SECTION 9. JURISDICTIONAL ANNEXES

9.12 City of Richmond

This section presents the jurisdictional annex for the City of Richmond 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 Richmond representatives who participated in the planning process, an assessment of the City of Richmond's risk and vulnerability, the different capabilities used in the City of Richmond, and an action plan that will be implemented to achieve a more resilient community.

9.12.1 Hazard Mitigation Planning Team

The City of Richmond identified the primary and alternate points of contact and developed this 2023 Hazard Mitigation Plan (HMP) over the course of several months with input from City of Richmond departments, including the Department of Emergency Services, and the Department of Engineering. The Mayor is a member of the Steering Committee and represents the community on the Fort Bend County HMP Planning Partnership along with the Emergency Management Coordinator and the City Engineer. The City supported the local planning process requirements by securing input from additional 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 who 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 9.12-1. Hazard Mitigation Planning Team

Primary Point of Contact		Alternate Point of Contact	
Name/Title:	Robert Oliver, Emergency Management Coordinator	Name/Title:	Terri Vela, City Manager
Address:	600 Morton Street, Richmond, Tx 77469	Address:	402 Morton Street, Richmond, Tx 77469
Phone Number:	281-342-0559	Phone Number:	281-342-5456
Email:	roliver@richmondx.gov	Email:	Tvela@richmondx.gov
NFIP Floodplain Administrator			
Name/Title:	Duane Whitehead, City Engineer		
Address:	600 Morton Street, Richmond, Tx 77469		
Phone Number:	281-341-0808		
Email:	dwhitehead@kaluzainc.com		
Additional Contributors:			
Name/Title: Method of Participation:	Rebacca K. Haas, Mayor On Steering Committee, Planning Committee Member and prepared correspondence.		
Name/Title: Method of Participation:	Jim Whitehead, Assistant Public Works Director Planning Committee Member		
Name/Title: Method of Participation:	Donald Kovar / Planning Section Chief Provide input during the planning process		

9.12.2 Municipal Profile

The City of Richmond, incorporated in May 1837, is the county seat of Fort Bend County and is on the Brazos River 15 miles southwest of Houston. The City's transportation links include U.S. highways 90A and 59, the Southern Pacific Railroad, and the Atchison, Topeka, and Santa Fe Railway.

As the county seat for Fort Bend County, Richmond has a concentration of County and City jobs. In addition, the educational services, health care, social assistance, and construction industries are the largest employers in Richmond, primarily due to Lamar Consolidated Independent School District, Wharton County Junior College, Texas State Technical College, and OakBend Medical Center.

The City of Richmond is the county seat of Fort Bend County. Richmond's downtown shops and small businesses are part of what gives Richmond its unique culture and atmosphere. The overall City of Richmond Jurisdiction has a total of 21,366.5 acres or 33.4 square miles. The City limits have a total area of 2,710.4 acres or 4.2 square miles.

According to the 2021 American Community Survey, the total population for the City of Richmond was 11,768, a slight increase from the 2010 Census population of 11,679. Data from the 2020 U.S. Census indicate that 5.7 percent of the population is 5 years of age or younger, and 13.4 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.

9.12.3 Jurisdictional Capability Assessment and Integration

The City of Richmond 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 Richmond 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 Richmond. The comment field provides information as to how the capability integrates hazard mitigation and risk reduction.

Table 9.12-2. 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				
Building Code	Yes	International Building Code	Local	Code Enforcement
How does this reduce risk? The City of Richmond adopted the 2015 International Building Code, which incorporates the latest safety standards to address known hazards to the community. The City's current building code has not been updated since the 2018 HMP; therefore, it does not integrate the HMP. When the City does update the code, they will review the current HMP and integrate into the code accordingly.				
Zoning/Land Use Code	Yes	Unified Development Ordinance – Revised Through 8/15/2022	Local	City Council
How does this reduce risk? The Unified Development Ordinance is part of the Development Services Code which details requirements for all zoning, land use, public infrastructure development, lot sizes, site designs, parking and access. The City's Unified Development Ordinance has been updated since the 2018 HMP and the City has integrated the HMP accordingly through the implementation of integrated regulations and design criteria the ordinance preserves and protects existing trees and vegetation, floodplains, stream corridors, and other areas of environmental significance from adverse impacts of development.				
Subdivision Ordinance	Yes	Unified Development Ordinance – Revised Through 8/15/2022– Revised Through 8/15/2022	Local	City Council
How does this reduce risk? The Unified Development Ordinance is part of the Development Services Code which details requirements for all zoning, land use, public infrastructure development, lot sizes, site designs, parking and access. The City's Unified Development Ordinance has been updated since the 2018 HMP and the City has integrated the HMP accordingly through the implementation of integrated regulations and design criteria the ordinance preserves and protects existing trees and vegetation, floodplains, stream corridors, and other areas of environmental significance from adverse impacts of development.				
Site Plan Ordinance	Yes	Unified Development Ordinance – Revised Through 8/15/2022	Local	City Council
How does this reduce risk? The Unified Development Ordinance is part of the Development Services Code which details requirements for all zoning, land use, public infrastructure development, lot sizes, site designs, parking and access.				
Stormwater Management Ordinance	Yes	Public Infrastructure Design Manual – 11/21/2016	Local	City Council
How does this reduce risk? Chapter 7 - Stormwater System Design Requirements identifies the requirements and goals of stormwater design requirements. One of the main goals is the prevention of structure flooding and the maintenance of one passable travel lane in each direction on major thoroughfares during a 100-year storm event to maintain safe routes for emergency vehicles and to critical facilities.				
Post-Disaster Recovery/ Reconstruction Ordinance	No	-	-	-
How does this reduce risk?				
Real Estate Disclosure	-	The Private Real Property Rights Preservation Act - Subchapter B: Chapter 2007 of the General Government Code	-	-
How does this reduce risk?				
Growth Management	N/A	-	-	-
How does this reduce risk?				
Environmental Protection Ordinance	N/A	-	-	-
How does this reduce risk?				
Flood Damage Prevention Ordinance	Yes	Unified Development Code – 4.3.200 Floodplain Management and Flood Damage Prevention	Local	-
How does this reduce risk? It is the purpose of this Division to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific areas. It reduces risk by: • Restricting or prohibiting uses that are dangerous to health, safety or property in times of flood, or cause excessive increases in flood heights or velocities; • Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;				

	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
• Controlling the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of flood waters; • Controlling filling, grading, dredging and other development which may increase flood damage; and • Preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards to other lands. The City's Unified Development Ordinance has been updated since the 2018 HMP and the City has integrated the HMP accordingly through the implementation of integrated regulations and design criteria the ordinance preserves and protects existing trees and vegetation, floodplains, stream corridors, and other areas of environmental significance from adverse impacts of development.				
Wellhead Protection	No	-	-	-
How does this reduce risk?				
Emergency Management Ordinance	No	-	-	-
How does this reduce risk?				
Climate Change Ordinance	No	-	-	-
How does this reduce risk?				
Other	-	-	-	-
Planning Documents				
Comprehensive/Master Plan	Yes	City of Richmond Comprehensive Master Plan – July 2014	Local	City Commission
How does this reduce risk? The City of Richmond Comprehensive Master Plan objective is to establish a community supported vision to guide growth and development, strengthen the public and private partnership between intergovernmental, institutional, and private sector leaders, influence the regulatory environment to ensure the community values and desired outcomes are realistic and enforceable, and design a strategic implementation program for directing annual work programs and prioritize capital improvement projects. The City's Comprehensive Master Plan has not been updated since the 2018 HMP and the City has integrated the HMP accordingly through the implementation of integrated recommendations the plan's goals include preserving and protecting existing trees and vegetation, floodplains, stream corridors, and other areas of environmental significance from adverse impacts of development, in addition to recommending facility improvements to mitigate future hazards. (It should be noted that the Master Plan is in the process of being updated).				
Capital Improvement Plan	Yes	9/19/2022	Local	Finance
How does this reduce risk? Fiscal Year 2023 FY23 capital projects total $34.46 million. Drainage projects make up much of the distribution at 36.90% and will reduce the risk of flooding in the targeted areas. Streets projects are at 11.75%, Municipal projects are at 19.22%, and Utilities projects are at 32.13%. Drainage projects total $12.71 million and include $7.65 million for Northside drainage improvements and $5.06 million Clay Street/Second Street drainage improvements				
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	Department of Public Works – Street and Drainage
How does this reduce risk? The City of Richmond has developed a Storm Water Management Program to reduce pollutants in the City's storm water system and to improve the water quality in the local creeks and rivers. The City's Stormwater Management Program addresses the following seven minimum control measures: • Public Education and Outreach • Public Involvement and participation • Illicit Discharge Detection and Elimination • Construction Site Runoff Control • Post-Construction Storm water Management in New Development and redevelopment • Pollution Prevention and Good Housekeeping and Municipal Operations • Authorization for Municipal Construction Activities				

