JEFFERSON COUNTY
HAZARD MITIGATION ACTION PLAN

UPDATE 2023

March 6th, 2023 - March 5th, 2028

Maintaining a Safe, Secure, and Sustainable Community

SETRPC
SOUTH EAST TEXAS REGIONAL PLANNING COMMISSION

H2O PARTNERS

For more information, visit our website at:

co.jefferson.tx.us

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FEMA Region 6
800 N. Loop 288
Denton, TX 76209

FEMA

March 6, 2023

Josh Davies, State Hazard Mitigation Officer
Texas Division of Emergency Management
P.O. Box 285
Del Valle, Texas 78617-9998

RE: Additional Approval to the Jefferson County, Texas Multi-Jurisdiction Hazard Mitigation Plan
Funding Source: HMGP; FEMA-DR4466-DR-TX; 0006

Dear Mr. Davies:

This office has concluded its review of the referenced plan, in conformance with the Final Rule on Mitigation Planning (44 CFR § 201.6). We are pleased to provide our approval of this new jurisdiction in meeting the criteria set forth by this Agency. By receiving this approval, the additional adopting jurisdictions, as well as the attached list of approved plan participants, retain eligibility for the Hazard Mitigation Assistance grants. This five-year period is concurrent with the original approval of this plan, which was issued on March 9, 2023 and will expire on March 8, 2028.

This approval does not demonstrate approval of projects contained in the plan. This office has provided the enclosed Local Hazard Mitigation Planning Tool with reviewer's comments, to further assist the community in refining the plan going forward. Please advise the referenced participants of this approval.

If you have any questions, please contact David Freeborn, HM Community Planner, at (940) 898-5323.

Sincerely,

Ronald C. Wanhanen
Chief, Risk Analysis Branch

Enclosure: Approved Participants

cc: Marty Chester, R6-MT-HM

Approved Participants

Attached is the list of approved participating governments included in the March 6, 2023 review of the referenced Hazard Mitigation plan.

	Community Name
1)	Beaumont city
2)	Bevil Oaks city
3)	China city
4)	Groves city
5)	Jefferson County
6)	Lower Neches Valley Authority
7)	Nederland city
8)	Nome city
9)	Port Arthur city
10)	Port Neches city
11)	Port of Beaumont Navigation District
12)	Port of Port Arthur Navigation District
13)	South East Texas Regional Planning Commission
14)	Taylor Landing city

LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA's evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan's strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction: Jefferson County	**Title of Plan:** Jefferson County Hazard Mitigation Action Plan Update 2022: Maintaining a Safe, Secure, and Sustainable Community	**Date of Plan:** Draft: July 2022
Local Point of Contact: Mike White	**Address:** 1149 Pearl St. Beaumont, TX, 77701	
Title: EMC		
Agency: Jefferson County Office of Emergency Management		
Phone Number: 409-835-8757	**E-Mail:** mwhite@co.jefferson.tx.us	

State Reviewer:	**Title:**	**Date:**

FEMA Reviewer: Doray Hill	**Title:** Community Planner	**Date:** 3/6/2023
Date Received in FEMA Region 6	3/6/2023	
Plan Not Approved		
Plan Approvable Pending Adoption		
Plan Approved	3/6/2023	

LOCAL MITIGATION PLAN REVIEW TOOL

SECTION 1: REGULATION CHECKLIST

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been 'Met' or 'Not Met.' The 'Required Revisions' summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is 'Not Met.' Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST **Regulation (44 CFR 201.6 Local Mitigation Plans)**	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	(pdf pages) P 8-16	X	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	P 22-25, 840-844, 886-911	X	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	P 22-26, 845-855, 886-911	X	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	P 17-22	X	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	P 823-824	X	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating, and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	P 817-824	X	
ELEMENT A: REQUIRED REVISIONS			

1. REGULATION CHECKLIST **Regulation (44 CFR 201.6 Local Mitigation Plans)**	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all-natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	P 37-39, 42-209	X	
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	P 40-41, 45-211	X	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	P 41, 48-212	X	

B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	P 83-84	X	
ELEMENT B: REQUIRED REVISIONS			

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	P 15-16, 912-916	X	
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	P 82-83, 912-916	X	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	P 213-215	X	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	P 493-816	X	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction)? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	P 17-18, 491-816	X	
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	P 18-22, 817-821	X	
ELEMENT C: REQUIRED REVISIONS **C2:** Page 81 says that all jurisdictions in Jefferson County are participating in the NFIP, and the Beaumont has adopted higher standards. However, on pages 913-916 the plan shows China and Beaumont to not have floodplain ordinances or a floodplain administrator. To be in good standing with eh NFIP each jurisdiction must show three things: 1.) the participants adoption of a floodplain ordinance, 2.) regulating development in the floodplain, 3.) and having appointed a floodplain administrator for their community The plan must clarify which jurisdictions are in the NFIP. If China and Beaumont are participating, the plan must either show that they have these or must provide a process to bring themselves into compliance. Revised Capability Assessment Section to confirm NFIP information for City of China.			

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			

LOCAL MITIGATION PLAN REVIEW TOOL

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	P 40-41	**X**	
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	P 216-490	**X**	
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	P 213	**X**	
ELEMENT D: REQUIRED REVISIONS			
ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))		**N/A**	
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))			**X**
ELEMENT E: REQUIRED REVISIONS **E2.** Once all Requirements have been met, the jurisdictions must provide documentation demonstrating that the plan has been adopted.			
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (optional for State reviewers only; not to be completed by FEMA)			
F1.			
F2.			
ELEMENT F: REQUIRED REVISION			

SECTION 2: PLAN ASSESSMENT

INSTRUCTIONS: The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically Risk MAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

Plan Strengths and Opportunities for Improvement is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

Resources for Implementing Your Approved Plan provides a place for FEMA to offer information, data sources and general suggestions on the overall plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.

LOCAL MITIGATION PLAN REVIEW TOOL

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Element A: Planning Process

Element B: Hazard Identification and Risk Assessment

Element C: Mitigation Strategy

Element D: Plan Update, Evaluation, and Implementation (Plan Updates Only)

B. Resources for Implementing Your Approved Plan

This section provides examples of possible resources plan implementation.

Ideas may be offered on moving the mitigation plan forward and continuing the relationship with key mitigation stakeholders such as the following:

- What FEMA assistance (funding) programs are available (for example, Hazard Mitigation Assistance (HMA)) to the jurisdiction(s) to assist with implementing the mitigation actions?
- What other Federal programs (National Flood Insurance Program (NFIP), Community Rating System (CRS), Risk MAP, etc.) may help with mitigation activities?
- What publications, technical guidance or other resources are available to the jurisdiction(s) relevant to the identified mitigation actions?
- Are there upcoming trainings/workshops (Benefit-Cost Analysis (BCA), HMA, etc.) to assist the jurisdictions(s)?
- What mitigation actions can be funded by other Federal agencies (for example, U.S. Forest Service, National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA) Smart Growth, Housing and Urban Development (HUD) Sustainable Communities, etc.) and/or state and local agencies?

FEMA Mitigation grants are available to eligible applicants. Search grants.gov for additional resources for implementing mitigation actions.

SECTION 3: MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)

INSTRUCTIONS: For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were 'Met' or 'Not Met,' and when the adoption resolutions were received. This Summary Sheet does not imply that a mini plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Requirements Met (Y/N)					
			A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
1	**Jefferson County**	County	Y	Y	Y	Y	Y	
2	**City of Beaumont**	City	Y	Y	Y	Y	Y	
3	**City of Bevil Oaks**	City	Y	Y	Y	Y	Y	
4	**City of China**	City	Y	Y	Y	Y	Y	
5	**City of Groves**	City	Y	Y	Y	Y	Y	
6	**City of Nederland**	City	Y	Y	Y	Y	Y	
7	**City of Nome**	City	Y	Y	Y	Y	Y	
8	**City of Port Arthur**	City	Y	Y	Y	Y	Y	
9	**City of Port Neches**	City	Y	Y	Y	Y	Y	
10	**City of Taylor Landing**	City	Y	Y	Y	Y	Y	
11	**Lower Neches Valley Authority**	Special District	Y	Y	Y	Y	Y	
12	**Port of Beaumont Navigation District**	Special District	Y	Y	Y	Y	Y	
13	**Port of Port Arthur Navigation District**	Special District	Y	Y	Y	Y	Y	
14	**South East Texas Regional Planning Commission**	Special District	Y	Y	Y	Y	Y	

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SECTION 1: INTRODUCTION

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BACKGROUND

Jefferson County is located in the Coastal Plain or Gulf Prairie region of extreme southeastern Texas. The Neches River forms its northeast boundary. Jefferson County is surrounded by the following counties: Hardin County to the north, Orange County to the northeast, Chambers County to the southwest, Liberty County to the northwest, and Cameron Parish, Louisiana to the east.

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

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

In 2005-2006, Jefferson County and the participating jurisdictions originally developed their Hazard Mitigation Action Plan (HMAP). Then in 2011, information about the planning area and hazard events were updated. In 2017, the South East Texas Regional Planning Commission (SETRPC) coordinated among Orange County, Hardin County, and Jefferson County to update each of their HMAP plans, and selected the consultant team of H2O Partners, Inc. to write and develop the HMAP Update 2017 for each of the three counties, including Jefferson County.

The Disaster Mitigation Act requires that hazard mitigation plans be reviewed and revised every five years to maintain eligibility for Hazard Mitigation Assistance (HMA) grant funding. Since FEMA approved the Jefferson County HMAP in 2006, and then approved updates in 2011 and 2017, the County began the process of developing a Hazard Mitigation Action Plan Update in order to maintain eligibility for grant funding within the five-year window. The SETRPC coordinated among Orange County, Hardin County, Jefferson County, and Jasper County to update each of their plans. The HMAP Update planning process provided an opportunity for

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

Jefferson County to evaluate successful mitigation actions and explore opportunities to avoid future disaster loss. The 2017 HMAP Update will expire in 2022, therefore the SETRPC and Jefferson County selected H2O Partners, Inc. to write and develop the 2022 HMAP Update, hereinafter titled "Jefferson County Hazard Mitigation Plan Update 2022: Maintaining a Safe, Secure, and Sustainable Community" (Plan or Plan Update). This is a multi-jurisdictional plan; the participating jurisdictions include: Jefferson County, City of Beaumont, City of Bevil Oaks, City of China, City of Groves, City of Nederland, City of Nome, City of Port Arthur, City of Port Neches, City of Taylor Landing, Lower Neches Valley Authority, Port of Beaumont Navigation District, Port of Port Arthur Navigation District, and the South East Texas Regional Planning Commission (SETRPC).

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

SCOPE

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

PURPOSE

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

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

Participating jurisdictions within Jefferson County, and planning participants identified eleven natural hazards to be addressed by the Plan Update. Additional hazards that have a very low risk or no risk to the planning area are included in Appendix A. The specific goals of the Plan Update are to:

- Provide a comprehensive update to the 2017 HMAP;
- Minimize disruption to participating jurisdictions within Jefferson County following a disaster;

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

AUTHORITY

The Plan is tailored specifically for participating jurisdictions within Jefferson County and plan participants including Planning Team members, stakeholders, and the general public who participated in the Plan Update development process. The Plan complies with all requirements promulgated by the Texas Division of Emergency Management (TDEM) and all applicable provisions of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Section 104 of the Disaster Mitigation Act of 2000 (DMA 2000) (P.L. 106-390), and the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004 (P.L. 108–264), which amended the National Flood Insurance Act (NFIA) of 1968 (42 U.S.C. 4001, et al). Additionally, the Plan complies with the Interim Final Rules for the Hazard Mitigation Planning and Hazard Mitigation Grant Program (44 CFR, Part 201), which specify the criteria for approval of mitigation plans required in Section 322 of the DMA 2000 and standards found in FEMA's "Local Mitigation Plan Review Guide" (October 2011), and the "Local Mitigation Planning Handbook" (March 2013). Additionally, the Plan is developed in accordance with FEMA's Community Rating System (CRS) Floodplain Management Plan standards and policies.

SUMMARY OF SECTIONS

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

Sections 4 through 15 present a hazard overview and information on individual natural hazards in the planning area. The hazards generally appear in order of priority based on potential losses to life and property, and other community concerns. For each hazard, the Plan Update presents a description of the hazard, a list of historical hazard events, and the results of the vulnerability and risk assessment process.

