes	City Engineer approves all planned work within the City
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	Public Works – GIS Applications Specialist
Environmental scientist familiar with natural hazards	No	-
Surveyor(s)	No	-
Emergency Manager	Yes	The City Fire Chief
Grant writer(s)	Yes	Grant Manager
Resilience Officer	No	-
Other (this could include stormwater engineer, environmental specialist, etc.)	-	-
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## Fiscal Capability

The table below summarizes financial resources available to the City of Stafford.

**Table 9.15-5. Fiscal Capabilities** 

Financial Resources	Accessible or Eligible to Use? (Yes/No)
Community Development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas, or electric service	No
Impact fees for homebuyers or developers of new development/homes	Yes
Stormwater utility fee	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	Yes
Withhold public expenditures in hazard-prone areas	Yes
Other federal or state funding programs	Yes
Open space acquisition funding programs	No
Other (for example, Clean Water Act 319 Grants [Nonpoint Source Pollution])	Texas Water Development Fund, TWDB Clean Water State Revolving Fund (CWSRF), TWDB Flood Protection Planning Grant (FPP)

## **Education and Outreach Capability**

The table below summarizes the education and outreach resources available to the City of Stafford.

Table 9.15-6. Education and Outreach Capabilities

Outreach Resources	Available? (Yes/No)	Comment:
Public information officer or communications office	Yes	Human Resources Department
Personnel skilled or trained in website development	Yes	Human Resources Department
Hazard mitigation information available on your website	Yes	Emergency Management Page, occasionally information will be posted on the flash screen of the City home page.
Social media for hazard mitigation education and outreach	Yes	Information posted through Facebook, Twitter, and NextDoor.
Citizen boards or commissions that address issues related to hazard mitigation	No	-
Warning systems for hazard events	Yes	Warnings are posted on electronic billboards in the City and broadcast over an AM radio station.
Natural disaster/safety programs in place for schools	Yes	Stafford Municipal Education Television
Does the jurisdiction have any public outreach mechanisms / programs in place to inform citizens on natural hazards, risk, and ways to protect themselves during such events?  • If yes, please describe.	No	-

## **Community Classifications**

The table below summarizes classifications for community programs available to the City of Stafford.



**Table 9.15-7. Community Classifications** 

Program	Participating? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Other			

#### **Adaptive Capacity**

Adaptive capacity is defined as "the ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or respond to consequences" (IPCC 2014). Each jurisdiction has a unique combination of capabilities to adjust to, protect from, and withstand a future hazard event, future conditions, and changing risk. The table below summarizes the adaptive capacity for each identified hazard of concern and the jurisdiction's capability to address related actions using the following classifications:

- Strong: Capacity exists and is in use.
- Moderate: Capacity might exist; but is not used or could use some improvement.
- Weak: Capacity does not exist or could use substantial improvement.

**Table 9.15-8. Adaptive Capacity** 

Hazard	Adaptive Capacity – Strong/Moderate/Weak
Dam/Levee Failure	Weak
Disease Outbreak	Moderate
Drought	Moderate
Extreme Temperature	Moderate
Flood	Moderate
Geologic Hazards	Weak
Hurricane/Tropical Storm	Moderate
Severe Weather	Moderate
Tornado	Moderate
Wildfire	Strong
Winter Weather	Strong

## 9.15.4 National Flood Insurance Program (NFIP) Compliance

This section provides specific information on the management and regulation of the regulatory floodplain, including current and future compliance with the NFIP. The Floodplain Administrator is responsible for maintaining this information and is listed in the Hazard Mitigation Planning Team table at the beginning of this annex.



#### **NFIP Summary**

The following table summarizes the NFIP statistics for the City of Stafford.

#### Table 9.15-9. NFIP Summary

Municipality	Policies in Force <sup>a</sup>	Number of Paid Claims <sup>a</sup>	Amount of Paid Claims <sup>a</sup>		Number of NFIP SRL Properties <sup>b</sup>
Stafford (C)	511	91	\$1,188,509.92	9	N/A

Sources: a BureauNet 2022 (https://nfipservices.floodsmart.gov/reports-flood-insurance-data)

b 2018 Fort Bend County HMP

Notes: Due to a contractual agreement with FEMA, detailed information at the municipal level was not available to incorporate into the 2023 HMP Update. The information presented here was collected from data provided by the State of Texas and from FEMA's HUDEX Report.

\*Number of RL and SRL properties provided by the State of Texas

\*\*Total policies in force and paid claims collected from FEMA's OpenFEMA Dataset: FIMA NFIP Redacted Claims

RL Repetitive Loss
SRL Severe Repetitive Loss

### **Flood Vulnerability Summary**

The following table provides a summary of the NFIP program in the City of Stafford.