	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
To satisfy the minimum control measures requirements, City developed various programs known as Best Management Practices (or BMPs). The effectiveness of the implementation of each bmp is assessed by one or more measurable goals.				
Open Space Plan	Yes	Parks, Recreations and Open Space Plan – 2017 - 2027	Local	City Commission
How does this reduce risk? The Parks, Recreation, and Open Space Master Plan provides the City of Richmond with an information base to help guide decisions related to parks, recreation, and open space. The plan set guidelines for future park and open space development that are feasible for Richmond in accordance with the desires of its citizens and assist in the implementation of those decisions. The plan includes the area within the incorporated limits of Richmond as well as property outside of the City limits which is owned by the municipality. The plan has a ten-year life (2017-2027) Aspects of the plan that integrate with the goals of the HMP include objectives such as; • To be proactive in the acquisition and protection of unique natural open spaces along the Brazos River Corridor and its contributing tributaries. • To limit development in natural open spaces and encourage environmentally responsible private development to minimize adverse effects on valuable ecosystems.				
Urban Water Management Plan	No	-	-	-
How does this reduce risk?				
Habitat Conservation Plan	No	-	-	-
How does this reduce risk?				
Economic Development Plan	No	-	-	-
How does this reduce risk?				
Shoreline Management Plan	No	-	-	-
How does this reduce risk?				
Community Wildfire Protection Plan	No	-	-	-
How does this reduce risk?				
Community Forest Management Plan	No	-	-	-
How does this reduce risk?				
Transportation Plan	Yes	Transportation Section - City of Richmond Comprehensive Master Plan – July 2014	Local	City Commission
How does this reduce risk? A policy of creating a mobility network of interconnected activity centers, corridors, and neighborhoods will provide a structure for guiding new growth and development. This will entail an efficient, well connected street layout that provides multiple paths to external destinations (and critical access for emergency vehicles) while also discouraging non-local or cut-through traffic The City's Comprehensive Master Plan has not been updated since the 2018 HMP and the City has integrated the HMP accordingly through the implementation of integrated recommendations the plan's goals include preserving and protecting existing trees and vegetation, floodplains, stream corridors, and other areas of environmental significance from adverse impacts of development, in addition to recommending facility improvements to mitigate future hazards. (It should be noted that the Master Plan is in the process of being updated).				
Agriculture Plan	No	-	-	-
How does this reduce risk?				
Climate Action/ Resiliency/Sustainability Plan	No	-	-	-
How does this reduce risk?				
Tourism Plan	No	-	-	-
How does this reduce risk?				
Business/ Downtown Development Plan	No	-	-	-
How does this reduce risk?				
Other	No	-	-	-
Response/Recovery Planning				
Comprehensive Emergency Management Plan	Yes	Fort Bend County - Emergency Operation Plan 2018	County	OEM
How does this reduce risk?				

	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
The Emergency Operations Plan (EOP) is an all-hazard plan that guides Fort Bend County's efforts to prepare for, respond to, recover from, and mitigate the effects of a major emergency or disaster. Consider the following: • Does your CEMP cover short-term response and long-term recovery to address communications, evacuation, and housing necessary for identified hazards?				
Continuity of Operations Plan	No	-	-	-
How does this reduce risk?				
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 EOP.	County	FBHHS
How does this reduce risk? 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	Yes	Bravos River Erosion Study – 1/7/2019	Local	City Commission-
How does this reduce risk? Due to the accelerated bank erosion along the Brazos River following significant flooding in 2015. 2016 and Hurricane Harvey in 2017, the City of Richmond contracted to have a geomorphologic study of bank erosion along the Bravos River. The river's meander migration was projected for the next 30 years to allow for advanced planning to address future flooding.				

Development and Permitting Capability

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

Table 9.12-3. 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	Building and Permits Department
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.)	Yes	City Floodplain Administrator
Do you have a buildable land inventory? • If yes, please describe	No	-
Describe the level of build-out in your jurisdiction.	N/A	85%

Administrative and Technical Capability

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

Table 9.12-4. Administrative and Technical Capabilities

Resources	Available? (Yes/No)	Comments (available staff, responsibilities, support of hazard mitigation)
Administrative Capability		
Planning Board	Yes	The Planning and Zoning Commission is a five member Commission appointed by the City Commission. The Planning and Zoning Commission is appointed to staggered terms of two years. The Planning and Zoning Commission is charged with undertaking a continued planning program for the physical, social, and economic growth, development, and redevelopment of the City and Extraterritorial Jurisdiction. The Planning and Zoning Commission is charged with review and making recommendations on text amendments to the Unified Development Code; amendments to the Official Zoning Map; conceptual or specific area plans; annexations; plats; concepts plans; periodic review of the Unified Development Code and Official Zoning Map; periodic review of the Comprehensive Master Plan; and ensure for the orderly growth, development, and welfare of the City.
Zoning Board of Adjustment	Yes	The Zoning Board of Adjustment (ZBA) is five member Board appointed for terms of two years by the City Commission. The ZBA is authorized by the Texas Local Government Code Section 211.008, Board of Adjustment. The ZBA is authorized to enforce ordinances related to appeals from alleged errors in the Code Official's decision; interpretations to the provisions of the Unified Development Code; and variances from the standards of the Unified Development Code where exceptional and peculiar hardship would be caused by enforcement of the regulations and where such variance would not substantially deviate from the intent of the Unified Development Code (UDC)
Planning Department	Yes	The goal of the Planning Department is to guide the development in the City of Richmond and the extraterritorial jurisdiction by advocating a long-term, comprehensive approach to planning in a manner that preserves the values, character, and history of Richmond while providing for strategic and complimentary new growth. The Department administers the Comprehensive Master Plan, the UDC, and other Master Plans, while ensuring the health, safety, and welfare of its citizens and property by regulating the use of land within the corporate limits of the City of Richmond.
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Public Works/Highway Department	Yes	The Public Works Department is responsible for the operation and maintenance of the City's public streets; bridges; drainage system; capital improvement projects, solid waste; water service; wastewater; and recycling. The Public Works Department is dedicated to providing the highest level of service to the citizens of Richmond.
Construction/Building/Code Enforcement Department	Yes	The mission of The Code Enforcement Department is to enhance City of Richmond's livability by protecting the health, safety and welfare of the City's residents and visitors by assuring compliance with the Development Code and General Ordinances. The City will ensure compliance both by encouraging voluntary compliance and by following progressive steps, including legal action, if necessary, for ordinance violators.
Emergency Management/Public Safety Department	Yes	The mission of the Emergency Management Department is to provide an integrated emergency management plan for all natural, man-made, or technological hazards that could adversely affect citizens, businesses, and

Resources	Available? (Yes/No)	Comments (available staff, responsibilities, support of hazard mitigation)
		visitors to the community by preparing, training, and coordinating emergency responses and recover efforts for the City of Richmond.
Warning Systems / Services (mass notification system, outdoor warning signals, etc.)	Yes	Email Alerts vis Emergency Management Department
Maintenance programs to reduce risk (stormwater maintenance, tree trimming, etc.)	Yes	See Public Works
Mutual aid agreements	No	-
Human Resources Manual	Yes	All staff members have training for working during an emergency situation. All staff members sign off knowing that if there is an emergency situation, they may be called into work.
Other	-	-
Technical/Staffing Capability		
Planners or engineers with knowledge of land development and land management practices	Yes	Public Works Dept.
Engineers or professionals trained in building or infrastructure construction practices	Yes	Code Enforcement Dept.
Planners or engineers with an understanding of natural hazards	Yes	Planning Department
Staff with expertise or training in benefit/cost analysis	Yes	Finance
Professionals trained in conducting damage assessments	Yes	Building Department / Fire Marshall
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Environmental scientist familiar with natural hazards	No	-
Surveyor(s)	No	-
Emergency Manager	Yes	Emergency Management Coordinator
Grant writer(s)	No	-
Resilience Officer	No	-
Other (this could include stormwater engineer, environmental specialist, etc.)	No	-

Fiscal Capability

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

Table 9.12-5. 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	Yes
Impact fees for homebuyers or developers of new development/homes	Yes
Stormwater utility fee	Yes
Incur debt through general obligation bonds	Yes

Financial Resources	Accessible or Eligible to Use? (Yes/No)
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state funding programs	Yes
Open space acquisition funding programs	Yes
Other (for example, Clean Water Act 319 Grants [Nonpoint Source Pollution])	-

Education and Outreach Capability

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

Table 9.12-6. Education and Outreach Capabilities

Outreach Resources	Available? (Yes/No)	Comment:
Public information officer or communications office	No	-
Personnel skilled or trained in website development	No	-
Hazard mitigation information available on your website	Yes	Emergency Management Department website provides information for man-made and natural hazards.
Social media for hazard mitigation education and outreach	Yes	Email
Citizen boards or commissions that address issues related to hazard mitigation	No	-
Warning systems for hazard events	Yes	FBC Alert / City of Richmond Alert System
Natural disaster/safety programs in place for schools	No	-
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.	Yes	The Department of Emergency Management has a webpage that provides safety, preparation and evacuation tips and instructions for Natural Disasters such as, Hurricanes, Tornadoes, Floods and Severe Thunderstorms.