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

Several hazards that were included in the previous plans that have very low or no risk to the planning area are included in Appendix A and are updated with any occurrences that have arisen in the past five years. The list of planning team members and stakeholders is located in Appendix B. Public survey results are analyzed and presented in Appendix C. Appendix D contains a detailed list of critical facilities for the area. Appendix E contains information regarding workshops

and meeting documentation. Capability Assessment results for participating jurisdictions within Jefferson County are in Appendix F.[3]

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

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PLAN PREPARATION AND DEVELOPMENT

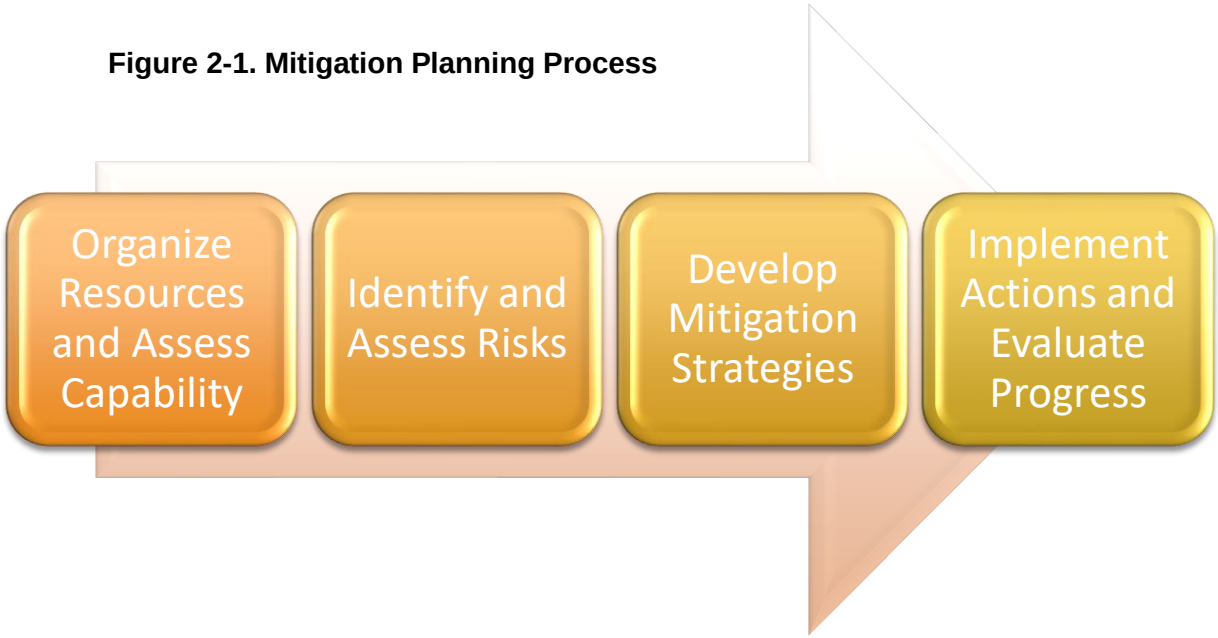
Hazard mitigation planning involves coordination with various constituents and stakeholders to develop a more disaster-resistant community. Section 2 provides an overview of the planning process including the identification of key steps and a detailed description of how stakeholders and the public were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

OVERVIEW OF THE PLAN

The South East Texas Regional Planning Commission (SETRPC) hired H2O Partners, Inc. (Consultant Team), to provide technical support and oversee the development of the Jefferson County Hazard Mitigation Action Plan Update 2022. The Consultant Team used the FEMA "Local Mitigation Plan Review Guide" (October 1, 2011), and the "Local Mitigation Planning Handbook" (March 2013) to develop the Plan Update. The overall planning process is shown in Figure 2-1 below.

SECTION 2: PLANNING PROCESS

Figure 2-1. Mitigation Planning Process



Jefferson County, participating jurisdictions, and the Consultant Team met in June 2021 to begin organizing resources, identify Planning Team members, and conduct a Capability Assessment.

PLANNING TEAM

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

Table 2-2 reflects the Advisory Planning Team, consisting of additional representatives from area organizations and departments from the participating jurisdictions within Jefferson County that participated throughout the planning process.

Table 2-1. Executive Planning Team

ORGANIZATION / DEPARTMENT	TITLE
SETRPC	Director of Homeland Security
SETRPC	Regional Emergency Planner
Jefferson County	Emergency Management Coordinator
City of Beaumont	Emergency Management Coordinator
City of Bevil Oaks	City Clerk
City of China	City Secretary
City of Groves	Fire Chief

ORGANIZATION / DEPARTMENT	TITLE
City of Nederland	Fire Chief
City of Nome	City Clerk
City of Port Arthur	Emergency Management Coordinator
City of Port Neches	Fire Chief / Marshall
City of Taylor Landing	Mayor
Lower Neches Valley Authority	Manager of Engineering
Port of Beaumont Navigation District	Director of Security and Emergency Management
Port of Port Arthur Navigation District	Executive Director / CEO

Table 2-2. Advisory Planning Team

ORGANIZATION / DEPARTMENT	TITLE
SETRPC	Contract and Financial Specialist
SETRPC	Program Specialist, 911 Network
SETRPC	Regional Emergency Planner
Jefferson County	County Engineer
Jefferson County	County Engineering Department Staff
Jefferson County	Deputy Emergency Management Coordinator
Jefferson County	Precinct 2 Commissioner
City of Beaumont	Deputy Emergency Management Coordinator
City of Beaumont	Grants Coordinator
City of Beaumont	Emergency Management Specialist
City of Bevil Oaks	Mayor
City of China	Mayor
City of Groves	Director of Public Works
City of Nederland	Assistant Fire Chief
City of Nederland	Chief of Police
City of Nederland	Sergeant

ORGANIZATION / DEPARTMENT	TITLE
City of Nome	Mayor
City of Port Arthur	Assistant City Manager
City of Port Arthur	City Engineer
City of Port Arthur	City Manager
City of Port Arthur	Deputy Emergency Management Coordinator
City of Port Arthur	Director of Public Works
City of Port Arthur	Planning and Zoning Senior Planner
City of Port Neches	City Manager
City of Port Neches	Deputy Emergency Management Coordinator / Director of Public Works
City of Port Neches	Economic Development Coordinator
City of Port Neches	Emergency Management Coordinator / Assistant Fire Chief
Lower Neches Valley Authority	Engineer
Port of Port Arthur Navigation District	Director of Accounting

Additionally, a Stakeholder Group was invited to participate in the planning process via e-mail. The Consultant Team, Planning Teams, and Stakeholder Group coordinated to identify mitigation goals, and develop mitigation strategies and actions for the Plan. Appendix B provides a complete listing of all participating Planning Team members and stakeholders from participating jurisdictions within Jefferson County by organization and title.

Based on results of completed Capability Assessment, participating jurisdictions within Jefferson County described methods for achieving future hazard mitigation measures by expanding existing capabilities. For example, several of the jurisdictions do not have a community wildfire protection plan in place. Other options for improving capabilities include the following:

- Establishing Planning Team members with the authority to monitor the Plan and identify grant funding opportunities for expanding staff.
- Identifying opportunities for cross-training or increasing the technical expertise of staff by attending free training available through FEMA and the Texas Division of Emergency Management (TDEM) by monitoring classes and availability through preparingtexas.org.
- Reviewing current floodplain ordinances for opportunities to increase resiliency such as modifying permitting or building codes.
- Developing ordinances that will require all new developments to conform to the highest mitigation standards.

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

The Planning Team developed hazard mitigation actions for mitigating risk from all of the hazards including potential flooding, hail, and extreme heat. The actions include but are not limited to drainage improvement projects, installing generators at critical facilities, and educating citizens to practice hazard mitigation techniques.

PLANNING PROCESS

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

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

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

KICKOFF WORKSHOP

The Kickoff Workshop was held on July 20, 2021 at the Orange County Expo Center/EOC. The initial workshop informed participating officials and key department personnel about how the planning process pertained to their distinct roles and responsibilities and engaged stakeholder groups including, but not limited to local emergency service districts (ESDs), the National Parks Conservation Association, the Baptist Hospital of South East Texas, and surrounding counties. In addition to the kickoff presentation, participants received the following information:

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

A risk ranking exercise was conducted at the Kickoff Workshop to get input from the Planning Team and stakeholders pertaining to various risks from a list of natural hazards affecting the planning area. Participants ranked hazards high to low in terms of perceived level of risk, frequency of occurrence, and potential impact.

SECTION 2: PLANNING PROCESS

HAZARD IDENTIFICATION

At the Kickoff Workshop, and through e-mail and phone correspondence, the Planning Team conducted preliminary hazard identification. The Planning Team in coordination with the Consultant Team reviewed and considered a full range of natural hazards. Once identified, the teams narrowed the list to significant hazards by reviewing hazards affecting the area as a whole, the 2018 State of Texas Hazard Mitigation Plan, and initial study results from reputable sources such as federal and state agencies. Based on this initial analysis, the teams identified a total of eleven natural hazards which pose a significant threat to the planning area.

RISK ASSESSMENT

An initial risk assessment for participating jurisdictions within Jefferson County was completed in November 2021 and results were presented to Planning Team members at the Risk Assessment Workshop held on November 18, 2021 at the Jasper County Annex (Expo) Building. At the workshop, the characteristics and consequences of each hazard were evaluated to determine the extent to which the planning area would be affected in terms of potential danger to property and citizens.

Property and crop damages were estimated by gathering data from the National Centers for Environmental Information (NCEI) and National Oceanic and Atmospheric Administration (NOAA). The assessment also examined the impact of various hazards on the built environment, including general building stock, critical facilities, lifelines, and infrastructure. The resulting risk assessment profiled hazard events provided information on previous occurrences, estimated probability of future events, and detailed the spatial extent and magnitude of impact on people and property. Each participant at the Risk Assessment Workshop was provided a risk ranking sheet that asked participants to rank hazards in terms of the probability or frequency of occurrence, extent of spatial impact, and the magnitude of impact. The results of the ranking sheets identified unique perspectives on varied risks throughout the planning area.

The assessments were also used to set priorities for hazard mitigation actions based on potential loss of lives and dollar losses. A hazard profile and vulnerability analysis for each of the hazards can be found in Sections 4 through 15.

MITIGATION REVIEW AND DEVELOPMENT

Developing the Mitigation Strategy for the Plan involved identifying mitigation goals and new mitigation actions. A Mitigation Workshop was held on January 27, 2022 at the Orange County Expo Center. In addition to the Planning Team, stakeholder groups were invited to attend the workshop. Regarding hazard mitigation actions, workshop participants emphasized the desire for flood and thunderstorm wind projects. Additionally, the participating jurisdictions were proactive in identifying mitigation actions to lessen the risk of all the identified hazards included in the Plan Update.

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

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

Specifically, the process involved:

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

Hazard mitigation actions identified in the process were made available to the Planning Team for review. The draft Plan Update was made available to the general public for review on the County's website, along with the participating jurisdictions' websites, with the chance to comment via sending an email.

REVIEW AND INCORPORATION OF EXISTING PLANS

REVIEW

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

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

appropriately rank the wildfire hazard, and to help identify potential grant opportunities. Materials from FEMA and TDEM were reviewed for guidance on Plan Update development requirements.

INCORPORATION OF EXISTING PLANS INTO THE HMAP PROCESS

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

Existing projects and studies were utilized as a starting point for discussing hazard mitigation actions among Planning and Consultant Team members. For example, the County has many mitigation projects in the planning phase, under construction, and also completed. These include home buyouts, drainage improvements, bridge upgrade and culvert upgrades. The City of Bevil Oaks has received a grant to elevate 23 homes and are currently in the process of raising 6 of them. The City of Nederland and installed generators for water treatment plant, wastewater treatment plant and lift stations, along with at the fire department, police department, EOC. The City of Nome is awaiting a grant for drainage work within the city. The City of Taylor Landing used Ike block grants to replace the sewer distribution and the city roads. The Lower Neches Valley Authority has floodproofing projects to Neches 1st Pump Station, BI 1st Pump Station, and WRTP. The Port of Port Arthur is presently and actively engaged on flood protection levee re-alignment design with the U.S. Army Corp of Engineers and local non-federal sponsor Jefferson County Drainage District 7. The Port also has a series of capital projects to partially place utilities underground to increase resiliency.

Additionally, policies and ordinances were reviewed by several of the participating jurisdictions. Other plans were reviewed, such as Emergency Operations Plan, to identify any additional mitigation actions. Finally, the 2018 State of Texas Hazard Mitigation Plan, developed by TDEM, was discussed in the initial planning meeting in order to develop a specific group of hazards to address in the planning effort. The 2018 State Plan was also used as a guidance document, along with FEMA materials, in the development of the Jefferson County Hazard Mitigation Action Plan Update 2022.