### Table 9.15-10. NFIP Summary

NFIP Topic	Comments
Flood Vulnerability Summary	Comments
Describe areas prone to flooding in your jurisdiction.  • Do you maintain a list of properties that have been damaged by flooding?	No
<ul> <li>Do you maintain a list of property owners interested in flood mitigation?</li> <li>How many homeowners and/or business owners are interested in mitigation (elevation or acquisition)?</li> </ul>	No
Are any RiskMAP projects currently underway in your jurisdiction?  • If so, state what projects are underway.	No
How do you make Substantial Damage determinations?     How many were declared for recent flood events in your jurisdiction?	The City does not have a Substantial Damage Management Plan in place, nor do they have a formal process in place when conducting substantial damage determinations. The City is in need of a formal process and plan to provide a framework for conducting such inspections and determinations.  No SD declarations for recent flood events.
How many properties have been mitigated (elevation or acquisition) in your jurisdiction?  • If there are mitigated properties, how were the projects funded?	N/A
Do your flood hazard maps adequately address the flood risk within your jurisdiction?  • If not, state why.	N/A
NFIP Compliance	
What local department is responsible for floodplain management?	Public Works
Are any certified floodplain managers on staff in your jurisdiction?	No
Do you have access to resources to determine possible future flooding conditions from climate change?	No



NFIP Topic	Comments
Does your floodplain management staff need any assistance or training to support its floodplain management program?  • If so, what type of assistance/training is needed?	Yes. Basic Training
Provide an explanation of NFIP administration services you provide (e.g., permit review, GIS, education/outreach, inspections, engineering capability)	Only organic services as provided by Public Works by staff engineer
How do you determine if proposed development on an existing structure would qualify as a substantial improvement?	N/A
What are the barriers to running an effective NFIP program in the community, if any?	None
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed?  • If so, state the violations.	N/A
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	N/A
<ul> <li>What is the local law number or municipal code of your flood damage prevention ordinance?</li> <li>What is the date that your flood damage prevention ordinance was last amended?</li> </ul>	Chapter 26 – Drainage and Flood Control – Article IV – Flood Damage Prevention
Does your floodplain management program meet or exceed minimum requirements?  • If exceeds, in what ways?	Meets floodplain requirements
Are there other local ordinances, plans or programs (e.g., site plan review) that support floodplain management and meeting the NFIP requirements? For instance, does the planning board or zoning board consider efforts to reduce flood risk when reviewing variances such as height restrictions?	N/A
Does your community plan to join the CRS program or is your community interested in improving your CRS classification?	No

## 9.15.5 Growth/Development Trends

Understanding how past, current, and projected development patterns have or are likely to increase or decrease risk in hazard areas is a key component to appreciating a jurisdiction's overall risk to its hazards of concern. The table below summarizes recent and expected future development trends, including major residential/commercial development and major infrastructure development.

**Table 9.15-11. Number of Building Permits for New Construction** 

Type of Development	2018		2019		2020		20	021	2022	
Number of Building	Permits	for New Co	nstructio	n Issued Si	nce the prev	rious HMP* (to	otal/within	regulatory fl	oodplain)	
		Within		Within		Within		Within		Within
	Total	SFHA	Total	SFHA	Total	SFHA	Total	SFHA	Total	SFHA
Single Family	39	0	4	0	6	0				
Multi-Family	0	0	0	0	7	0				
Other (commercial, mixed use, etc.)	15	0	13	0	11	0				
Total Permits Issued	54	0	17	0	24	0				

SFHA Special Flood Hazard Area (1% annual chance flood event)

<sup>\*</sup> Only location-specific hazard zones or vulnerabilities identified.





Table 9.15-12. Recent and Expected Future Development

Property or Development Name	Type (e.g., Res., Comm.)	# of Units / Structures	Address and Parcel ID	Known Hazard Zone(s)	Description/Status of Development					
Recent Major Developme	ent from 2018 to F	Present								
		No	t Applicable							
Known or Anticipated M	Known or Anticipated Major Development in the Next Five (5) Years									
	Not Applicable									

#### 9.15.6 Jurisdictional Risk Assessment

The hazard profiles in Volume 1, Section 4 (Risk Assessment) provide detailed information regarding each plan participant's vulnerability to the identified hazards. Section 4.1 (Methodology and Tools) and Section 4.4 (Hazard Ranking) provide detailed summaries for the City of Stafford's risk assessment results and data used to determine the hazard ranking discussed later in this section.

Hazard area extent and location maps provided below illustrate the probable areas impacted within the jurisdiction based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps were generated only for those hazards that can be identified clearly using mapping techniques and technologies and for which the City of Stafford has significant exposure. The maps also show the location of potential new development, where available.