Community Classifications

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

Table 9.12-7. 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 9.12-8. Adaptive Capacity

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

9.12.4 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 Richmond.

Table 9.12-9. NFIP Summary

Municipality	Policies in Force[a]	Number of Paid Claims[a]	Amount of Paid Claims[a]	Number of NFIP RL Properties[b]	Number of NFIP SRL Properties[b]
Richmond (C)	338	226	$4,391,812.52	13	0

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 Richmond.

Table 9.12-10. NFIP Summary

NFIP Topic	Comments
Flood Vulnerability Summary	
Describe areas prone to flooding in your jurisdiction. • Do you maintain a list of properties that have been damaged by flooding?	The City of Richmond is capable of maintaining this information; however, it is currently outsourced.
• Do you maintain a list of property owners interested in flood mitigation? • How many homeowners and/or business owners are interested in mitigation (elevation or acquisition)?	N/A
Are any RiskMAP projects currently underway in your jurisdiction? • If so, state what projects are underway.	N/A
• 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.	Yes. The City uses the mapping developed by the County and approved by FEMA.
NFIP Compliance	
What local department is responsible for floodplain management?	N/A
Are any certified floodplain managers on staff in your jurisdiction?	The City Engineer is contracted staff and is a CFM.
Do you have access to resources to determine possible future flooding conditions from climate change?	The FBC Drainage District may have access to resources needed to predict future flooding resulting from Climate Change, but the City does not.
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?	N/A
Provide an explanation of NFIP administration services you provide (e.g. permit review, GIS, education/outreach, inspections, engineering capability)	Floodplain Development permit applications are reviewed. Once in compliance, permits are issued.
How do you determine if proposed development on an existing structure would qualify as a substantial improvement?	The City utilizes FBCAB value and construction cost to determine if it is over 50% of the current value.
What are the barriers to running an effective NFIP program in the community, if any?	N/A
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
• What is the local law number or municipal code of your flood damage prevention ordinance? • What is the date that your flood damage prevention ordinance was last amended?	Chapter 4.3.2 of the Unified Development Ordinance; It is the purpose of this Division to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific areas. It reduces risk by: • Restricting or prohibiting uses that are dangerous to health, safety or property in times of flood, or cause excessive increases in flood heights or velocities;

NFIP Topic	Comments
	• Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction; • Controlling the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of flood waters; • Controlling filling, grading, dredging and other development which may increase flood damage; and • Preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards to other lands. The City's Unified Development Ordinance has been updated since the 2018 HMP and the City has integrated the HMP accordingly through the implementation of integrated regulations and design criteria the ordinance preserves and protects existing trees and vegetation, floodplains, stream corridors, and other areas of environmental significance from adverse impacts of development.
Does your floodplain management program meet or exceed minimum requirements? • If exceeds, in what ways?	N/A
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?	N/A

9.12.5 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 9.12-11. Number of Building Permits for New Construction

Type of Development	2016		2017		2018		2019		2020		2021		2022	
Number of Building Permits for New Construction Issued Since the previous HMP* (total/within regulatory floodplain)														
	Total	**Within SFHA**	**Total**	**Within SFHA**	**Total**	**Within SFHA**	**Total**	**Within SFHA**	**Total**	**Within SFHA**	**Total**	**Within SFHA**	**Total**	**Within SFHA**
Single Family	1	0	1	0	2	0	3	0	8	0	106	0	147	0
Multi-Family	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other (commercial, mixed-use, etc.)	2	0	5	0	1	0	2	0	3	0	17	0	1	0
Total Permits Issued	3	0	6	0	3	0	5	0	11	0	123	0	148	0

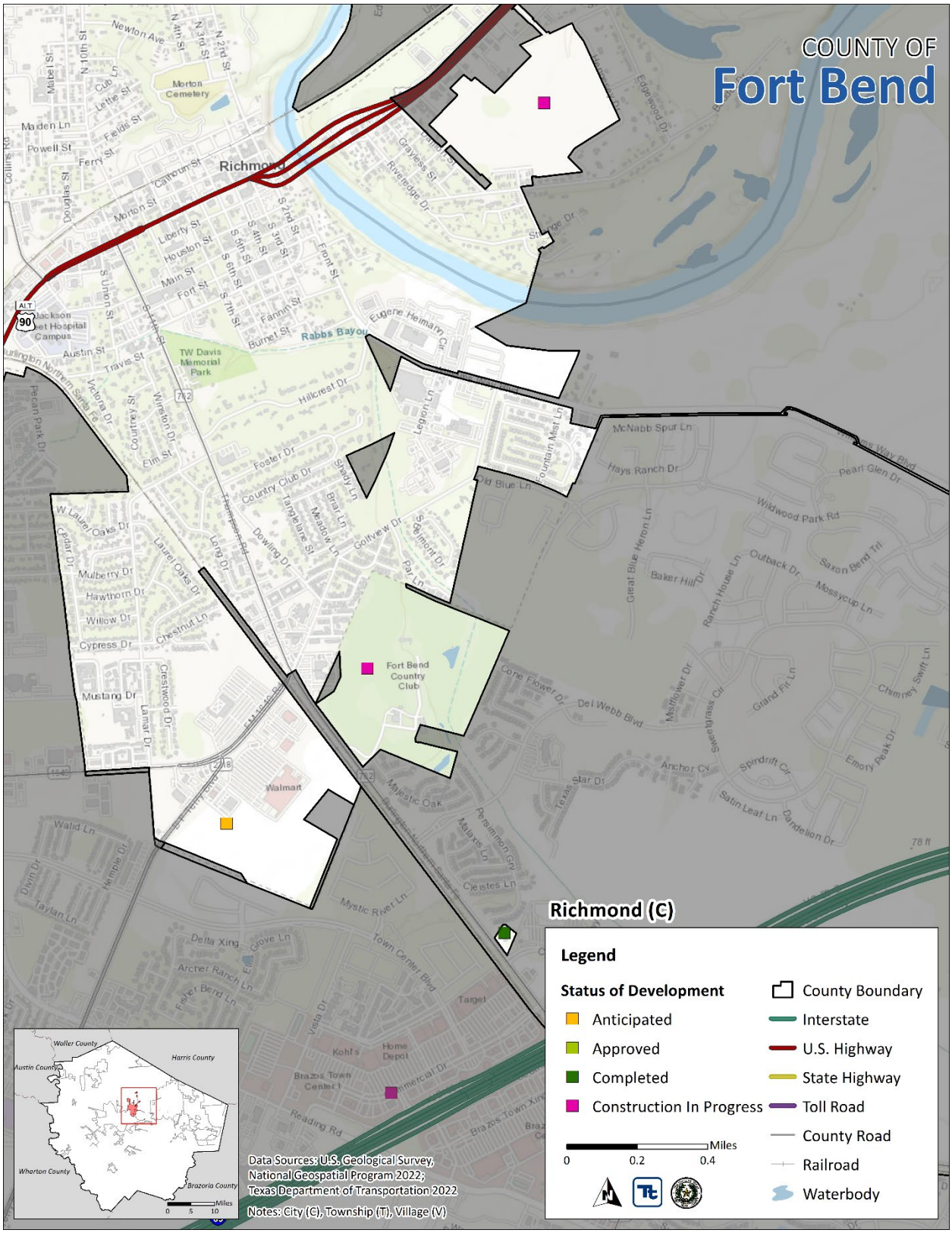
SFHA Special Flood Hazard Area (1% annual chance flood event)

** Only location-specific hazard zones or vulnerabilities identified.*

Table 9.12-12. 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 Development from 2018 to Present					
Mandola Farms	Residential	263	200 Mandola Farms Drive	Expansive Soils, 1% Flood, 2% Flood	Construction in progress
Veranda	Residential	10 Buildings with future build-out possible	24500 Wildwood Park Drive	Expansive soils, Wildfire	Construction in progress
New Quest	Commercial	1 Structure – 5 Units	3415 FM 762 Road	Expansive soils, Wildfire	Completed
Known or Anticipated Major Development in the Next Five (5) Years					
West Street Village	Residential	150	200 Wall Street	Expansive Soils	Anticipated, no approval date
Pit-Stop Express	Commercial	2 Structures	Williams Way @ 59	Expansive Soils	Anticipated, no approval date
Circle Oak	Mixed-use	Unknown currently	100 Cemetery Road	Wildfire	Construction in progress