INCORPORATION OF THE HMAP INTO OTHER PLANNING MECHANISMS

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

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

A funding source has been listed for each identified hazard mitigation action and may be utilized to implement the action. An implementation time period has also been assigned to each hazard

mitigation action as an incentive and to determine whether actions are implemented on a timely basis.

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

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

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

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

Table 2-3 identifies types of planning mechanisms and examples of methods for incorporating the Plan into other planning efforts.

Table 2-3. Examples of Methods of Incorporation

Planning Mechanism	Incorporation of Plan
Annual Budget Review	Various departments and key personnel that participated in the planning process for participating jurisdictions within Jefferson County will review the Plan and mitigation actions therein when conducting their annual budget review. Allowances will be made in accordance with grant applications sought, and mitigation actions that will be undertaken, according to the implementation schedule of the specific action.
Capital Improvement Plans	Participating jurisdictions within Jefferson County have a Capital Improvement Plan (CIP) in place. Prior to any revisions to the CIP, County, City, and other departments will review the risk assessment and mitigation strategy sections of the HMAP, as limiting public spending in hazardous zones is one of

Planning Mechanism	Incorporation of Plan
	the most effective long-term mitigation actions available to local governments.
Comprehensive Plans	Participating jurisdictions within Jefferson County have Long-term Comprehensive Development Plans in place. Since comprehensive plans involve developing a unified vision for a community, the mitigation vision and goals of the Plan will be reviewed in the development or revision of a Comprehensive Plan.
Floodplain Management Plans	Floodplain management plans include preventative and corrective actions to address the flood hazard. Therefore, the actions for flooding and information found in Section 6 of this Plan Update discussing the people and property at risk to flood will be reviewed and revised when participating jurisdictions within Jefferson County update their management plans or develops new plans.
Grant Applications	The Plan will be evaluated by participating jurisdictions within Jefferson County when grant funding is sought for mitigation projects. If a project is not in the Plan Update, a Plan Revision may be necessary to include the action in the Plan.
Regulatory Plans	Currently, participating jurisdictions within Jefferson County have regulatory plans in place, such as Emergency Management Plans, Continuity of Operations Plans, Land Use Plans, and Evacuation Plans. The Plan Update will be consulted when County, City, and other departments review or revise their current regulatory planning mechanisms, or in the development of regulatory plans that are not currently in place.

Appendix F provides an overview of Planning Team members' existing planning and regulatory capabilities to support implementation of mitigation strategy objectives. Appendix F also provides further analysis of how each intends to incorporate hazard mitigation actions into existing plans, policies, and the annual budget review as it pertains to prioritizing grant applications for funding and implementation of identified hazard mitigation projects.

It should be noted for the purposes of the Plan Update that the HMAP has been used as a reference when reviewing and updating all plans and ordinances for the entire planning area, including all participating jurisdictions. The Emergency Management Plans developed for Jefferson County, City of Beaumont, City of China, City of Groves, City of Nederland, City of Nome, City of Port Arthur, City of Port Neches, City of Taylor Landing, Lower Neches Valley

Authority, Port of Beaumont, Port of Port Arthur and SETRPC are updated every 5 years and incorporates goals, objectives and actions identified in the mitigation plan.

PLAN REVIEW AND PLAN UPDATE

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

TIMELINE FOR IMPLEMENTING MITIGATION ACTIONS

Both the Executive Planning Team (Table B-1, Appendix B) and the Advisory Planning Team (Table B-2, Appendix B) will engage in discussions regarding a timeframe for how and when to implement each hazard mitigation action. Considerations include when the action will be started, how existing planning mechanisms' timelines affect implementation, and when the action should be fully implemented. Timeframes may be general, and there will be short, medium, and long-term goals for implementation based on prioritization of each action, as identified on individual Hazard Mitigation Action worksheets included in the Plan Update for participating jurisdictions within Jefferson County.

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

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

PUBLIC AND STAKEHOLDER INVOLVEMENT

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

The public was involved in the development of the Jefferson County Hazard Mitigation Action Plan Update 2022 at different stages prior to official Plan approval and adoption. Public input was sought using three methods: (1) open public meetings; (2) survey instruments; and (3) making the draft Plan Update available for public review on participating jurisdictions' websites.

The draft Plan Update was made available to the general public for review and comment on participating jurisdictions' websites. The public was notified at the public meetings that the draft

Plan Update would be available for review. No feedback was received on the draft Plan Update, although it was given on the public survey, and all relevant information was incorporated into the Plan Update. Public input was utilized to assist in identifying hazards that were of most concern to the citizens of the County and what actions they felt should be included and prioritized.

The Plan Update will be advertised and posted on Jefferson County and participating jurisdictions' websites upon approval from FEMA, and a copy will be kept at the SETRPC office and the County's Engineering office.

STAKEHOLDER INVOLVEMENT

Stakeholder involvement is essential to hazard mitigation planning since a wide range of stakeholders can provide input on specific topics and from various points of view. Throughout the planning process, members of community groups, local businesses, neighboring jurisdictions, schools, and hospitals were invited to participate in development of the Plan Update. The Stakeholder Group (Table B-3 in Appendix B, and Table 2-4, below), included a broad range of representatives from both the public and private sector and served as a key component in Jefferson County's outreach efforts for development of the Plan Update. Documentation of stakeholder meetings is found in Appendix E. A list of organizations invited to attend via e-mail is found in Table 2-4.

Table 2-4. Stakeholder Working Group

AGENCY	TITLE	PARTICIPATED
Baptist Hospital of South East Texas	Director of Administrative Facilities Management	
Baptist Hospital of South East Texas	Executive Director	
Baptist Hospital of South East Texas	Safety Office	
Baptist Hospital of South East Texas	Trauma Program Manager	
Batson Fire	Volunteer Fire Department	
Beaumont Public Health	PHEP Planner	X
Christus Health	Operations Manager	
Colonial Pipeline	General Representative	
Colonial Pipeline	Operations Manager	X
Consultant at Carroll and Blackman, Inc.	PE, Vice President	
Consultant at David Waxman	Engineering	
Consultant at MPTX Associates	Certified Floodplain Manager	
Consultant at Sabine River Authority	Technical Service Manager	
Consultant at Texas FFA Association	Regional Manager	

AGENCY	TITLE	PARTICIPATED
Department of Homeland Security	Advisor	
Department of Transportation	Director	
Environmental Protection Agency (EPA)	Regional Representative	
General Land Office (GLO)	Regional Representative	X
Hardin County ESD #5	Fire Chief	
Jasper-Newton County Health	Program Director	
Jefferson County Drainage District #7	General Laborer	
Jefferson County Drainage District #7	Supervisor	
Jefferson County ESD #3	Fire Chief	X
Jefferson County ESD #4	District Administrator	
Lamar University	Professor, Department of Industrial and Systems Engineering	
Local Emergency Planning Committee	Southeast Regional Representative	
Long-term Care Partnership (LTCP)	State Farm Representative	
National Parks Conservation Association	Consultant	
National Parks Conservation Association	Regional Director Texas & Oklahoma	X
National Oceanic and Atmospheric Administration (NOAA)	Regional Representative	
Orange County Economic Development Center	Executive Director	
Orange County ESD #2	VFD Chief	
Orange County Navigation and Port District	Executive Port Director	
Saratoga Fire	Volunteer Fire Department	
South East Texas Disaster Recovery Group	Representative	
South East Texas Ground Water Conservation Group	General Manager	
Texas Commission on Environmental Quality (TCEQ)	Outreach Coordinator	

AGENCY	TITLE	PARTICIPATED
Texas Division on Emergency Management (TDEM)	Regional Representative	
Texas A&M University (TAMU)	District Forester I, Forest Resource Development & Sustainable Forestry	
Texas A&M University (TAMU)	Professor, Department of Marketing and Commerce	
Texas A&M University (TAMU)	Texas A&M Agrilife County Extension Agent	
Texas Department of Public Safety (TDPS)	Telecommunication Division	
Texas Congress	District Director to Congressman	
Texas House District 19	Representative	
Texas House District 19	Representative	
Texas House District 21	Representative	
Texas House District 22	Representative	
Texas Senate	District Coordinator	
Texas Senate District 3	Senate	
Texas Senate District 4	Senate	
Thicket Fire	Volunteer Fire Department	
United Way	Beaumont Office Representative	
United Way	Orange County Office Representative	

Stakeholders and participants from neighboring communities that attended the Planning Team and public meetings played a key role in the planning process. For example, hurricane was one of the concerns to stakeholders, so participating jurisdictions included actions to identify and implement mitigation activities that would aid/enhance evacuations throughout the planning area.

PUBLIC MEETINGS

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

Public meetings were held on the following dates and locations:

- July 20, 2021, South East Texas Regional Planning Commission
- November 18, 2021, South East Texas Regional Planning Commission
- January 27, 2022, virtual via Microsoft Teams

PUBLIC PARTICIPATION SURVEY

In addition to public meetings, the Planning and Consultant Teams developed a public survey designed to solicit public input during the planning process from citizens and stakeholders and to obtain data regarding the identification of any potential hazard mitigation actions or problem areas. The survey was promoted by local officials and a link to the survey was posted on participating jurisdictions' websites. A total of 221 surveys were completed online. The survey results are analyzed in Appendix C. Participating jurisdictions within Jefferson County reviewed the input from the surveys and decided which information to incorporate into the Plan as hazard mitigation actions. For example, many citizens mentioned concerns about flood, and suggested drainage improvements. In response, several actions were added to the Plan to demo existing substandard bridges and construct new concrete bridges, replace substandard/undersized road and private drive culverts, and improving ditches to promote positive water flow.

SECTION 3: COUNTY PROFILE

Overview 1
Population and Demographics 4
Special District Population 5
Population Growth 6
Future Development 7
Economic Impact 8
Existing and Future Land Use and Development Trends 9

OVERVIEW

Jefferson County, formed in 1836 and organized in 1837, was one of the original counties in the Republic of Texas. It was named for the municipality that preceded it, which was in turn named for Thomas Jefferson. The county boundaries, as delineated on December 21, 1837, included all of the future Orange County, a part of what later became Hardin County, and the extreme eastern part of the future Chambers County. The first county seat, Jefferson, or Old Jefferson, on the east bank of Cow Bayou, was replaced by Beaumont in 1838 and had disappeared by 1845, when the site of Orange was surveyed. Another chief town was Sabine Pass, laid out in 1839. Early settlers, primarily from the lower South, were joined by Cajuns in the 1840s and by immigrants from the North and from Europe in the 1850s. The area became an ethnic conglomerate.

By the 1840s shingle manufacture and timber exports supplemented a domestic economy based on spinning, leatherwork, and soap and candle making. Shipbuilding, which grew from the lumber industry before 1850, took place next to the lumber mills in Sabine Pass and Beaumont. Jefferson County land was better suited to livestock than to cotton-based plantation economy. By 1820 Louisiana cattlemen drove herds across the Sabine and Neches to graze on Gulf Coast saltgrasses, and a system of roads and ferries running from east to west across the county was slowly put in place to support movement of the herds. Leather shops and tanneries developed in Beaumont in the 1840s, and shoe shops, saddleries, and exporters of hides and tallow followed in the 1850s.

The Sabine-Neches or Port Arthur Ship Canal was dug in 1897 and 1898 from Sabine Pass to Port Arthur. It opened in 1899 and was gradually extended to the mouths of the Neches and Sabine Rivers by around 1905. Interurban service from Nederland to Beaumont and Port Arthur in 1913 linked those communities, and by 1916 completion of the channel to Beaumont from Port Arthur and the mouth of the Neches had further increased lumber exports.

Jefferson County's county line is formed to the east by the Neches River, Sabine Lake, and Sabine Pass, and to the north by Pine Island Bayou. A series of lakes extends across the southern part of the county, and beaches overlook the Gulf. The Port Arthur ship canal, on the west shore of Sabine Lake, connects with the Neches and Sabine rivers to provide deepwater ports at Beaumont, Port Arthur, Nederland, and Port Neches. Deep water transportation and petrochemical industries are among the county's economic mainstays.

SECTION 3: COUNTY PROFILE

Jefferson County comprises 1,113 square miles, mainly of grassy plains, though a dense forest belt crosses the northwest part, of which 876 square miles is land and 237 square miles is water. The southern third of the county consists of marshy saltgrass terrain good for cattle raising, the middle third is coastal prairie used for grazing and rice culture, and the northern third is heavily forested with hardwoods and southern yellow pine.[1]

Figure 3-1 shows the general location of Jefferson County along with the Cities that are located within the County.