Figure 9.15-1. City of Stafford Hazard Area Extent and Location Map-Flood

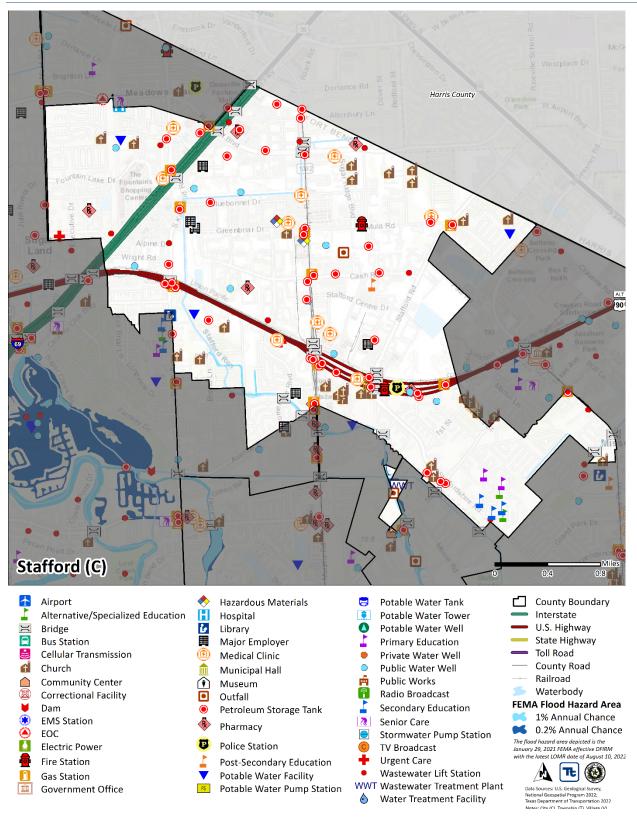




Figure 9.15-2. City of Stafford Hazard Area Extent and Location Map-Dam Inundation

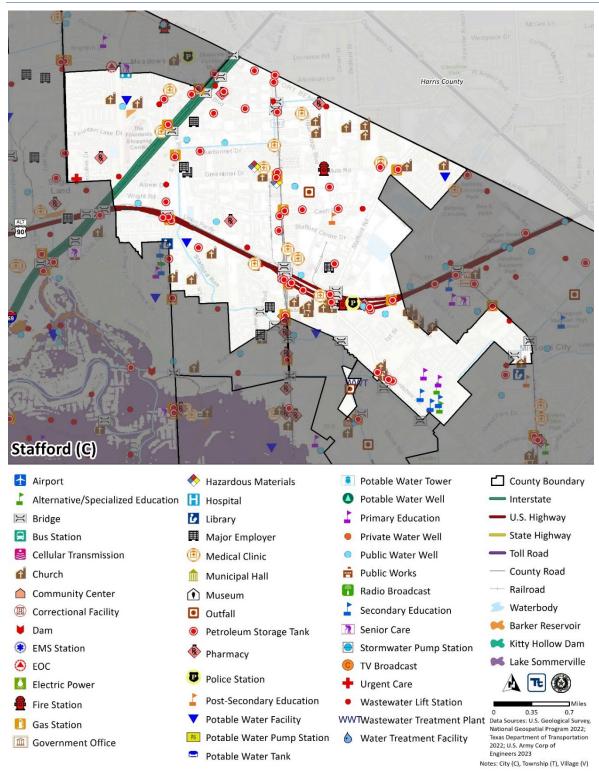
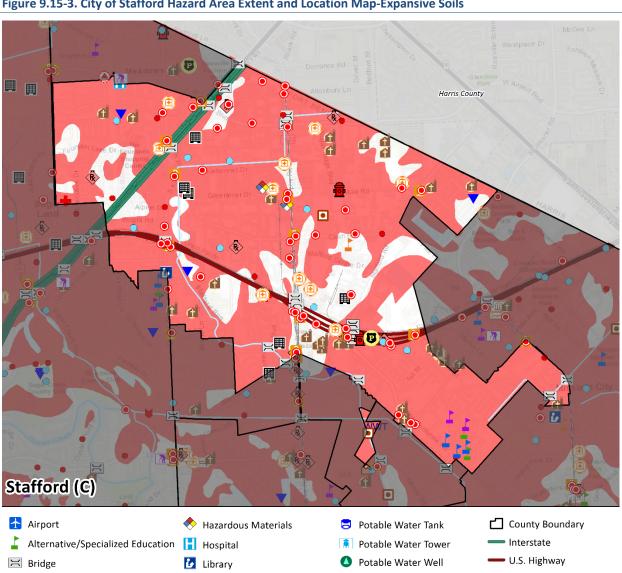




Figure 9.15-3. City of Stafford Hazard Area Extent and Location Map-Expansive Soils



- Bus Station
- Cellular Transmission
- Church
- Community Center
- Correctional Facility
- **EMS Station**
- EOC
- Electric Power
- Fire Station
- Gas Station
- (a) Government Office