Figure 9.12-1. City of Richmond Extent and Location Map-New Development

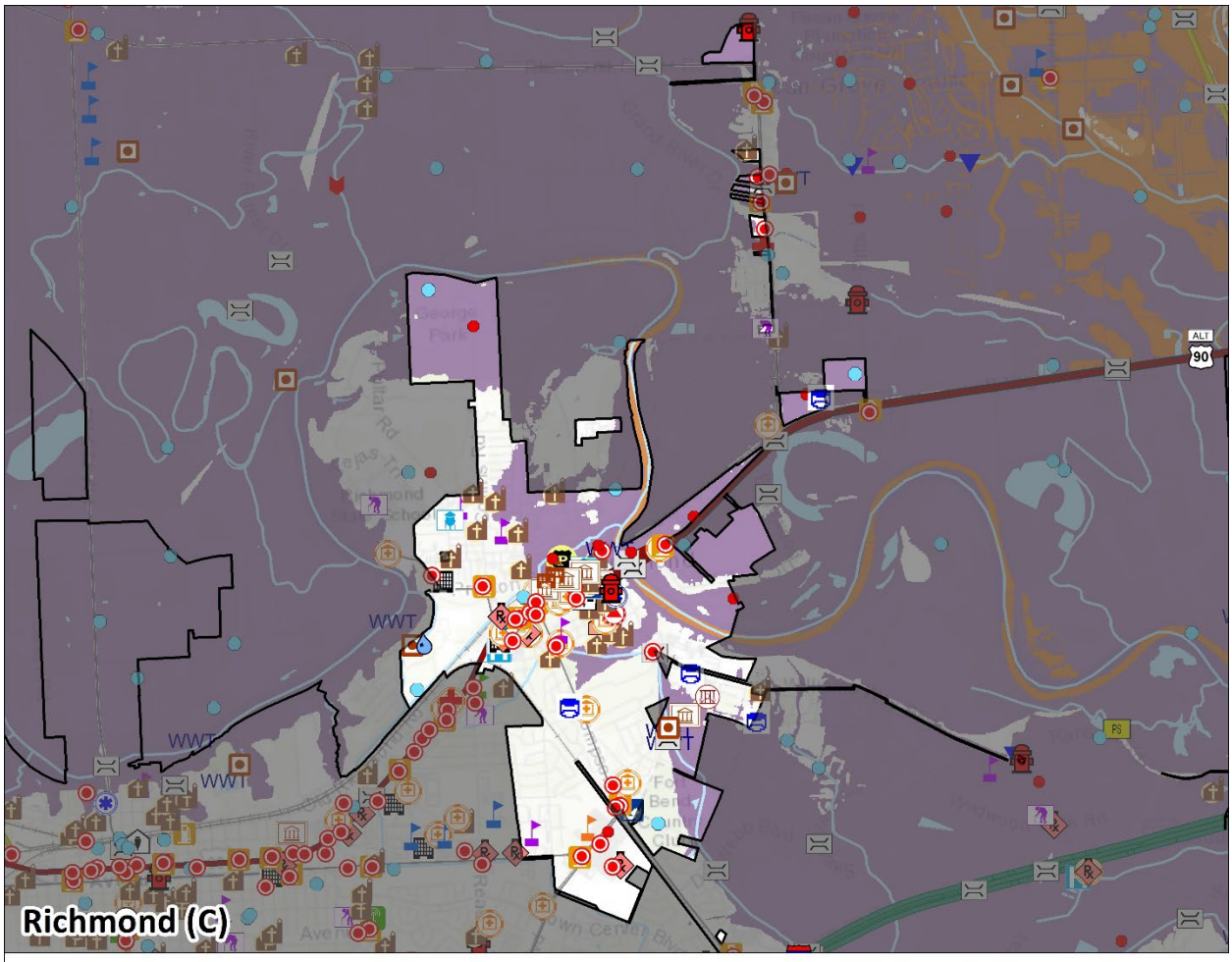


9.12.6 Jurisdictional Risk Assessment

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 Richmond'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 Richmond has significant exposure. The maps also show the location of potential new developments, where available.

Figure 9.12-2. City of Richmond Hazard Area Extent and Location Map-Dam Inundation



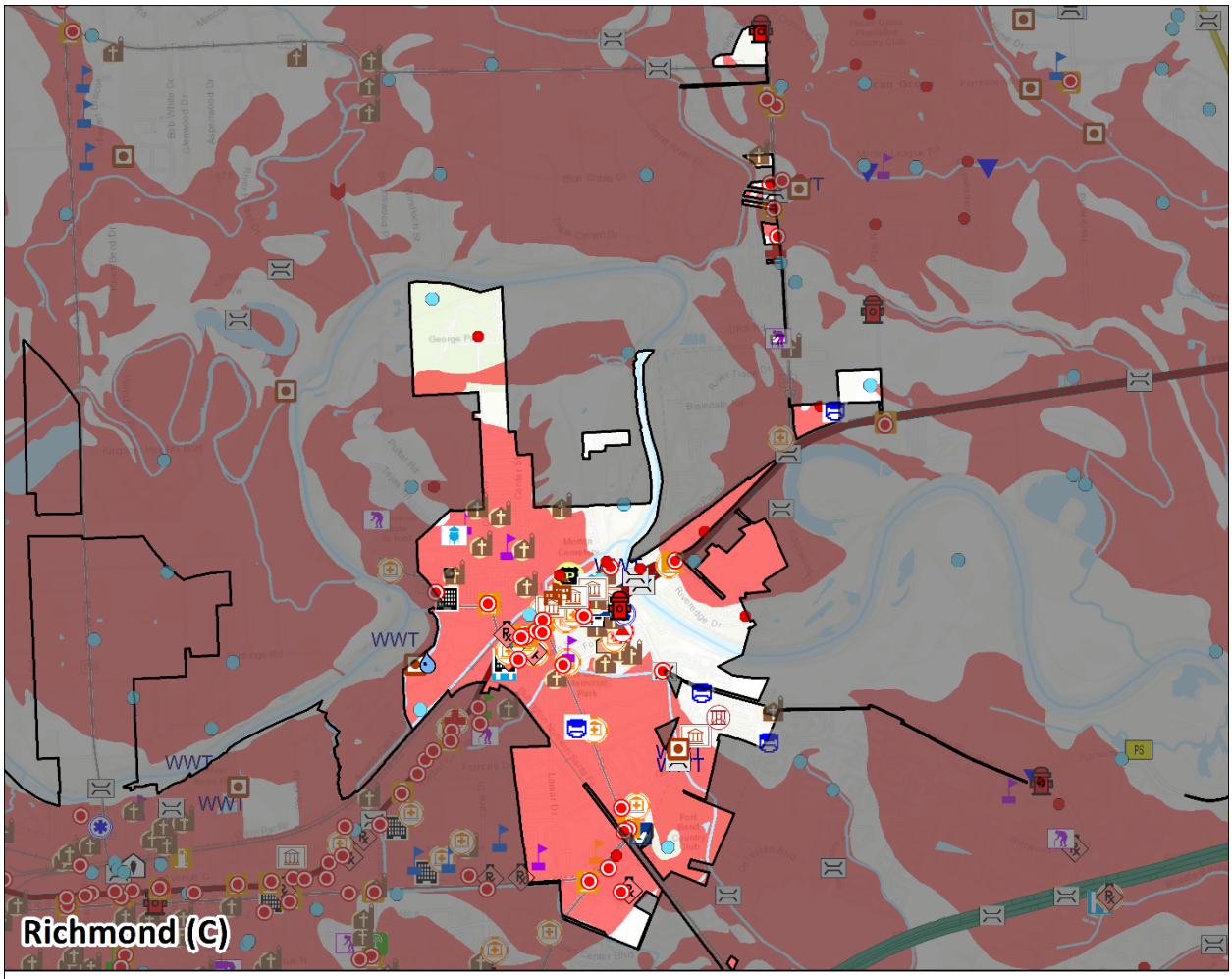
- Airport
- Alternative/Specialized Education
- Bridge
- Bus Station
- Cellular Transmission
- Church
- Community Center
- Correctional Facility
- Dam
- EMS Station
- EOC
- Electric Power
- Fire Station
- Gas Station
- Government Office
- Hazardous Materials
- Hospital
- Library
- Major Employer
- Medical Clinic
- Municipal Hall
- Museum
- Outfall
- Petroleum Storage Tank
- Pharmacy
- Police Station
- Post-Secondary Education
- Potable Water Facility
- Potable Water Pump Station
- Potable Water Tank
- Potable Water Tower
- Potable Water Well
- 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
- WWT Wastewater Treatment Plant
- Water Treatment Facility
- County Boundary
- Interstate
- U.S. Highway
- State Highway
- Toll Road
- County Road
- Railroad
- Waterbody
- Barker Reservoir
- Kitty Hollow Dam
- Lake Sommerville