Figure 3-1. Location of Jefferson County

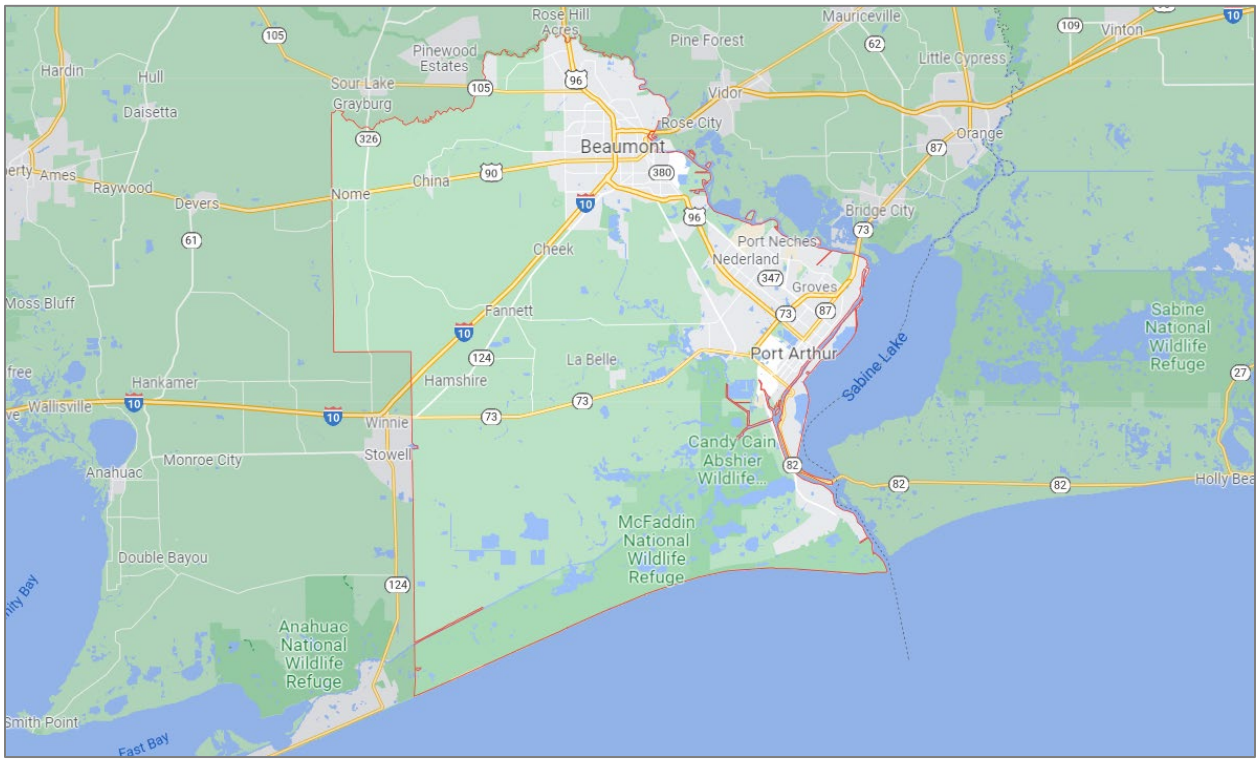
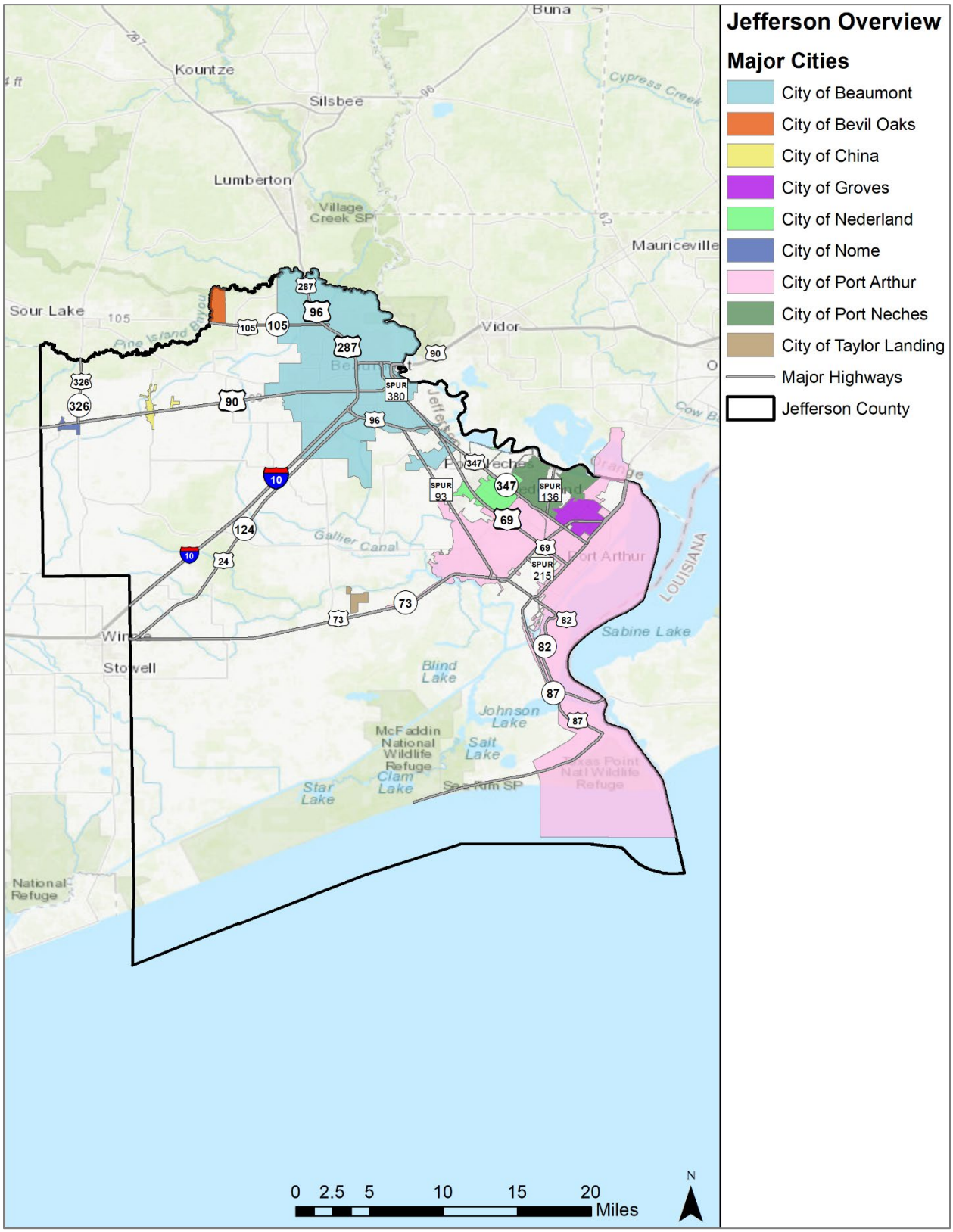


Figure 3-2 shows the participating jurisdictions within Jefferson County that are covered in the risk assessment analysis of the Plan Update.

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

Figure 3-2. Jefferson County Planning Area



SECTION 3: COUNTY PROFILE

Provided in Table 3-1 below is a listing of the jurisdictions in Jefferson County that participated in the Jefferson County Hazard Mitigation Action Plan Update 2022.

Table 3-1. Participating Jurisdictions

PARTICIPATING JURISDICTIONS	
Jefferson County	City of Port Arthur
City of Beaumont	City of Port Neches
City of Bevil Oaks	City of Taylor Landing
City of China	Lower Neches Valley Authority
City of Groves	Port of Beaumont Navigation District
City of Nederland	Port of Port Arthur Navigation District
City of Nome	South East Texas Regional Planning Commission (SETRPC)

POPULATION AND DEMOGRAPHICS

In the official Census population count, as of April 1, 2010, Jefferson County has a population of 252,273 residents. By 2020, the census population count is 253,136. Table 3-2 provides the population distribution by jurisdiction within Jefferson County based on the 2010 Census information.[2]

Between official U.S. Census population counts, the estimate uses a formula based on new residential building permits and household size. It is simply an estimate and there are many variables involved in achieving an accurate estimation of people living in a given area at a given time.

Table 3-2. Population Distribution by Jurisdiction

JURISDICTION	TOTAL 2010 POPULATION	PERCENTAGE (based on 2010 Population)	2020 POPULATION	ESTIMATED VULNERABLE OR SENSITIVE POPULATIONS		
				Youth (Under 5)	Elderly (Over 65)	Below Poverty Level
City of Beaumont	118,296	46.9%	117,321	8,790	17,689	22,174
City of Bevil Oaks	1,274	0.5%	1,084	68	241	44
City of China	1,160	0.5%	1,069	22	285	114
City of Groves	16,144	6.4%	15,531	1,014	2,790	2,159
City of Nederland	17,547	7.0%	17,334	1,100	2,702	1,491

[2] Source: https://demographics.texas.gov/Data/Decennial/2010/ and https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2020/

JURISDICTION	TOTAL 2010 POPULATION	PERCENTAGE (based on 2010 Population)	2020 POPULATION	ESTIMATED VULNERABLE OR SENSITIVE POPULATIONS		
				Youth (Under 5)	Elderly (Over 65)	Below Poverty Level
City of Nome	588	0.2%	534	20	166	23
City of Port Arthur	53,818	21.3%	56,039[3]	4,412	7,002	14,606
City of Port Neches	13,040	5.2%	12,729	798	1,984	1,247
City of Taylor Landing	228	0.1%	248	7	96	0
Unincorporated Jefferson County	30,178	12.0%	32,581	1,387	3,511	3,706
Jefferson County	**252,273**	**100%**	**253,136**	**17,609**	**36,466**	**45,564**

SPECIAL DISTRICT POPULATION

The Lower Neches Valley Authority provides for the present and long term freshwater needs of municipal, agricultural and industrial customers, protects water quality in the Neches River and Coastal Basin, insures affordability of the water supply, and enhances economic development in the Authority's jurisdiction. The Lower Neches Valley Authority is one of the 23 River Authorities created by the State of Texas to develop and manage the waters of the State. Each of these River Authorities was granted powers to conserve, store, control, preserve, utilize, and distribute the waters of its respective area for the benefit of its residents. The Lower Neches Valley Authority was granted authority to operate within Tyler, Hardin, Liberty, Chambers and Jefferson Counties, located within the Neches River Basin and the Neches-Trinity Coastal Basin. The watersheds of the Neches River and its tributaries occupy an area of approximately 10,300 square miles.

Port of Beaumont Navigation District is a deep-water port located in Beaumont Texas near the mouth of the Neches River. It is the fourth busiest port in the United States according to the American Association of Port Authorities 2018 report, and the forty-seventh busiest in the world in terms of tonnage, according to the American Association of Port Authorities 2013 report. It is also the busiest military port in the world for processing U.S. military equipment. The port serves as headquarters to the United States Army's 842nd Transportation Battalion, which specializes in port logistical activity.

Port of Port Arthur Navigation District is the ultimate direct transfer facility for international cargo shipping. An expansion that was completed in the year 2000 included all the operating features demanded by the maritime industry. Less than two hours from sea to transit, the Port of Port Arthur is North America's ultimate direct transfer facility positioned on the Gulf of Mexico to competitively handle any type of commodity. It is strategically located midway on the barge shipping routes of the intercoastal waterway that extends from St. Marks, Florida to Brownsville, Texas. The Sabine Neches Ship Channel is part of that system with channel depths to safely accommodate large petrochemical tankers and cargo ships. The Port is 19 miles from the Gulf of Mexico with 24-hour channel and dock accessibility.

[3] Source: https://www.census.gov/quickfacts/fact/table/portarthurcitytexas/PST045221

SECTION 3: COUNTY PROFILE

South East Texas Regional Planning Commission (SETRPC) is a voluntary associate of local governments that serves Hardin, Jefferson, Orange, and Jasper Counties. The Planning Commission was established in June of 1970 under authority provided by the Texas Legislature in 1965. SETRPC is one of 24 Regional Planning Councils that serve all of Texas. Regional Council boundaries conform to the State Planning Region System whereby 24 areas or regions are delineated according to socio-economic and physical characteristics that set one area apart from another. Each of these Regional Councils were founded for the purpose of solving area wide problems by promoting intergovernmental cooperation and coordination, conducting comprehensive regional planning, and providing a forum for the discussion and study of area issues. Membership in SETRPC is open to all general and special purpose local governmental bodies in the four-county region; counties, cities, school districts and other special purpose districts such as water and sewer districts, municipal utility districts and port and drainage districts. The Planning Commission is governed by an Executive Committee composed of elected officials from various city councils, county commissioner's courts, and special district boards that form its membership.