- Major Employer
- Medical Clinic
- Municipal Hall
- Museum
- Outfall
- Petroleum Storage Tank
- Pharmacy
- Police Station
- Post-Secondary Education
- Potable Water Facility
- Potable Water Pump Station

- **Primary Education**
- Private Water Well
- Public Water Well
- Public Works
- Radio Broadcast
- Secondary Education
- Senior Care
- Stormwater Pump Station
- TV Broadcast
- **Urgent Care**
- Wastewater Lift Station
- WWTWastewater Treatment Plant
- Water Treatment Facility

- State Highway
- Toll Road
- County Road
- --- Railroad
- Waterbody

#### **Expansive Soils Hazard Area**

Linear Extensibility >6%





Data Sources: U.S. Geological Survey, National Geospatial Program 2022; Texas Department of Transportation 2022; U.S. Department of Agriculture, Natural Resources Conservation Service 2022

Notes: City (C), Township (T), Village (V)



Figure 9.15-4. City of Stafford Hazard Area Extent and Location Map-Inland Erosion

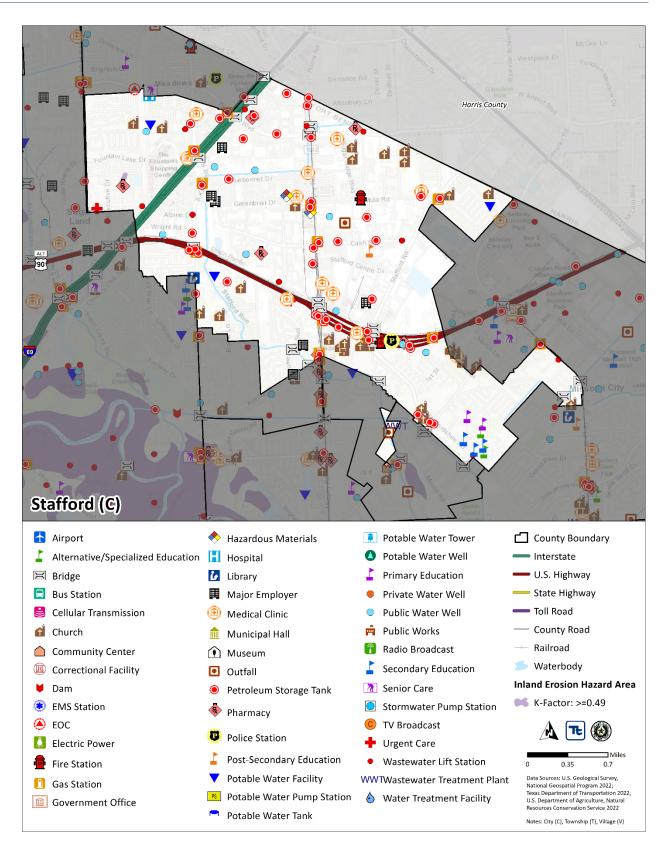
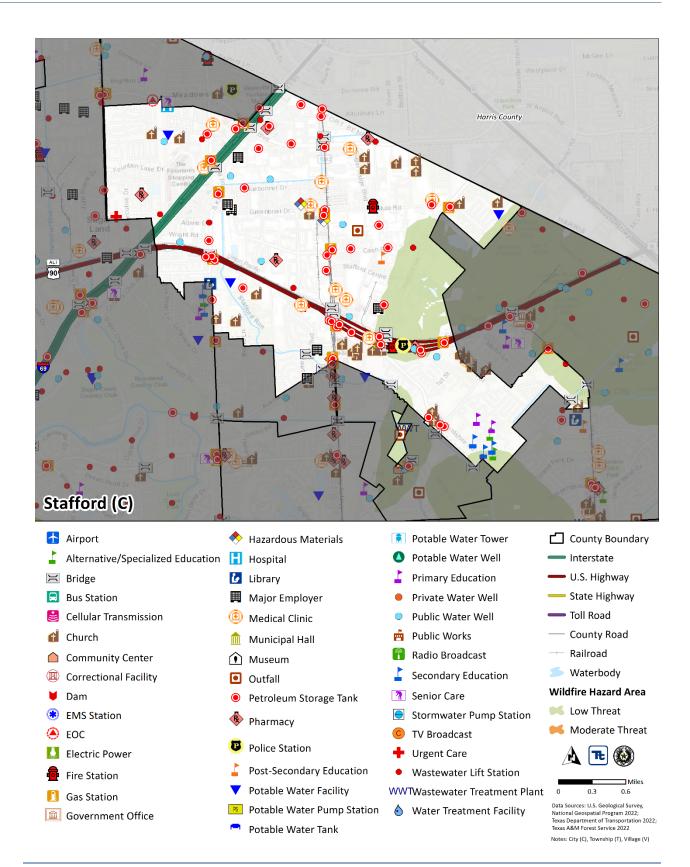




Figure 9.15-5. City of Stafford Hazard Area Extent and Location Map-Wildfire





#### **Hazard Event History**

Fort Bend County has a history of natural and non-natural hazard events, as detailed in Volume I, Section 4 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities.