Miles
0 0.5 1

Data Sources: U.S. Geological Survey, National Geospatial Program 2022; Texas Department of Transportation 2022; U.S. Army Corp of Engineers 2023

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

Figure 9.12-3. City of Richmond Hazard Area Extent and Location Map- Expansive Soils



- Airport
- Alternative/Specialized Education
- Bridge
- Bus Station
- Cellular Transmission
- Church
- Community Center
- Correctional Facility
- Dam
- EMS Station
- EOC
- Electric Power
- Fire Station
- Gas Station
- Government Office
- Hazardous Materials
- Hospital
- Library
- Major Employer
- Medical Clinic
- Municipal Hall
- Museum
- Outfall
- Petroleum Storage Tank
- Pharmacy
- Police Station
- Post-Secondary Education
- Potable Water Facility
- Potable Water Pump Station
- Potable Water Tank
- Potable Water Tower
- Potable Water Well
- 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
- WWT Wastewater Treatment Plant
- Water Treatment Facility
- County Boundary
- Interstate
- U.S. Highway
- State Highway
- Toll Road
- County Road
- Railroad
- Waterbody

Expansive Soils Hazard Area

- Linear Extensibility >6%

Miles
0 0.475 0.95

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 9.12-4. City of Richmond Hazard Area Extent and Location Map- Flood

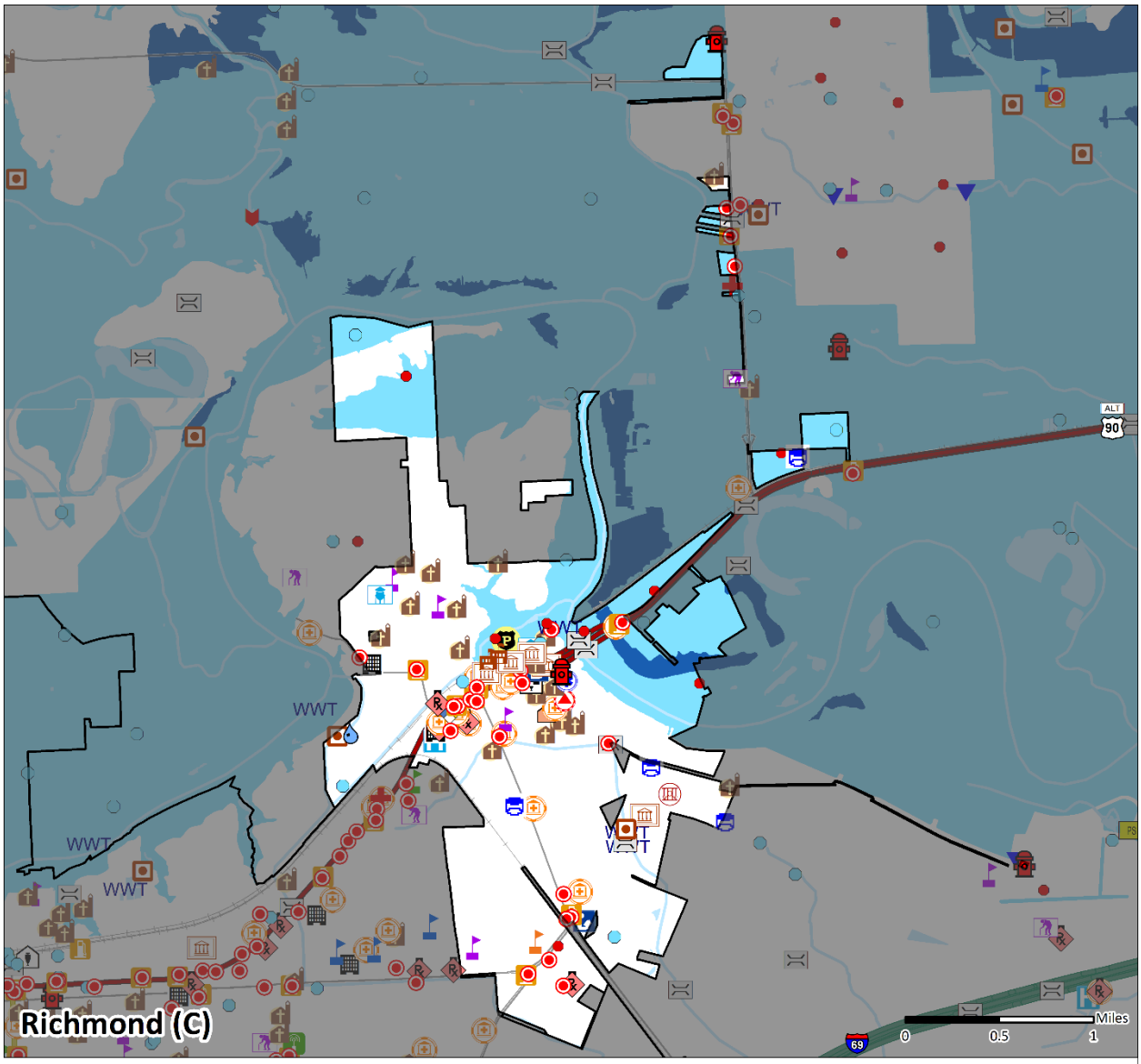


Figure 9.12-5. City of Richmond Hazard Area Extent and Location Map- Inland Erosion