Table 3-3 provides the number of people employed by each special district.

Table 3-3. Special District Population

SPECIAL DISTRICT	STAFF / EMPLOYEES	RESIDENTS THE DISTRICT SERVES	ESTIMATED VULNERABLE OR SENSITIVE POPULATIONS
			Staff Works Outdoors
Lower Neches Valley Authority	135	40,000[4]	100
Port of Beaumont Navigation District	218	0	184
Port of Port Arthur Navigation District	18	55,000	10
South East Texas Regional Planning Commission (SETRPC)	59	54[5]	0

POPULATION GROWTH

The official 2010 Jefferson County population is 252,273. By 2020, the census is 253,136. Overall, Jefferson County experienced an increase in population between 1980 and 2020 by 1.80%, or an increase by 4,484. The City of Nederland experienced an increase in population between 1980 and 2020. The other jurisdictions experienced a population decline with the exception of Taylor Landing as it wasn't incorporated in 1980. Between 2010 and 2020, the City of Port Arthur, the City of Taylor Landing, and Jefferson County as a whole experienced a population growth, while the other jurisdictions experienced a population decline. Table 3-4 provides historic growth rates in Jefferson County.

[4] This includes 10 municipalities, 30 commercial/industrial customers, 26,000 acres of rice production annually.
[5] This includes 4 counites, 23 cities, and 27 other districts.

Table 3-4. Population for Jefferson County, 1980-2020

JURISDICTIONS	1980	1990	2000	2010	2020	POP CHANGE 1980-2020	PERCENT OF CHANGE	POP CHANGE 2010-2020	PERCENT OF CHANGE
City of Beaumont	118,067	114,177	112,930	118,296	117,321	-764	-0.63%	-975	-0.82%
City of Bevil Oaks	1,306	1,350	1,346	1,274	1,084	-222	-17.0%	-190	-14.91%
City of China	1,351	1,144	1,112	1,160	1,069	-282	-20.87%	-91	-7.84%
City of Groves	17,090	16,744	15,733	16,144	15,531	-1,559	-9.12%	-613	-3.80%
City of Nederland	16,855	16,192	17,422	17,547	17,334	479	2.84%	-213	-1.21%
City of Nome	550	448	515	588	534	-16	-2.91%	-54	-9.18%
City of Port Arthur	60,562	58,056	57,106	53,818	54,705	-5,857	-9.67%	887	1.65%
City of Port Neches	13,944	12,908	13,601	13,040	12,729	-1,215	-8.71%	-311	-2.38%
City of Taylor Landing	-	-	226	228	248	-	-	20	8.77%
Unincorporated Jefferson County	18,927	18,370	32,060	30,178	32,581	13,654	72.14%	2,403	7.96%
Jefferson County	**248,652**	**239,389**	**252,051**	**252,273**	**253,136**	**4,484**	**1.80%**	**863**	**0.34%**

FUTURE DEVELOPMENT

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

Population projections from 2010 to 2050 are listed in Table 3-5, as provided by the Office of the State Demographer, Texas State Data Center, and the Institute for Demographic and Socioeconomic Research. Population projections are based on a 0.5 scenario growth rate, which is 50 percent of the population growth rate that occurred during 2000-2010. This information is only available at the County level; however, the population projection shows an increase in population density for the County, which would mean overall growth for the County.

Table 3-5. Jefferson County Population Projections

LAND AREA (SQ MI)	2010		2020		2030		2040		2050	
	Population									
	Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)	Total Number	Density (Land Area, SQ MI)
876.3	252,273	287.88	258,678	295.19	261,291	298.18	259,254	295.85	256,131	292.29

ECONOMIC IMPACT

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

Major employers in the area are critical to the health of the economy, as well as effective transportation connectivity.

Jefferson County is part of the South East Texas Regional Planning Commission (SETRPC) which has many departments to promote intergovernmental cooperation and coordination, conduct comprehensive regional planning, and provide a forum for the discussion and study of area issues. The Transportation and Environmental Resources Division administers federal and state funds for the planning and implementation of programs, projects, and policies related to air quality, various modes of transportation, solid waste management, and economic development for the four-county region. The staff of the Division works with federal, state, and local entities to enhance the quality of life of southeast Texas citizens, improve air quality and assist the regions' efforts to attain federal Clean Air Act air quality standards, support economic development, provide improved mobility, increased transportation options, and improved intermodal connections within the region, promote coordination of collection, transportation, and disposal of solid waste, maximize community benefit and protect the environment, maintain a variety of data and information on southeast Texas, including GIS data and demographics, and encourage community participation and increase awareness of individual roles and responsibilities.

The City of Beaumont has a firm commitment to neighborhood revitalization; the mission of the Planning & Community Development Department is to enhance the quality of life of low to moderate income citizens through affordable housing, economic development, public service, education, employment and health care.

The Nederland Economic Development Corporation (EDC)'s role is to promote the expansion of businesses and jobs in Nederland and to attract new businesses and development to Nederland. Their goals include: attract and grow primary industry jobs; increase sales tax revenue; increase property tax revenue; support a positive business climate; promote and assist Nederland Businesses; and leverage investment in the community.

The Port Arthur Economic Development Corporation is a 4a sales tax corporation created to enhance Port Arthurs' business climate and overall economic development. The PAEDC is responsible for encouraging and developing business growth and attracting new business to Port Arthur. Their 300-acre business park is especially beneficial to business in the areas of manufacturing, light industrial and commercial development.

EXISTING AND FUTURE LAND USE AND DEVELOPMENT TRENDS

The following jurisdictions have a Master or Comprehensive Plan in place: City of Beaumont, City of China, City of Groves, City of Nederland, City of Nome, City of Port Arthur, City of Port Neches, City of Taylor Landing, Port of Beaumont Navigation District, and Port of Port Arthur Navigation District. These plans are part of a continuous process to provide an environment for the citizens and to consider the general desire of the community to conserve, preserve, and protect the natural environment of their jurisdiction. These plans are used to guide individuals in making decisions which affect the community with the understanding of the long-term effects.

The City of Beaumont Planning Division is responsible for the comprehensive planning activities of the City and for administering the subdivision regulations. The Development Strategies Plan: A Development/Re-Development/Conservation Guide for Beaumont and its Environs is a component of the Land Use Plan of the City of Beaumont and consists of the goals, objectives, policies, and improvement proposals of the City Council and City Planning Commission for guiding both short-to-long range physical growth and short-to-intermediate range re-development/ conservation actions within the City of Beaumont and the area within Beaumont's Extra-Territorial Jurisdiction (ETJ).

The City of Port Arthur's Planning & Zoning Division primary function is to monitor land use and observe how land is subdivided, in regards o the use (zoning) along with determining where certain developments will occur. Their Comprehensive Plan, Imagine Port Arthur, guides the overall development, welfare, quality of life and development of the city and its residents. It is their responsibility as Planning & Zoning staff to make sure zoning and land uses are compatible with the community and promoting an enhanced quality of life through the use of zoning maps, strategic planning for growth, and community engagement.

SECTION 4: RISK OVERVIEW

Hazard Description 1
Natural Hazards and Climate Change 4
Overview of Hazard Analysis 4

HAZARD DESCRIPTION

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

Upon a review of the full range of natural hazards suggested under FEMA planning guidance, participating jurisdictions within Jefferson County identified eleven natural hazards that are addressed in the Hazard Mitigation Plan Update and were identified as significant, as shown in Table 4-1. The hazards were identified through input from Planning Team members and a review of the current 2018 State of Texas Hazard Mitigation Plan (State Plan). Readily available online information from reputable sources such as federal and state agencies were also evaluated and utilized to supplement information as needed.

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

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

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

For the Risk Assessment, the wildfire hazard is considered “other,” since this hazard is not considered atmospheric, hydrologic, nor technological.

Appendix A will include additional hazards that have a very low risk or no risk to the planning area: geologic hazard, tsunami, earthquake, water contamination, dam failure, hazardous materials incident and terrorism.

Table 4-1. Hazard Descriptions

HAZARD	DESCRIPTION
ATMOSPHERIC	
Extreme Heat	Extreme heat is the condition whereby temperatures hover ten degrees or more above the average high temperature in a region for an extended period of time.
Hail	Hailstorms are a potentially damaging outgrowth of severe thunderstorms. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to the rapid rising of warm air into the upper atmosphere and subsequent cooling of the air mass.
Hurricane Wind	A hurricane is an intense tropical weather system of strong thunderstorms with a well-defined surface circulation and maximum sustained winds of 74 mph or higher.
Lightning	Lightning is a sudden electrostatic discharge that occurs during an electrical storm. This discharge occurs between electrically charged regions of a cloud, between two clouds, or between a cloud and the ground.
Thunderstorm Wind	A thunderstorm occurs when an observer hears thunder. Radar observers use the intensity of the radar echo to distinguish between rain showers and thunderstorms. Lightning detection networks routinely track cloud-to-ground flashes, and therefore thunderstorms.
Tornado	A tornado is a violently rotating column of air that has contact with the ground and is often visible as a funnel cloud. Its vortex rotates cyclonically with wind speeds ranging from as low as 40 mph to as high as 300 mph. The destruction caused by tornadoes ranges from light to catastrophic, depending on the location, intensity, size, and duration of the storm.
Winter Storm	Severe winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Blizzards, the most dangerous of all winter storms, combine low temperatures, heavy snowfall, and winds of at least 35 miles per hour, reducing visibility to only a few yards. Ice storms occur when moisture falls and freezes immediately upon impact on trees, power lines, communication towers, structures, roads, and other hard surfaces. Winter storms and ice storms can down trees, cause widespread power outages, damage property, and cause fatalities and injuries to human life.
HYDROLOGIC	
Drought	A prolonged period of less than normal precipitation such that the lack of water causes a serious hydrologic imbalance. Common effects of drought include crop failure, water supply shortages, and fish and wildlife mortality.

HAZARD	DESCRIPTION
Flood	The accumulation of water within a body of water, which results in the overflow of excess water onto adjacent lands, usually floodplains. The floodplain is the land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body that is susceptible to flooding. Most floods fall into the following three categories: riverine flooding, coastal flooding, and shallow flooding.
Coastal Erosion	Coastal erosion is a hydrologic hazard defined as the wearing away of land and loss of beach, shoreline, or dune material as a result of natural coastal processes or manmade influences.
OTHER	
Wildfire	A wildfire is an uncontrolled fire burning in an area of vegetative fuels such as grasslands, brush, or woodlands. Heavier fuels with high continuity, steep slopes, high temperatures, low humidity, low rainfall, and high winds all work to increase the risk for people and property located within wildfire hazard areas or along the urban/wildland interface. Wildfires are part of the natural management of forest ecosystems, but most are caused by human factors.

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

Table 4-2. Other Hazards Deferred

HAZARD CONSIDERED	REASON FOR DETERMINATION
Dam Failure	There are three dams located in the Jefferson County planning area. However, there are no historical occurrences of these dams failing and there is none expected in the future. If the dams were to fail, Jefferson County would not experience any impact to life, property, or services provided by the community.
Earthquake	According to the State Plan, an earthquake occurrence for the Jefferson County planning area is considered exceedingly rare. Although a small event is possible, it would pose little to no risk for the area. There is no history of impact to critical structures, systems, populations or other community assets or vial services as a result of earthquake and non is expected in the future.
Expansive Soils	There is no history of impact to critical structures, systems, populations or other community assets or vital services as a result of expansive soils and none is expected in the future.

HAZARD CONSIDERED	REASON FOR DETERMINATION
Land Subsidence	There are no historical occurrences of land subsidence for the planning area and it is located in an area where occurrences are considered rare. There is no history of impact to critical structures, systems, populations or other community assets or vital services as a result of land subsidence and none is expected in the future.

NATURAL HAZARDS AND CLIMATE CHANGE

Climate change is defined as a long-term hazard which can increase or decrease the risk of other weather hazards. It directly endangers property due to sea level rise and biological organisms due to habitat destruction.

Global climate change is expected to exacerbate the risks of certain types of natural hazards impacted through rising sea levels, warmer ocean temperatures, higher humidity, the possibility of stronger storms, and an increase in wind and flood damages due to storm surges. While sea level rise is a natural phenomenon and has been occurring for several thousand years, the general scientific consensus is that the rate has increased in the past 200 years, from 0.5 millimeters per year to 2 millimeters per year.