The City of Stafford's history of federally declared (as presented by FEMA) and significant hazard events [as presented in NOAA-National Centers for Environmental Information (NCEI)] is consistent with that of the County. The table below provides details regarding municipal-specific loss and damages the City of Stafford experienced during hazard events since the last hazard mitigation plan update. Information provided in the table below is based on reference material or local sources.

Table 9.15-13. Hazard Event History

Dates of Event	Event Type (Disaster Declaration if applicable)	County Designated?	Summary of Event	Municipal Summary of Damages and Losses
January 20, 2020 - continuing	EM-3458 - Covid-19; DR- 4485 - Covid- 19 Pandemic	Yes	Covid-19 pandemic	The City was subject to closures and masking/social distancing requirements.
July 25-31, 2020	EM-3530 – Hurricane Hanna	Yes	Hurricane-force winds resulted in significant number of downed trees and utility lines.	Minor damage, tree limbs.
August 23- 27, 2020	EM-3540 – Tropical Storms Marco and Laura	Yes	Fort Bend County activated their emergency operations center as fringe impacts of Tropical Storms Marco and Laura impacted the County	The City did not experience any damages or losses that were documented.
September 12-18, 2021	EM-3572 Hurricane Nicholas	No	Hurricane Nicholas produced several hours of tropical storm-force sustained winds and gusts. There were numerous power outages and minor to moderate damage to some structures and roofs. Trees down in areas.	Minor wind damage, down fences and trees and limbs, and minor power outages.
February 11- 21, 2021	DR-4586; EM 3554 – Severe Winter Storms	Yes	Winter Storm Uri distributed a record amount of snow throughout Texas. Snow, ice, and ultra-low temperatures caused widespread road closures.	Moderate infrastructure damage, moderate damage to citizen's homes. Main damage was damage to pipes. Estimated damage over \$500k.
January 20, 2020 - continuing	EM-3458 - Covid-19; DR- 4485 - Covid- 19 Pandemic	Yes	Covid-19 pandemic	The City was subject to closures and masking/social distancing requirements.

Source: FEMA 2023; NOAA 2023

### Hazard Ranking and Vulnerabilities

The hazard profiles in Volume 1, Section 4 (Risk Assessment) have detailed information regarding each plan participant's vulnerability to the identified hazards. The following summarizes the City of Stafford's risk assessment results and data used to determine the hazard ranking.

### **Hazard Ranking**

This section provides the community specific identification of the primary hazard concerns based on identified problems, impacts, and the results of the risk assessment as presented in Volume 1, Section 4 (Risk Assessment). The



ranking process involves an assessment of the likelihood of occurrence for each hazard; the potential impacts of the hazard on people, property, and the economy; and community capabilities to address the hazard and changing future climate conditions. Mitigation action development uses the inputs from the evaluation to target those hazards with highest level of concern.

As discussed in Volume 1, Section 4.4 (Hazard Ranking), each participating jurisdiction has differing degrees of risk exposure and vulnerability compared with the County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the City of Stafford. The City of Stafford reviewed the County hazard risk/vulnerability risk ranking table and individual results to reflect the relative risk of the hazards of concern to the community.

**Table 9.15-14. Hazard Ranking Input** 

Hazard	Hazard Ranking
Dam/Levee Failure	Low
Disease Outbreak	Low
Drought	Medium
Extreme Temperature	Medium
Flood	Low
Geologic Hazards	Low
Hurricane/Tropical Storm	Medium
Severe Weather	High
Tornado	Medium
Wildfire	Low
Winter Weather	Low

#### Critical Facilities and Community Lifelines

The table below identifies the number of critical facilities and community lifelines in the community located in hazard areas. The community reviewed the list of facilities and lifelines to determine appropriate mitigation measures for the facilities, where appropriate. Refer to Section 4.3 (Hazard Profiles) for details on the risk assessment and the facilities and lifelines exposed to each hazard of concern.