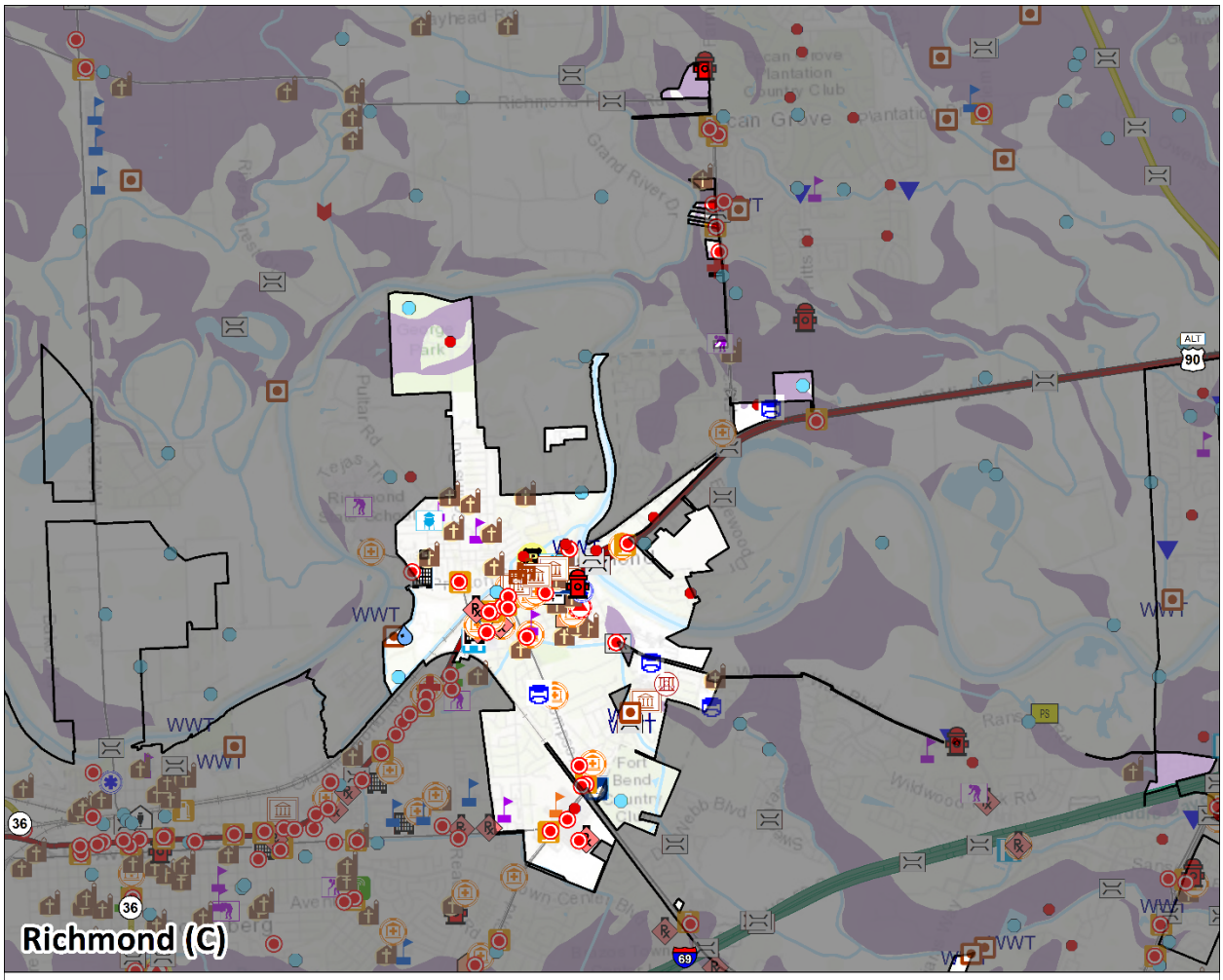
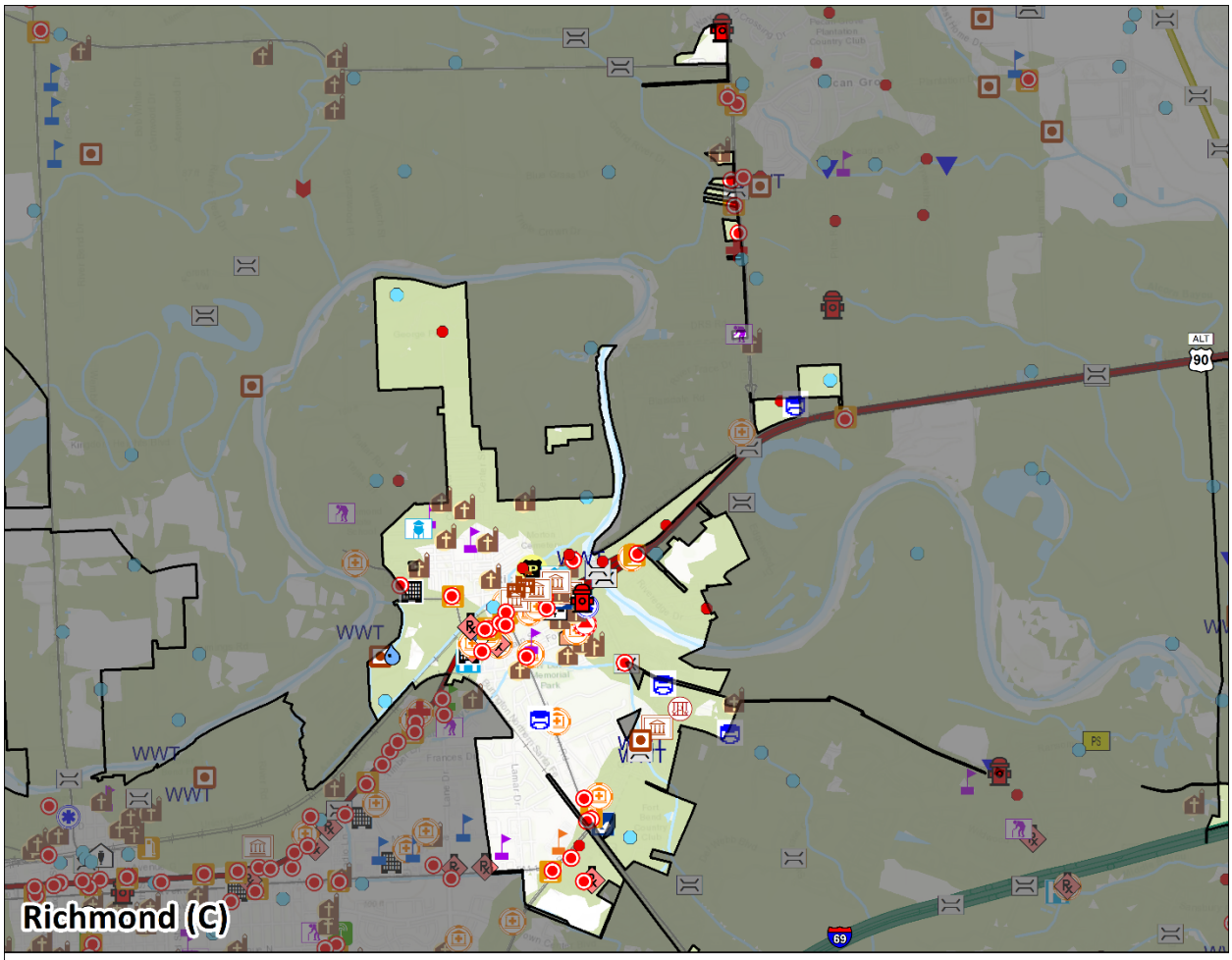


Figure 9.12-6. City of Richmond Hazard Area Extent and Location Map-Wildfire



- Airport
- Alternative/Specialized Education
- Bridge
- Bus Station
- Cellular Transmission
- Church
- Community Center
- Correctional Facility
- Dam
- EMS Station
- EOC
- Electric Power
- Fire Station
- Gas Station
- Government Office
- Hazardous Materials
- Hospital
- Library
- Major Employer
- Medical Clinic
- Municipal Hall
- Museum
- Outfall
- Petroleum Storage Tank
- Pharmacy
- Police Station
- Post-Secondary Education
- Potable Water Facility
- Potable Water Pump Station
- Potable Water Tank
- Potable Water Tower
- Potable Water Well
- 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
- WWT Wastewater Treatment Plant
- Water Treatment Facility
- County Boundary
- Interstate
- U.S. Highway
- State Highway
- Toll Road
- County Road
- Railroad
- Waterbody

Wildfire Hazard Area

- Low Threat
- Moderate Threat

Miles
0 0.5 1

Data Sources: U.S. Geological Survey, National Geospatial Program 2022; Texas Department of Transportation 2022; Texas A&M Forest Service 2022

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

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 Richmond'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 Richmond experienced during hazard events since the last HMP update. Information provided in the table below is based on reference material or local sources.

Table 9.12-13. 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	$661,815
July 25-31, 2020	EM-3530 – Hurricane Hanna	Yes	Hurricane-force winds resulted in a significant number of downed trees and utility lines.	While the County was impacted by this event, the City did not document significant damages or losses.
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.	While the County was impacted by this event, the City did not document significant damages or losses
September 12-18, 2021	EM-3572 – Hurricane Nicholas	Yes	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.	While the County was impacted by this event, the City did not document significant damages or losses
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.	$56,577

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 Richmond'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 the 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 Richmond. The City of Richmond 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.

During the review of the hazard/vulnerability risk ranking, the City of Richmond indicated the following:

- Extreme Temperature – The City adjusted the ranking to high. The City is concerned w/ climate change.
- Geologic Hazards – The City adjusted the ranking to medium. The City has not had an incident in years.
- Wildfire – The City adjusted the ranking to medium due to drought conditions and the amount of undeveloped land located throughout the municipality.

Table 9.12-14. Hazard Ranking Input

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

Critical Facilities

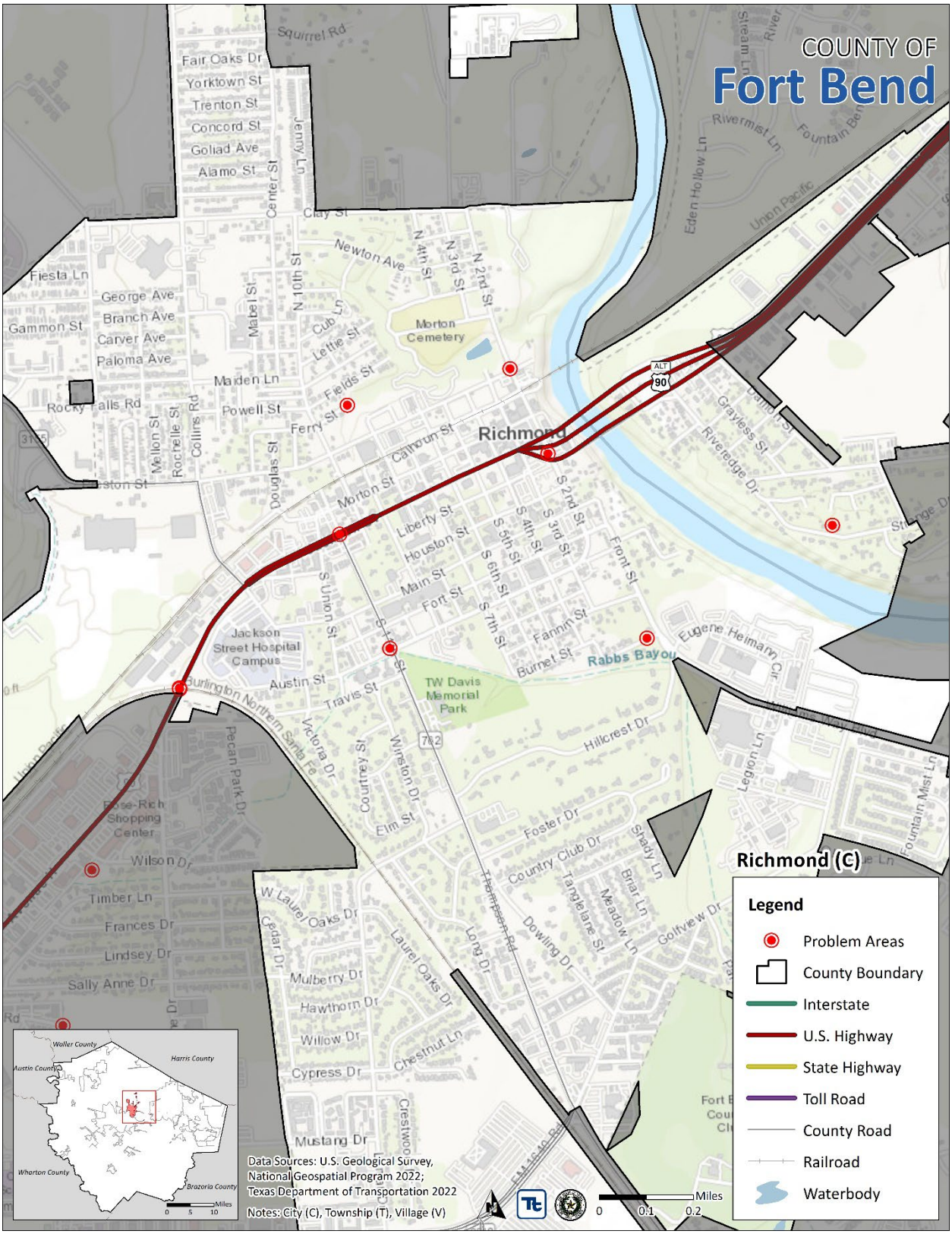
The table below identifies the number of critical facilities and community lifelines in the community located in hazard areas. The community reviewed the list of facilities and lifelines to determine appropriate mitigation measures for the facilities, where appropriate. Refer to Section 4.3 (Hazard Profiles)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