Texas is considered one of the more vulnerable states in the U.S. to both abrupt climate changes and to the impact of gradual climate changes to the natural and built environments. Mega-droughts can trigger abrupt changes to regional ecosystems and the water cycle, drastically increase extreme summer temperature and fire risk, and reduce availability of water resources, as Texas experienced during 2011-2012.

Paleoclimate records also show that the climate over Texas had large changes between periods of frequent mega-droughts and the periods of mild droughts that Texas is currently experiencing. While the cause of these fluctuations is unclear, it would be wise to anticipate that such changes could occur again and may even be occurring now.

OVERVIEW OF HAZARD ANALYSIS

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

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

The use of geographic information system (GIS) technology to identify and assess risks for Jefferson County, and evaluate community assets and their vulnerability to the hazards.

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

Frequency of return was calculated by dividing the number of events in the recorded time period for each hazard by the overall time period that the resource database was recording events. Frequency of return statements are defined in Table 4-3, and impact statements are defined in Table 4-4 below.

Table 4-3. Frequency of Return Statements

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

Table 4-4. Impact Statements

POTENTIAL SEVERITY	DESCRIPTION
Substantial	Multiple deaths. Complete shutdown of facilities for 30 days or more. More than 50 percent of property destroyed or with major damage.
Major	Injuries and illnesses resulting in permanent disability. Complete shutdown of critical facilities for at least two weeks. More than 25 percent of property destroyed or with major damage.
Minor	Injuries and illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than one week. More than 10 percent of property destroyed or with major damage.
Limited	Injuries and illnesses are treatable with first aid. Shutdown of critical facilities and services for 24 hours or less. Less than 10 percent of property destroyed or with major damage.

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

To better understand how future growth and development in the Jefferson County region might affect hazard vulnerability, it is useful to consider population growth, occupied and vacant land, the potential for future development in hazard areas, and current planning and growth

management efforts. Hazard vulnerability for all participating jurisdictions within Jefferson County was reviewed based on recent development changes that occurred throughout the planning area. Jefferson County has increased slightly between 2010 and 2020 according to the U.S. Census Bureau, therefore there has been no significant factors or development trends with a consequential effect or increase in vulnerability to the population, infrastructure and buildings for hazards.

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

Table 4-5. Hazard Risk Ranking

HAZARD	FREQUENCY OF OCCURENCE	POTENTIAL SEVERITY
Hurricane Wind	Likely	Substantial
Flood	Highly Likely	Substantial
Thunderstorm Wind	Highly Likely	Substantial
Lightning	Highly Likely	Substantial
Tornado	Highly Likely	Substantial
Hail	Highly Likely	Limited
Extreme Heat	Highly Likely	Limited
Wildfire	Highly Likely	Limited
Winter Storm	Highly Likely	Substantial
Drought	Occasional	Limited
Coastal Erosion	Highly Likely	Limited

SECTION 5: HURRICANE WIND

Hazard Description 1
Location 1
Extent 3
Historical Occurrences 4
Significant Events 6
Probability of Future Events 7
Vulnerability and Impact 7
Assessment of Impacts 10

HAZARD DESCRIPTION

Hurricanes often begin as tropical depressions that intensify into tropical storms when maximum sustained winds increase to between 35-64 knots (39 – 73 mph). At these wind speeds the storm becomes more organized and circular in shape and begins to resemble a hurricane. Tropical storms can be equally problematic without ever becoming a hurricane, resulting in heavy rainfall, high winds and tidal surge in coastal communities. When maximum sustained winds reach or exceed 39 mph, the system becomes a tropical storm. Once sustained winds reach or exceed 74 mph, the storm becomes a hurricane.

The intensity of a land falling hurricane is expressed in categories relating wind speeds and potential damage. Tropical storm-force winds are strong enough to be dangerous to those caught in them. For this reason, emergency managers plan to have evacuations completed and personnel sheltered before winds of tropical storm-force arrive, which precedes the arrival of hurricane-force winds.

According to the National Hurricane Center, the greatest potential for loss of life related to a hurricane is from storm surge. This happens when low pressure and high circular winds “pile” the water into a dome shape that can be 50-100 miles wide. The surge travels with the storm and is most severe on the right side of the storm, relative to the direction the storm travels. The surge can be 15 feet deep, topped by waves, and make landfall ahead of the center, or “eye”, of the hurricane. Wind-driven waves are superimposed on the storm tide. This rise in water level can cause severe flooding in coastal areas, particularly when the storm tide coincides with normal high tides.

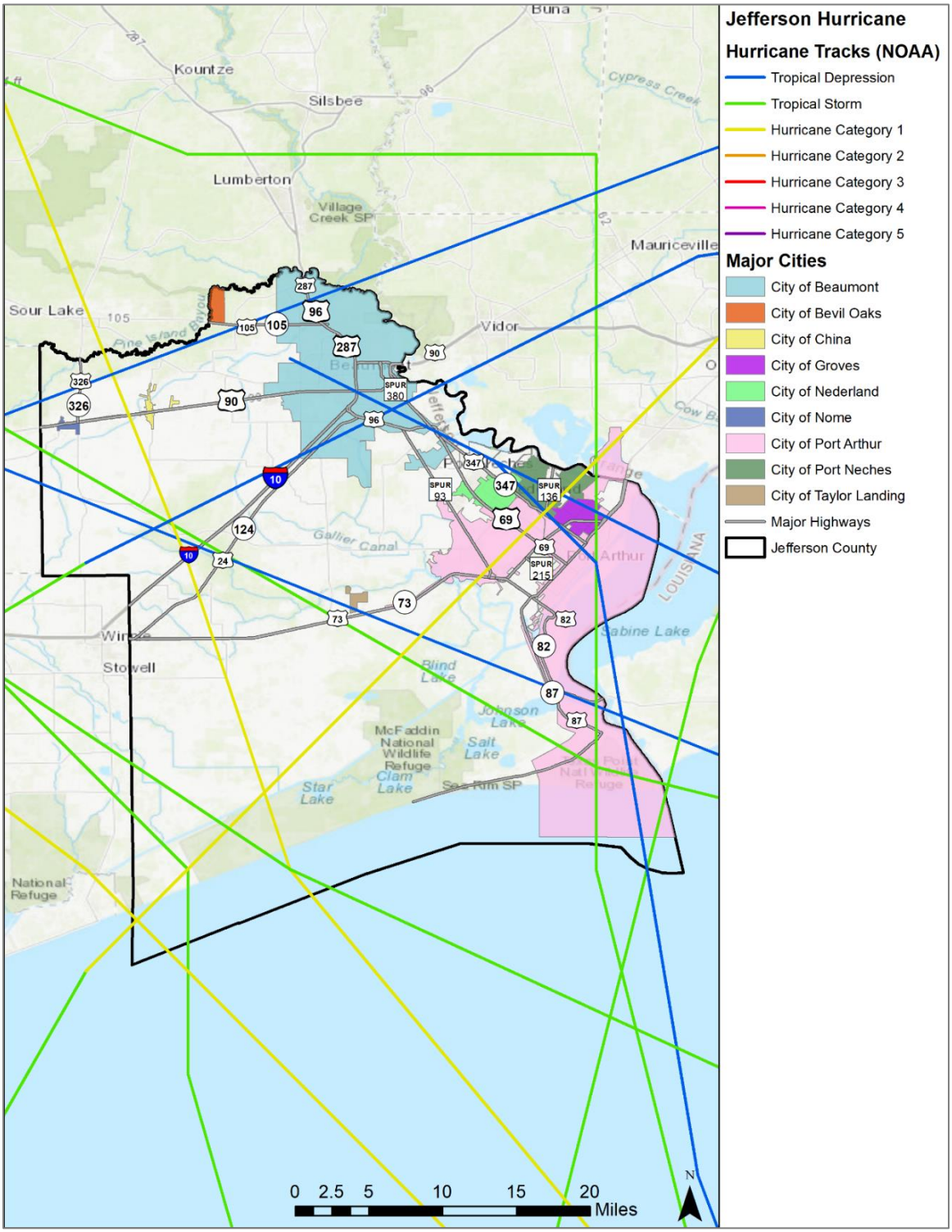
LOCATION

The location of Jefferson County on the coast makes the planning area vulnerable to threats directly and indirectly related to a hurricane event, such as high-force winds, coastal erosion, and flooding. The county is located in the Coastal Plain or Gulf Prairie region of extreme southeastern Texas along the Gulf of Mexico making it susceptible to hurricanes. Hurricanes and/or tropical storms can impact Jefferson County from June to November, the official Atlantic U.S. hurricane season.

SECTION 5: HURRICANE WIND

Jefferson County is in a moderate to high-risk area for hurricane wind speeds of 74 to more than 155 miles per hour (mph). In Figure 5-1 below, hurricane tracks are reflective of their strength in the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts.

Figure 5-1. Location of Historic Storm Tracks



EXTENT

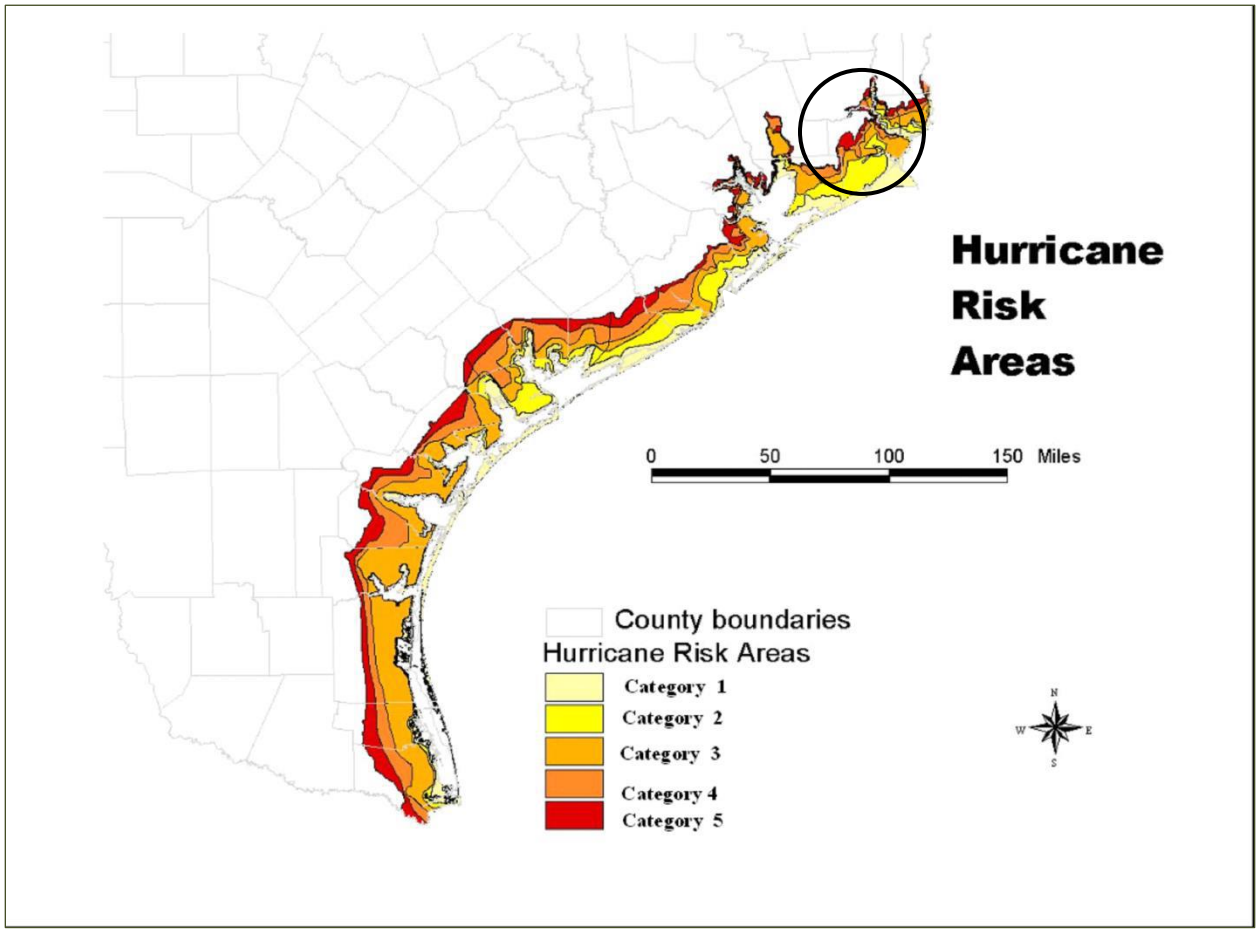
Hurricanes are categorized according to the strength and intensity of their winds using the Saffir-Simpson Hurricane Scale (See Table 5-1). A Category 1 storm has the lowest wind speeds, while a Category 5 hurricane has the highest. This scale only ranks wind speed, but lower category storms can inflict greater damage than higher category storms depending on where they strike, other weather they interact with and how slow they move.