### **Table 9.15-15. Potential Flood Losses to Critical Facilities**

	1-Percen	t Annual												
	Chance Flood Wildfire Hazard		Inland Erosion (K- Expansive Soils (Linear		Dam Inundation Hazard		Dam Inundation Hazard		Dam Inundation Hazard					
	Event Hazard		Area – M	loderate	Factor	: >= 0.49)	Extensibi	bility >6%) Hazard   Area - Barker Reservoir   A		Area - Lake Sommerville		Area - Kitty Hollow D		
	Area		Ris	sk	Haza	rd Area		Area	Dam In	undation Area	Dam In	undation Area	Inundation Area	
	Critical		Critical		Critical		Critical		Critical		Critical		Critical	
Jurisdiction	Facilities	Lifelines	Facilities	Lifelines	Facilities	Lifelines	Facilities	Lifelines	Facilities	Lifelines	Facilities	Lifelines	Facilities	Lifelines
Stafford (C)	3	3	0	0	0	0	125	106	0	0	0	0	0	0

Source: Fort Bend County; Hazus v5.1; FEMA 2022; Fort Bend Drainage District 2023



#### **Identified Issues**

After review of the City of Stafford's hazard event history, hazard rankings, jurisdiction specific vulnerabilities, hazard area extent and location, and current capabilities, the City of Stafford identified the following vulnerabilities within their community:

- The City of Stafford does not regularly update floodplain management programs.
- The City of Stafford does not have up-to-date FEMA flood maps.
- The City of Stafford stormwater systems will overflow during heavy rain fall events causing roadway flooding, residential flooding. Heavy rain and winter weather events also increase the chances of erosion.
- The City of Stafford public buildings and critical facilities are at risk of damage from hurricane/tropical storms and severe wind events.
- The City of Stafford does not have a Debris Management Plan.
- The City does not have resources developed to evaluate future conditions of hazards from the effects of climate change, including storm and hazard frequency and intensity.
- The City does not have a Substantial Damage Management Plan in place, nor do they have a formal process in place when conducting substantial damage determinations. The City is in need of a formal process and plan to provide a framework for conducting such inspections and determinations.

### 9.15.7 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritizes actions to address over the next five years.

#### **Past Mitigation Initiative Status**

The following table indicates progress on the community's mitigation strategy identified in the 2018 HMP. Actions that are in progress are carried forward and combined with new actions as part of this plan update and are included in the tables with prioritization. Previous actions that are now ongoing programs and capabilities are indicated as such and previously presented in the Capability Assessment earlier in this annex.

<sup>\*</sup>This issue was identified as a specific area of concern based on resident response to the Fort Bend County Hazard Mitigation public survey.



**Table 9.15-16. Status of Previous Mitigation Actions** 

		What is the status? (e.g., In Progress, No Progress,	If you did not o	If you did not complete the action, should the action be included in the 2023 HMP (i.e., there is still a need, this is still a priority)?						
Project	Responsible Party	Ongoing Capability, or Completed)  If in progress or completed, please  describe the funding source, cost,  and who is implementing.	Yes/No	If Yes, please describe the original problem (i.e., hazard, location, historic losses)	If Yes, identify the responsible department/person to implement the project.					
Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or mediumrisk hazard areas	Stafford Public Works	No submitted properties	N/A							
Integrate the hazard mitigation plan into other plans, ordinances and programs that dictate land use decisions in the community, including Zoning Ordinance, Capital Improvement projects, and Economic Development Corporation planning.	Planning and Zoning	Proposed for review in future	No							
Actively participate in the plan maintenance protocols outlined in Volume 1 of this hazard mitigation plan	City of Stafford OEM	In progress	Yes	To maintain viability	COS OEM					
Continue to maintain good standing and compliance under the NFIP through implementation of floodplain management programs that, at a minimum, meet the NFIP requirements:  • Enforce the flood damage prevention ordinance.  • Participate in floodplain identification and mapping updates.  • Provide public assistance/information on floodplain requirements and impacts.	Stafford Public Works	In progress	Yes	Localized flooding in subdivisions	COS Public Works					
Install generators/emergency power at the Stafford Centre for use as an emergency shelter	Economic Development Corporation	Completed	No							
Expand city's emergency warning system to increase coverage within the community's population.	City of Stafford OEM	Completed	No							
Improve drainage channels to increase flow rate and increased retention areas	Stafford Public Works	In progress	Yes	Localized street flooding	COS Public Works					



Project	Responsible Party	What is the status? (e.g., In Progress, No Progress, Ongoing Capability, or Completed) If in progress or completed, please describe the funding source, cost, and who is implementing.	If you did not o	complete the action, should the (i.e., there is still a need, thi If Yes, please describe the original problem (i.e., hazard, location, historic losses)	e action be included in the 2023 HMP s is still a priority)? If Yes, identify the responsible department/person to implement the project.
Implement drainage improvements in Missouri City Estates- replace open ditches by installing storm sewers and level ground to reduce overland and sheet flow flooding within neighborhoods.	Stafford Public Works	In progress	Yes	Localized street flooding	COS Public Works
Harden air infiltration system and critical infrastructure/public buildings to support high efficiency particulate air resistance filters in order to minimize health risks and property damage due to air particulate hazards and minimize equipment damage due to smoke.	Stafford Public Works	No progress	No		
Hardening of critical infrastructure facilities for hurricane wind hazards.	Stafford Public Works	In progress	Yes	Wind damage survivability improvement	COS OEM
Purchase generator for Fire/EMS Station 1	Stafford Public Works	Completed	No		
Purchase/install generators at critical facilities and infrastructure that lack adequate back-up power or are in need of replacement.	Stafford Public Work	Completed	No		