Table 9.12-15. Potential Flood Losses to Critical Facilities

Jurisdiction	1-Percent Annual Chance Flood Event Hazard Area		Wildfire Hazard Area – Moderate Risk		Inland Erosion (K-Factor: >= 0.49) Hazard Area		Expansive Soils (Linear Extensibility >6%) Hazard Area		Dam Inundation Hazard Area - Barker Reservoir Dam Inundation Area		Dam Inundation Hazard Area - Lake Sommerville Dam Inundation Area		Dam Inundation Hazard Area - Kitty Hollow Dam Inundation Area	
	Critical Facilities	Lifelines	Critical Facilities	Lifelines	Critical Facilities	Lifelines	Critical Facilities	Lifelines	Critical Facilities	Lifelines	Critical Facilities	Lifelines	Critical Facilities	Lifelines
Richmond (C)	21	21	0	0	8	8	72	63	0	0	35	33	0	0

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

Figure 9.12-7. City of Richmond Extent and Location Map-Problem Areas



Identified Issues

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

- During river rising events, North Second Street is inundated with water making it impassable to vehicular traffic. North Second is a direct emergency route for Fire Police and EMS.
- During river rising and/or flood events, the lift station at Greenwood becomes inundated and inoperable.
- Residents may be unaware or underinformed about potential hazards within the community in which they live due to lack of internet or technical knowledge/smart devices.
- Richmond, like all other cities, are susceptible to all types of pathogens and diseases that are undetectable until someone becomes infected. Some of these diseases can be highly contagious and could infect a large portion of the population.
- Many residents may not have proper heating and/or cooling equipment or they may not have access to temperature-controlled facilities.
- There are some areas in the City that may have an excess amount of potential fuels that could help ignite a wildfire. The City of Richmond has not had a wildfire in many years, however, the potential is always there, especially in the undeveloped areas of the City.
- Drought, land subsidence and infrastructure fortification. Solution: Initiate upgrades to at-risk structures and/or infrastructure to include structurally fortifying at-risk infrastructure, integrating increased thermal insulation, impact resistant film or glass, surge protection systems and wind resistant windows and doors.
- The areas of Riveredge Drive south of Edgewood Drive, 800 block Ferry Street, and Rabbs Bayou - Wheaton Street at Richmond Pkwy flood during major river rising events impacting private residences and roadways.
- These areas experience excessive ponding during heavy rains, US Hwy 90A at South Second Street, US Hwy 90A at South Eleventh (FM 762), US Highway 90A at Underpass, and Austin at Thompson Hwy (FM 762). In many cases the roadways must be closed and the underpass Floods during heavy rain events - Road access to the area is often hampered. Avenue H at the Railroad Underpass at Lane Drive Floods during heavy rain events - Road access to the area is impacted.
- 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.

9.12.7 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.

Table 9.12-16. Status of Previous Mitigation Actions

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 complete the action, should the action be included in the 2023 HMP (i.e., there is still a need, this is still a priority)?		
			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.
Pursue acquisition, elevation or floodproofing projects and structural solutions to flooding for the 11 repetitive loss structures.	City of Richmond Public Works	Complete	No	-	-
Promote flood insurance.	City of Richmond Engineering	Ongoing	No	-	City of Richmond Communications Division
Join the NFIP's Community Rating System (CRS).	City of Richmond Engineering	In Progress	No	-	-
Increase public awareness of hazard mitigation.	City of Richmond OEM	Ongoing	No	-	-
Ensure that the City has adequate evacuation plans and notification procedures in place.	City of Richmond OEM, Police	Ongoing	No	-	-
Wildfire hazard areas study	City of Richmond Fire Dept.	Ongoing	No	-	-
Monitor drought conditions	City of Richmond Water Dept.	Ongoing	No	-	City of Richmond Public Works
Public information campaigns	City of Richmond OEM	Ongoing	No	-	-
Evaluate the risks presented by excessive heat and humidity, especially in terms of high-risk populations such as the elderly/low-income.	City of Richmond OEM	Ongoing	No	-	-
In cooperation with County and State officials, ensure that high-risk populations are adequately addressed in response plans that are related to excessive heat risks.	City of Richmond OEM	Ongoing	No	-	-
Review plans and resources to address risk posed by snow and ice hazards during winter storms.	City of Richmond Public Works, OEM	Ongoing	No		City of Richmond Public Works, OEM
Various mitigation actions to reduce wildfire risk	City of Richmond Fire Dept.	Ongoing	No	-	-

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 complete the action, should the action be included in the 2023 HMP (i.e., there is still a need, this is still a priority)? 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.
Upgrades to at-risk structures and higher standards for new structures	City of Richmond Engineering, Public Works	Ongoing	Yes		City of Richmond Engineering, Public Works
Complete a detailed structural/engineering survey of Richmond public facilities to ensure their soundness with respect to resisting the effects of high winds, extreme roof loading from snow or ice, and hail. Test soil for traits of expansive soil. Establishes basis of decisions about any additional actions to mitigate risk.	City of Richmond Public Works	Complete	No		
Understanding dam/levee risks	City of Richmond Engineering	Complete	No		
Evacuation plans	City of Richmond OEM	Choose an item.	No		

Additional Mitigation Efforts

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

- Upper Rabbs Bayou Drainage Improvements – General Land Office Flood Mitigation Grant to improve drainage for Rabbs Bayou from the Richmond/Rosenberg City limits near Victoria Drive through Freeman Town Park. Project will mitigate flooding along Austin Street. City of Richmond Public Works is managing the project
- Elevate North Second Street - General Land Office Flood Mitigation Grant to prevent Brazos River flooding Lake Richmond, Richmond Police Department and Wessendorff Park. Elevating North Second Street will create a barrier to prevent the Brazos River from flooding when it reaches flood stage. City of Richmond Public Works is managing the project
- Elevating/relocating sanitary sewer lift stations- General Land Office Flood Mitigation Grant to prevent flooding sanitary sewer facilities in the flood plain in North Richmond and East of the Brazos River. City of Richmond Public Works is managing the project
- North Richmond Drainage Improvement Project – Project will include underground storm drainage infrastructure from Clay at Collins, east on Clay to Second St, down Second St and outfall into the Brazos River. Project will mitigate flooding in North Richmond. City of Richmond Public Works is managing the project.

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 9.12-17. Analysis of Mitigation Actions by Hazard and Category

	FEMA				CRS					
Hazard	**LPR**	**SIP**	**NSP**	**EAP**	**PR**	**PP**	**PI**	**NR**	**SP**	**ES**
Dam/Levee		X		X			X		X	
Disease Outbreak			X					X		
Drought		X		X			X		X	
Extreme Temperature		X		X			X		X	
Flood		X		X			X		X	
Geologic Hazards		X		X			X		X	
Hurricane/Tropical Storms		X		X			X		X	
Severe Weather		X		X			X		X	
Tornado		X		X			X		X	
Wildfire		X	X	X			X	X	X	
Winter Storm				X			X			

Note: Mitigation categories are described below the Mitigation Initiatives.