Table 5-1. Extent Scale for Hurricanes

CATEGORY	MAXIMUM SUSTAINED WIND SPEED (Mph)	MINIMUM SURFACE PRESSURE (Millibars)	STORM SURGE (Feet)
1	74 – 95	Greater than 980	3 – 5
2	96 – 110	979 – 965	6 – 8
3	111 – 130	964 – 945	9 – 12
4	131 – 155	944 – 920	13 – 18
5	155 +	Less than 920	19 +

Based on the historical storm tracks for hurricanes and tropical storms, as well as the location of Jefferson County, the average extent to be mitigated for is a Category 5 storm. The Jefferson County planning area has experienced wind speeds in excess of 155 mph, therefore a Category 5 should be mitigated in the event of a hurricane. Figure 5-2 displays the location of hurricane risk by storm category along the Gulf Coast.

Figure 5-2. Location of Hurricane Risk along the Texas Coast



HISTORICAL OCCURRENCES

Previous occurrences include storms that had a direct path through the Jefferson County planning area, including the SETRPC and all participating jurisdictions, or storm events that passed close enough in proximity to the planning area to create damages. Table 5-2 below lists the storms that have impacted the Jefferson County planning area during the years of 1955-2021.

The Lower Neches Valley Authority reported hurricane wind damages from only one event, Hurricane Rita in 2005. No damage description or dollar estimates were available. Flood damages from Hurricane Harvey were reported and have been included in the flood section of this plan (Section 6). The Port of Port Arthur Navigation District also reported flooding during hurricane events (see Section 6). Hurricane damages of $814,970 were reported for the district due to Hurricane Ike in 2008. The Port of Beaumont Navigation District reported $20,982,274 in damages due to Hurricane Harvey and Hurricane Delta. Additional details on damages for the participating special districts were not available. The SETRPC did not report and damages to their facility as a result of hurricanes. The SETRPC and all three special districts do not experience events separate and apart from those events reported in the NCEI database under the jurisdiction which they are located.

Table 5-2. Historical Hurricane Events for the Jefferson County Planning Area, 1955-2021[1]

DATE	NAME	CATEGORY[2]	PROPERTY DAMAGE	CROP DAMAGE
9/12-9/17/2021	Nicholas	Category 1	$0	$0
10/4-10/11/2020	Delta[3]	Category 4	$52,422,347	$0
9/17-9/25/2020	Beta	Tropical Storm	$0	$0
8/20-8/29/2020	Laura[4]	Category 4	$231,075,416	$0
8/16-9/2/2017	Harvey[5]	Category 4	$0	$0
9/1-9/15/2008	Ike[6]	Category 4	$811,409,811	$0
8/3-8/6/2008	Edouard	Tropical Storm	$311,525	$0
9/12-9/14/2007	Humberto	Category 1	$32,735,743	$0
9/18-9/26/2005	Rita[7]	Category 5	$1,870,814,132	$0
9/2-9/24/2004	Ivan	Category 5	$0	$0
9/8-9/9/2000	Unnamed	Tropical Depression	$0	$0
9/8-9/13/1998	Frances[8]	Tropical Storm	$8,343,612	$0
8/21-8/24/1998	Charley[9]	Tropical Storm	$100,246	$0
7/30-8/3/1989	Chantal	Category 1	$0	$0
6/23-6/28/1986	Bonnie	Category 1	$0	$0
9/9-9/12/1982	Chris	Tropical Storm	$0	$0
7/15-7/29/1979	Claudette	Tropical Storm	$0	$0
7/7-7/8/1971	Unnamed	Tropical Depression	$0	$0
9/16-9/20/1963	Cindy	Tropical Storm	$0	$0
8/8-8/11/1957	Bertha	Tropical Storm	$0	$0

[1] Values are reported in 2022 dollars.
[2] Category at time of landfall.
[3] Delta made landfall in Louisiana, approximately 60 miles east of the planning area. However, high winds and squalls with wind gusts up to 100 mph reached the planning area causing significant damages.
[4] Laura made landfall in Louisiana, approximately 30 miles east of the planning area. However, high winds and squalls with wind gusts up to 70 mph reached the planning area causing significant damages.
[5] Harvey made its initial landfall approximately 150 miles southwest of the county line. After turning back into the gulf, Harvey made landfall again near the Texas Louisiana border, approximately 25 miles east of the county line. Extreme wind, heavy rainfall and squalls with significant wind gusts reached the planning area causing substantial damages.
[6] Ike made landfall at Galveston County, approximately 25 miles west of the planning area. However, high winds and squalls with significant wind gusts reached the planning area causing substantial damages.
[7] Rita made landfall just east of the Texas Louisiana border, just east of the planning area. However, high winds and squalls with significant wind gusts reached the planning area causing substantial damages.
[8] Frances made landfall approximately 175 miles southwest of the planning area. However, high winds and squalls with significant wind gusts reached the planning area causing substantial damages.
[9] Charley made landfall in Nueces County, more than 200 miles southwest of the planning area. However, high winds and squalls with significant wind gusts reached the planning area causing significant damages.

SECTION 5: HURRICANE WIND

DATE	NAME	CATEGORY[2]	PROPERTY DAMAGE	CROP DAMAGE
TOTAL	20		$3,007,212,832	

Based on the list of historical hurricane events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions and special districts, five events have occurred since the 2017 Plan.

SIGNIFICANT EVENTS

Hurricane Laura, August 20-29, 2020 – Jefferson County

Hurricane Laura entered the Gulf of Mexico and became a hurricane on the 25th. Outer bands spread inland during the afternoon of the 26th and it made landfall at Cameron, Louisiana on the 27th. The west side of the category 4 hurricane impacted Southeast Texas as the center moved north across west Louisiana, causing damages totaling roughly $1.95 Billion. There was a mandatory evacuation for Jefferson County. The storm surge flooded Sabine Pass and backed up area waterways including Neches River, Hillebrandt Bayou and Taylor Bayou. Many trees and power lines were blown down across the county. Homes and businesses were damaged from downed trees and severe wind. Over 60 percent of the county was without power immediately after the storm. Wind gusts ranged from 55 to 90 mph across the county. Five fatalities were attributed to the storm with a reported eighteen injuries, all having been residents of Jefferson County.

Hurricane Ike, September 12-13, 2008 – Jefferson County

Hurricane Ike caused wind damage and significant storm surge flooding across southeast Texas. Ike made landfall near Galveston, TX early in the morning on September 13th as a strong category 2 hurricane. Sustained hurricane force winds were confined to Jefferson County, Hardin County, western Orange County, southwestern Jasper County, and western Tyler County. The highest recorded winds were at Southeast Texas Regional Airport with sustained winds of 61 knots (70 mph) and gusts of 83 knots (96 mph). Maximum storm total rainfall was between 5 and 8 inches across Jefferson, Hardin, Orange, and southern Jasper counties. The storm surge was a significant event which almost topped the seawall around Port Arthur, however large waves did crash over the seawall causing flooding of homes within the surrounding area. Hurricane Ike caused category 1 wind damage across Jefferson County. Many trees and power lines were downed, some landing on homes and businesses. The event caused a single fatality in the planning area.

Hurricane Rita, September 18-26, 2005 – Jefferson County

Hurricane Rita made landfall just east of the Texas - Louisiana border. The hurricane moved northwest and across southeast Texas in the morning hours of September 24th as a dangerous category 3 hurricane with sustained winds of 120 mph. Along the coast of neighboring Jefferson County, storm surges near 10 feet occurred near Sabine Pass, where over 90 percent of the homes were severely damaged or destroyed. The storm surge backed up the Sabine River and flooded a small section of downtown neighboring Orange with around 4 to 5 feet of storm surge. Winds blew over 100 mph across the entire region, snapping and uprooting trees, and damaged over 125,000 homes and businesses. Some homes in neighboring Jasper and Newton counties did not have electricity restored for over six weeks. Seven fatalities were attributed to the storm, all residents of Jefferson County.

PROBABILITY OF FUTURE EVENTS

Due to the location on the Gulf Coast, and the previous history of 20 events over a 67-year reporting period for the area, the likelihood or future probability of a tropical storm or hurricane in the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, is likely, meaning an event is probable in the next three years.

VULNERABILITY AND IMPACT

Hurricane-force winds can cause major damage to large areas; hence all existing buildings, facilities and populations are equally exposed and vulnerable to this hazard and could potentially be impacted. Warning time for hurricanes has lengthened due to modern and early warning technology. Hurricane-force winds can easily destroy poorly constructed buildings and mobile homes, as well as debris such as signs, roofing materials, and small items left outside become extremely hazardous in hurricanes and tropical storms. Extensive damage to trees, towers, and underground utility lines (from uprooted trees) and fallen poles cause considerable civic disruption. Older structures may suffer greater damages from storm surge along the coast due to lower elevation of foundations.

The Jefferson County planning area features multiple mobile or manufactured home parks throughout the planning area, including most of the participating jurisdictions. These parks are typically more vulnerable to hurricane wind events than typical site-built structures. In addition, manufactured homes are located sporadically throughout the planning area and unincorporated areas of the county which would also be more vulnerable. The US Census data indicates a total of 3,545 manufactured homes located in the Jefferson County planning area (3.3%), including participating jurisdictions (Table 5-3). In addition, 59.2% (approximately 64,430 structures) of the single family residential (SFR) structures in the entire planning area were built before 1980. These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damages during significant hurricane wind events.

Table 5-3. Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Jefferson County	3,545	64,430
City of Beaumont	1,166	30,675
City of Bevil Oaks	31	418
City of China	44	239
City of Groves	20	5,126
City of Nederland	243	5,220
City of Nome	3	136
City of Port Arthur	299	15,842
City of Port Neches	112	3,558

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
City of Taylor Landing	0	41
Lower Neches Valley Authority	2	0
Port of Beaumont Navigation District	5	0
Port of Port Arthur Navigation District	8	0

The following critical facilities would be vulnerable to hurricane wind events in the planning area, including the SETRPC and all participating jurisdictions and special districts.

Table 5-4. Critical Facilities by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	10 Fire Stations, 1 Sheriff's Department, 5 Police Stations, 67 Schools, 9 Medical Facilities, 1 Emergency Service District, 4 Water Districts, 3 Drainage District, 3, Utility Districts, 4 Port Authorities, 1 Government Facility, 1 Airport
City of Beaumont	13 Fire Stations, 1 Police Station, 32 Schools, 5 Medical Facilities, 6 Emergency Medical Services (EMS), 1 EOC, 1 Event Center, 1 Stadium, 1 Mall, 2 Water Treatment Facilities, 3 Water Wells, 1 Wastewater Treatment Facility, 2 Pump Stations, 75 Lift Stations, 1 Waste Operation Facility, 1 Landfill, 8 Chemical Facilities, 8 Communication Facilities, 1 Electrical Facility, 16 Government Facilities, 4 Federal Facilities, 1, Animal Shelter, 1 County Dispatch Facility, 1 Airport, 1 Canal, 1 Maritime Transport Facility, 2 Traffic and Transit Operation Facilities, 5 Railroad and Infrastructure, 2 Highway Transport and Infrastructure, 4 Lower Neches Valley Facilities and Infrastructure
City of Bevil Oaks	1 Emergency Service District, 1 Fire Station
City of China	1 Emergency Service District, 1 Fire Station, 1 Water Plant, 1 Wastewater Plant, 8 Lift Stations, 3 Wells
City of Groves	1 Fire Station, 1 Police Station, 3 Schools
City of Nederland	1 Fire Station, 1 Police Station, 8 Schools, 3 Medical Facilities
City of Nome	1 Fire Station, 1 Water Treatment Plant, 1 Wastewater and Sewage Plant, 5 Lift Stations, 1 Government Building
City of Port Arthur	1 Fire Station, 1 Police Station, 14 Schools, 1 Medical Facility, 1 Drainage District, 2 Port Authority and Navigation Districts
City of Port Neches	1 Fire Station, 2 Police Stations, 5 Schools, 1 EOC, 1 Water Treatment Plant, 3 Water Towers, 1 Wastewater Treatment Plant, 10 Lift Stations, 3 Government Facilities, 2 Federal Facilities, 2 Commercial Facilities, 3 Industrial Facilities, 2 Public Works Facilities and Infrastructure

JURISDICTION	CRITICAL FACILITIES
City of Taylor Landing	1 Electric Facility, 1 Fiber Optic Facility, 2 Sewer Plant and Infrastructures
Lower Neches Valley Authority	1 Communication Center, 1 Water Plant, 1 Water Treatment Plant, 5 Pumping Plants
Port of Beaumont Navigation District	2 Administrative Facilities, 2 Facility Operations Facilities, 1 Maintenance Building, 2 Security Offices, 1 Army Building, 6 Transit Sheds, 7 Terminals, 2 Barge Docs, 2 Bulkhead-Aprons, 1 Dock / Ramp
Port of Port Arthur Navigation District	1 Administrative Facility, 1 Command Center, 1 Terminal, 1 Tenant/ Pipeline
SETRPC	SETRPC Facility

Storm track data was available for the past 150 years; however, property and crop loss data is only available from 1955 through December 2021. Table 5-5 shows impact or loss estimation for storms impacting the county. Annual loss estimates were based on the 67-year reporting period for such damages (Table 5-5). Damages are reported on a county-wide basis and are not available for individual jurisdictions. Each special district participating in the plan provided historic losses specific to the district assets. These losses, listed below, provided the basis for the annualized losses specific to the districts, separate and apart from the county-wide losses presented in this section. The average annualized loss estimate for the Jefferson County planning area is estimated to be approximately $44,883,774.