### **Additional Mitigation Efforts**

In addition to the mitigation initiatives completed in the table above, the City of Stafford identified the following mitigation efforts completed since the last HMP:

#### None Identified

Since the adoption of the County's first HMP, the City of Stafford has made significant mitigation progress in the following areas:

#### None Identified

### Proposed Hazard Mitigation Initiatives for the HMP Update

Fort Bend County participated in a mitigation action workshop in March 2023 and was provided the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 'Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards' (January 2013) and FEMA 'Mitigation Assistance Resource Guide for Texas' (2020).

The table below indicates the range of proposed mitigation action categories. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table to further demonstrate the wide-range of activities and mitigation measures selected.

Table 9.15-17. Analysis of Mitigation Actions by Hazard and Category

		CRS								
Hazard	LPR	SIP	NSP	EAP	PR	PP	PI	NR	SP	ES
Dam/Levee Failure	Х	Х	-	Х	Х	Х	1	-	١	Х
Disease Outbreak	Х	-	-	-	X	ı	ı	•	ı	Х
Drought	X	•	-	-	Х	1	ı	•	ı	Х
Extreme Temperature	X	•	-	-	Х	1	ı	•	ı	Х
Flood	Х	Х	-	Х	X	Х	Χ	Х	ı	Х
Geologic Hazards	Х	Х	-	-	X	-	-	Х	-	Χ
Hurricane/Tropical Storm	X	Х	-	-	Х	Х	ı	-	ı	Х
Severe Weather	X	X	-	-	X	X	-	-	-	X
Tornado	X	-	-	-	Х	-	-	-	•	Х
Wildfire	X	-	-	-	X	ı	ı	-	ı	Х
Winter Weather	Х	-	-	-	Х	ı	ı	-	ı	Х

Note: Mitigation categories are described below the Mitigation Initiatives.



The table below summarizes the specific mitigation initiatives the City of Stafford would like to pursue in the future to reduce the effects of hazards. The initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities.

**Table 9.15-18. Proposed Hazard Mitigation Initiatives** 

Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
2023-City of Stafford- 001	Improve Compliance with NFIP	Problem: The City of Stafford does not regularly update floodplain management programs.  Solution: The City of Stafford Public Works will designate a local floodplain manager who will maintain and achieve Certified Floodplain Manager certification.	Dam/Levee Failure, Flood	1,2	1 to 2 years	City of Stafford Public Works	City Budget	Reduce the loss of life and property		High	EAP, LPR	PR
2023-City of Stafford- 002	Update FEMA Flood Maps	Problem: The City of Stafford does not have up-to-date FEMA flood maps.  Solution: The City of Stafford Public Works will work with FEMA to update the current flood maps.	Flood	1,2	1 to 3 years	City of Stafford Public Works, FEMA	HMGP, FMA, City Budget	Reduce the loss of life and property		High	EAP	PR, PI
2023-City of Stafford- 003	Improve Stormwater Drainage System Capacity	Problem: The City of Stafford stormwater systems will overflow during heavy rain fall events causing roadway flooding, residential flooding. Heavy rain and winter weather events also increase the chances of erosion.  Solution: The City Public Works will increase the capacity of the stormwater drainage system to reduce flooding and provide grassy swales along the roadsides to combat erosion.	Geologic Hazards, Flood	2	1 to 2 years	City of Stafford Public Works	BRIC, HMGP, FMA, City Budget	Reduce the loss of life and property		High	SIP	NR
2023-City of Stafford- 004	Retrofit Critical Facilities and Infrastructure	Problem: The City of Stafford public buildings and critical facilities are at risk of damage from hurricane/tropical storms and severe wind events.  Solution: The City Office of Emergency Management will work with the City Public Works to improve roof coverings and	Dam/Levee Failure, Flood, Hurricane/Tropi cal Storm, Severe Weather	2,3,5	1 to 3 years	City of Stafford Office of Emergency Management, City Public Works	HMGP, BRIC, FMA, City Budget	Reduce the loss of property, maintain continuity of operations		High	SIP	PP