The table below summarizes the specific mitigation initiatives the City of Richmond 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 9.12-18. 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-Richmond-001	North Second Mitigation	**Problem**: During river rising events, North Second Street is inundated with water making it impassable to vehicular traffic. North Second is a direct emergency route for Fire Police and EMS. **Solution**: The City will complete an engineering study to determine next steps in elevating North Second Street. Once the study is complete, the City will seek funding to begin elevating the roadway which will protect infrastructure and allow emergency personnel to access this roadway during a disaster.	Dam and Levee Failure; Flood; Hurricane/Tropical Storm; Severe Weather	2, 3	Within two years	Public Works	BRIC and HMGP; TX Local Government Projects Program	Allows the roadway to stay open for all emergency traffic during events. This will also reduce the risk to certain areas of the City from being inundated.	$5 Million	High	SIP	SP
2023-Richmond-002	Lift station elevation	**Problem**: During river rising and/or flood events, the lift station at Greenwood becomes inundated and inoperable. **Solution**: By raising the lift station, the City may continue providing services without interruption during flood events. The station will be elevated to the City's requirements for structural elevations.	Dam and Levee Failure; Flood; Hurricane/Tropical Storm; Severe Weather	2, 5	Three years	Public Works	FMA, BRIC, or HMGP; City Budget	Being able to continue uninterrupted services.	$2 million	High	SIP	SP
2023-Richmond-003	Public Outreach	**Problem**: Residents may be unaware or underinformed about potential hazards within the community in which they live due to lack of internet or technical knowledge/smart devices. **Solution**: Continue to provide information on all web-based platforms. Send informational flyers along with water bills in the mail. Post information at City facilities.	Dam and Levee Failure; Drought; Extreme Temperature; Flood; Geologic; Hurricane/Tropical Storm; Disease Outbreak; Severe Weather; Tornado; Wildfire; Winter Weather	1, 2, 3, 4, 5	1 year	OEM	City Budget	This will assist in getting more of the citizens informed about potential hazards that could occur and how to react if they do occur.	$10,000	High	EAP	PI

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-Richmond-004	PPE Storage	**Problem**: Richmond, like all other cities, are susceptible to all types of pathogens and diseases that are undetectable until someone becomes infected. Some of these diseases can be highly contagious and could infect a large portion of the population. **Solution**: Stockpile PPE kits for distribution during an outbreak event. PPE will include face masks, face shields, gowns, gloves, eye protection, hand sanitizer, and any other essential items needed during a disease outbreak.	Disease Outbreak	1, 2, 3, 5	1 year	OEM	HMGP, City Budget	It would allow the City to help reduce the number of infect citizens by providing PPE in a timely manner.	$250,000	Medium	NSP	NR
2023-Richmond-005	Warming/Cooling Centers	**Problem**: Many residents may not have proper heating and/or cooling equipment or they may not have access to temperature-controlled facilities. **Solution**: Working with local businesses, churches and schools, the City will identify facilities to use as warming/cooling centers for residents. The City will create MOUs with the facility owners to allow them to access the facilities when needed to serve as heating/cooling centers.	Extreme Temperature; Winter Weather	1, 2, 3, 5	1 year	OEM	City Budget	This will help reduce the risk to our citizens during extreme temperatures by providing them a safe place to go to get out of the weather.	$10,000	High	SIP	SP
2023-Richmond-006	Reduce exposure and vulnerability	**Problem**: There are some areas in the City that may have an excess amount of potential fuels that could help ignite a wildfire. The City of Richmond has not had a wildfire in many years, however, the potential is always there, especially in the undeveloped areas of the City. **Solution**: On a case by case basis, develop and initiate mitigation actions to reduce the wildfire and brush fire risk by creating fire breaks. Actions may include informing property owners of appropriate actions, clearing vegetation and wildfire fuels.	Wildfire	1, 2, 3, 4, 5,	5 years	Fire Department	Staff Time	Cost-effective, as measures tend to be inexpensive and prevent fires.	No additional cost	Medium	NSP	NR

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-Richmond-007	Reduce Exposure and Vulnerability to Natural Hazards	**Problem**: Drought, land subsidence and infrastructure fortification. Solution: Initiate upgrades to at-risk structures and/or infrastructure to include structurally fortifying at risk infrastructure, integrating increased thermal insulation, impact resistant film or glass, surge protection systems and wind resistant windows and doors. **Solution**: Integrate higher levels of soil compaction standards, foundation supports and mandate freeboard for new development.	Drought; Extreme Temperature; Flood; Geologic; Hurricane/Tropical Storm; Severe Weather; Tornado; Wildfire; Winter Weather; Dam and Levee Failure	1, 2, 3, 5	One to two years per project	City Engineer	Locally funded, HMGP and FMA	Infrastructure will be hardened and capable of withstanding many natural disasters and continue to operate without interruption.	$10,000 - $1,000,000	Medium	SIP	SP
2023-Richmond-008	Bravos River Flood Mitigation	**Problem**: The areas of Riveredge Drive south of Edgewood Drive, 800 block Ferry Street, and Rabbs Bayou - Wheaton Street at Richmond Pkwy flood during major river rising events impacting private residences and roadways. **Solution**: Identify river bank areas most vulnerable to breaches for additional fortification measures; elevate homes and roadways at risk.	Flood	2 and 3	2 years	City Engineer	BRIC, HMGP, FMA	The Brazos River will not flood as much, and the properties nearby will not be flooded as often.	Engineering Study: $5,000	High	SIP	SP
2023-Richmond-009	Stormwater Flooding Study	**Problem**: These areas experience excessive ponding during heavy rains, US Hwy 90A at South Second Street, US Hwy 90A at South Eleventh (FM 762), US Highway 90A at Underpass, and Austin at Thompson Hwy (FM 762). In many cases the roadways must be closed and the underpass Floods during heavy rain events - Road access to the area is often hampered. Avenue H at the Railroad Underpass at Lane Drive Floods during heavy rain events - Road access to the area is impacted. **Solution:** Inspect conveyance structures for obstructions, increase quantity of stormwater detained and conveyed, and identify	Flood	2 and 3	2 years	City Engineer	BRIC HMGP, FMA	Roadways will not flood allowing for evacuation and emergency access during storm events.	$10,000	High	SIP	SP

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
		nonstructural means of conveying stormwater allowing for percolation.										
2023-Richmond-010	Substantial Damage Management Plan	**Problem:** 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. **Solution:** The City will develop a Substantial Damage Management Plan, following the six-step planning process in 2021 Developing a Substantial Damage Management Plan (https://crsresources.org/files/500/developing_subst_damge_mgmt_plan.pdf). This plan will outline responsibilities for Substantial Damage determinations, determining market value, and permit approval processes following a disaster event.	Dam/Levee Failure, Drought, Extreme Temperature, Flood, Geologic Hazards, Hurricane/Tropical Storm, Severe Weather, Tornado, Wildfire, Winter Weather	2, 4	Within 5 years to develop the plan; ongoing to maintain and update the plan	Floodplain Administrator, Public Works, OEM, Construction Department	City Budget	This plan will provide a process in making Substantial Damage Determinations and allow the municipality to make these determinations and meet NFIP requirements more quickly.	< $5,000	High	LPR	ES, PR

**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:

CRS	*Community Rating System*
FEMA	*Federal Emergency Management Agency*
HMA	*Hazard Mitigation Assistance*
N/A	*Not applicable*
NFIP	*National Flood Insurance Program*

Potential FEMA HMA Funding Sources:

FMA	*Flood Mitigation Assistance Grant Program*
HMGP	*Hazard Mitigation Grant Program*
BRIC	*Building Resilient Infrastructure and Communities Program*

Timeline:

The time required for completion of the project upon implementation.

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or 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 man-made 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 9.12-19. 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-Richmond-001	North Second Mitigation	1	1	1	1	1	1	1	1	-1	1	1	1	1	1	12	High
2023-Richmond-002	Lift station elevation	1	1	1	1	1	1	0	1	-1	1	1	1	1	1	11	High
2023-Richmond-003	Public Outreach	1	1	1	0	1	1	1	1	-1	1	1	1	1	1	11	High
2023-Richmond-004	PPE Storage	1	0	1	0	1	1	1	0	0	1	0	1	1	0	8	Medium
2023-Richmond-005	Warming/Cooling Centers	1	0	1	1	1	1	1	1	-1	0	1	1	1	0	9	High
2023-Richmond-006	Reduce exposure and vulnerability	1	1	1	1	1	1	1	1	-1	1	1	1	1	1	12	High
2023-Richmond-007	Reduce Exposure and Vulnerability to Natural Hazards	1	1	1	1	1	1	1	1	-1	0	1	1	1	1	11	High
2023-Richmond-008	Bravos River Flood Mitigation	1	1	1	1	0	0	1	1	0	1	0	1	1	0	9	High
2023-Richmond-009	Stormwater Flooding Study	1	1	1	1	0	0	1	1	0	1	0	1	1	1	10	High
2023-Richmond-010	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).