Project Number	Mitigation Initiative Name	Description of Problem and Solution retrofitting buildings with load-path connectors to strengthen structural frames.	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
2023-City of Stafford- 005	Debris Management Plan	Problem: The City of Stafford does not have a Debris Management Plan.  Solution: The City will develop a Debris Management Plan.	Dam/Levee Failure, Disease Outbreak, Drought, Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropi cal Storm, Severe Weather, Tornado, Wildfire, Winter Weather	1,2	1 year	City of Stafford Public Works	City Budget	Increase disaster response capabilities		High	LPR	ES
2023-City of Stafford- 006	Future Conditions Resources	Problem: The City does not have resources developed to evaluate future conditions of hazards from the effects of climate change, including storm and hazard frequency and intensity.  Solution: The City will work with FEMA and the County to develop future condition maps and resources so that the City may keep plans and regulations up to code with projected conditions of population and building stock exposed to increasing hazard events.	Dam/Levee Failure, Disease Outbreak Drought, Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropi cal Storm, Severe Weather, Tornado, Wildfire, Winter Weather	1,2	3 years	City, County, FEMA	BRIC, HMGP, FMA, County, and City Budget	The City will be better equipped to handle hazards that have been intensified due to Climate Change		High	LPR	PR



Project Number	Mitigation Initiative Name	Description of Problem and Solution	Hazard(s) to be Mitigated	Goals Met	Estimated Timeline	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Costs	Priority	Mitigation Category	CRS Category
2023-City of	Substantial Damage	<b>Problem:</b> The City does not have a Substantial Damage Management Plan in	Dam/Levee Failure,	2, 4	Within 5 years to	Floodplain Administrator,	City Budget	This plan will provide a	< \$5,0	High	LPR	ES, PR
Stafford-	Management	place, nor do they have a formal process in	Drought,		develop the	Public Works,	J	process in	00			
007	Plan	place when conducting substantial damage	Extreme		plan;	OEM,		making				
		determinations. The City is in need of a	Temperature,		ongoing to	Construction		Substantial				
		formal process and plan to provide a	Flood,		maintain	Department		Damage				
		framework for conducting such inspections	Geologic		and update			Determinati				
		and determinations.	Hazards,		the plan			ons and				
			Hurricane/Tropi					allow the				
		<b>Solution:</b> The City will develop a Substantial	cal Storm,					municipality				
		Damage Management Plan, following the six- step planning process in 2021 Developing a	Severe Weather.					to make these				
		Substantial Damage Management Plan	Tornado,					determinatio				
		(https://crsresources.org/files/500/developi	Wildfire.					ns and meet				
		ng_subst_damge_mgmt_plan.pdf). This plan	Winter Weather					NFIP				
		will outline responsibilities for Substantial						requirement				
		Damage determinations, determining market						s more				
		value, and permit approval processes						quickly.				
		following a disaster event.										

<sup>\*</sup>Mitigation initiative is related to a critical facility and/or community lifeline

Notes: Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:			Potential	FEMA HMA Funding Sources:	Timeline:						
	CRS	Community Rating System	FMA	Flood Mitigation Assistance Grant Program	The time required for completion of the project upon implementation.						
	<i>FEMA</i>	Federal Emergency Management	HMGP	Hazard Mitigation Grant Program	Cost:						
	Agency		BRIC	Building Resilient Infrastructure and Communities	The estimated cost for implementation.						
	HMA	Hazard Mitigation Assistance	Program		Benefits:						
	N/A	Not applicable			A description of the estimated benefits, either quantitative and/or						
	NFIP	National Flood Insurance Program			qualitative.						
		_									

#### Mitigation Category:

- Local Plans and Regulations (LPR)—These actions include government authorities, policies, or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP)—These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This
  could apply to public or private structures, as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of
  hazards.
- Natural Systems Protection (NSP)—These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP)—These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them.

  These actions may also include participation in national programs, such as StormReady and Firewise Communities.

#### CRS Category:

• Preventative Measures (PR)—Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.



- Property Protection (PP)—These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a
  hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI)—Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach
  projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR)—Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- Structural Flood Control Projects (SP)—Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- Emergency Services (ES)—Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.

The prioritization criteria provided in Volume 1, Section 6 (Mitigation Strategy) identify 14 evaluation/prioritization criteria to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing actions as High, Medium, or Low. The table below provides a summary of the prioritization of all proposed mitigation initiatives for the HMP update.

**Table 9.15-19. Summary of Prioritization of Actions** 

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2023-City of Stafford-001	Improve Compliance with NFIP	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
2023-City of Stafford-002	Update FEMA Flood Maps	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
2023-City of Stafford-003	Improve Stormwater Drainage System Capacity	1	1	1	1	0	1	1	1	1	1	1	1	1	1	13	High
2023-City of Stafford-004	Retrofit Critical Facilities and Infrastructure	1	1	0	1	1	1	1	0	1	1	1	1	1	1	12	High
2023-City of Stafford-005	Debris Management Plan	1	1	1	1	1	1	1	1	1	1	1	1	1	0	13	High
2023-City of Stafford-006	Future Conditions Resources	1	1	1	1	1	1	1	1	1	1	1	1	1	0	13	High
2023-City of Stafford-007	Substantial Damage Management Plan	0	1	1	1	1	1	1	0	1	1	1	1	0	0	10	High

Note: Volume 1, Section 6 (Mitigation Strategy) conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).