Table 5-5. Potential Annualized Losses Jefferson County, 1955-2021

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Jefferson County	$3,007,212,832	$44,883,774
Lower Neches Valley Authority	$0	$0
Port of Beaumont Navigation District	$20,892,274	$313,168
Port of Port Arthur Navigation District	$814,970	$12,164
SETRPC	$0	$0

While all citizens are at risk to the impacts of a hurricane, forced relocation and disaster recovery drastically impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. An estimated 18.0% of the planning area population live below the poverty level (Table 5-6).

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

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Jefferson County	45,564
City of Beaumont	22,174
City of Bevil Oaks	44
City of China	114
City of Groves	2,159
City of Nederland	1,491
City of Nome	23
City of Port Arthur	14,606
City of Port Neches	1,247
City of Taylor Landing	0

The potential severity of impact from a hurricane for the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, is classified as “Substantial”, complete shutdown of critical facilities and services for 30 days or more, and more than 50 percent of property would be destroyed or have major damage.

ASSESSMENT OF IMPACTS

Hurricane events have the potential to pose a significant risk to people and can create dangerous and difficult situations for public health and safety officials. The impact of climate change could produce larger, more severe hurricane events, exacerbating the current hurricane impacts. Worsening hurricane conditions can be frequently associated with a variety of impacts, including:

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Driving conditions in all jurisdictions may be dangerous during a hurricane event, especially over the Causeway or other elevated bridges, elevating the risk of injury and accidents during evacuations if not timed properly.
- Emergency evacuations may be necessary prior to a hurricane landfall, requiring emergency responders, evacuation routing and temporary shelters.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.

[10] US Census Bureau 2020 data for Jefferson County.

- During hurricane landfall, first responders may be prevented from responding to calls, as the winds may reach a speed in which their vehicles and equipment are unsafe to operate.
- Hurricane events often result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage often results in an increase in structure fires and carbon monoxide poisoning, as individuals attempt to cook or heat their homes with alternate, unsafe cooking or heating devices, such as grills.
- Extreme hurricane events may rupture gas lines and down trees and power lines, increasing the risk of structure fires during and after a storm event.
- Extreme hurricane events may lead to prolonged evacuations during search and rescue, and immediate recovery efforts requiring additional emergency personnel and resources to prevent entry and protect citizens and property.
- First responders are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions.
- Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications.
- Critical staff may be unable to report for duty, limiting response capabilities.
- City or county departments may be damaged, delaying response and recovery efforts for the entire community.
- Private sector entities that the city and its residents rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Some businesses not directly damaged by the hurricane may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.
- Older structures built to less stringent building codes may suffer greater damage as they are typically more vulnerable to hurricane damage.
- Large scale hurricanes can have significant economic impact on the affected area, as it must now fund expenses such as infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, as well as normal day-to-day operating expenses.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damages without a backup power source.

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

SECTION 6: FLOOD

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Assessment of Impacts 27
National Flood Insurance Program (NFIP) Participation 29
NFIP Compliance and Maintenance 30
Repetitive Loss 31

HAZARD DESCRIPTION

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

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

LOCATION

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

- Zone A: Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance requirements and floodplain management standards apply.
- Zone AE: Areas subject to inundation by 1-percent-annual-chance shallow flooding. It is the base floodplain where BFEs are provided. AE zones are now used on new format FIRMs instead of A1-30 zones.

- Zone AH: Areas subject to inundation by the 1-percent-annual-chance shallow flooding, usually areas of ponding, where average depths range from 1 to 3 feet. BFEs derived from detailed hydraulic analyses are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone VE: Areas subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action. BFEs derived from detailed hydraulic analyses are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone X: Moderate risk areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by a levee. No BFEs or base flood depths are shown within these zones.

Locations of flood zones in Jefferson County based on the digital Flood Insurance Rate Map (DFIRM) from FEMA are illustrated in Figures 6-1 to 6-14.

Figure 6-1. Estimated Flood Zones in Jefferson County

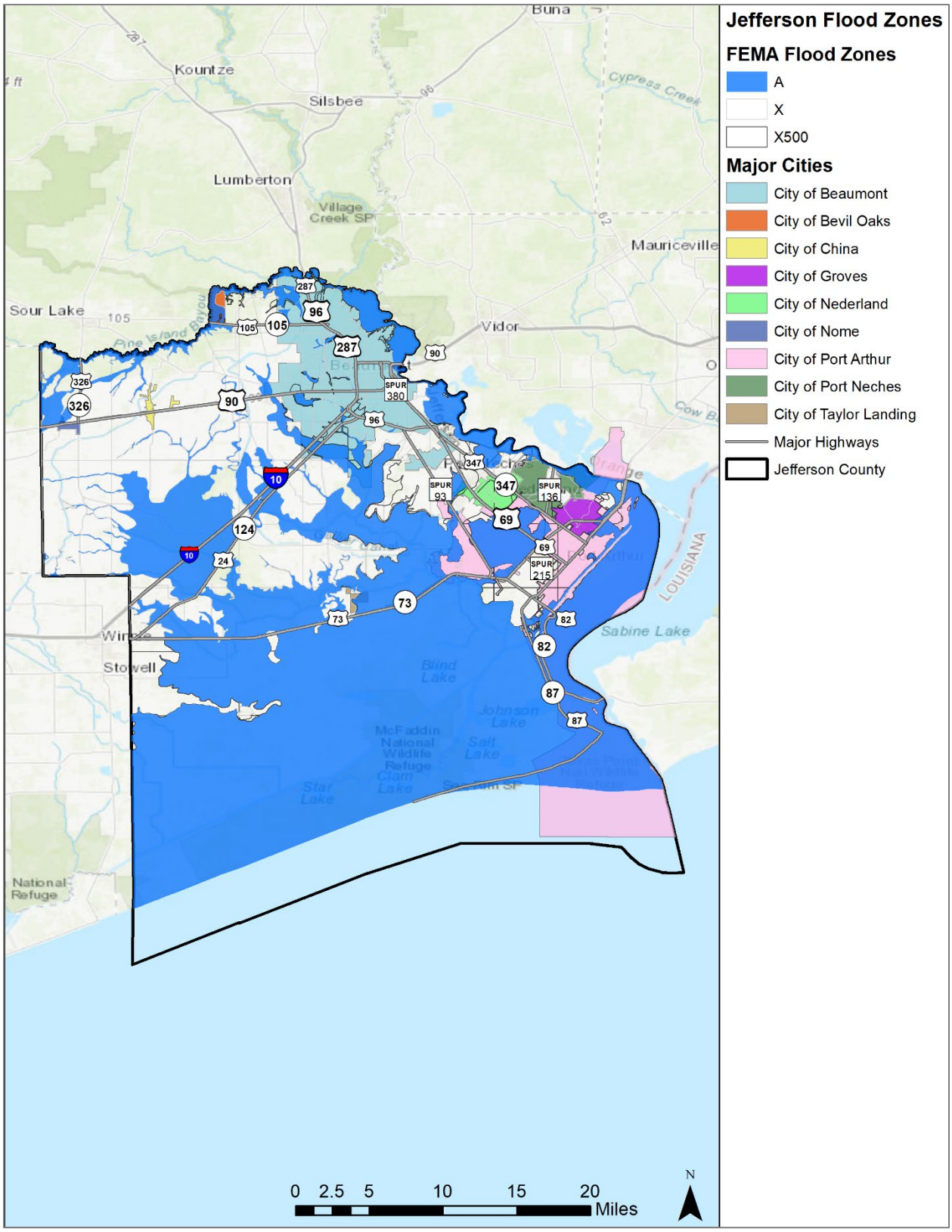


Figure 6-2. Estimated Flood Zones in the City of Beaumont

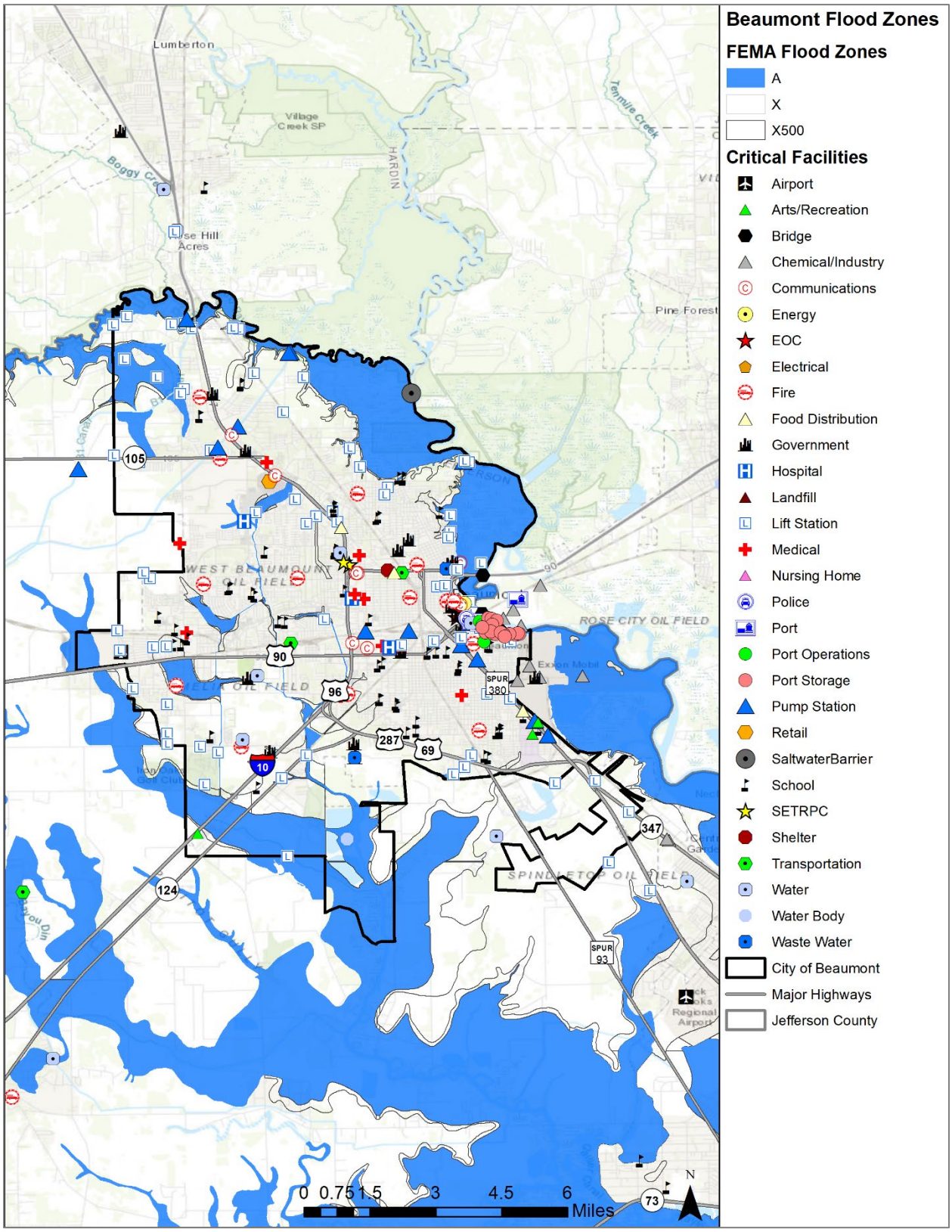


Figure 6-3. Estimated Flood Zones in the City of Bevil Oaks

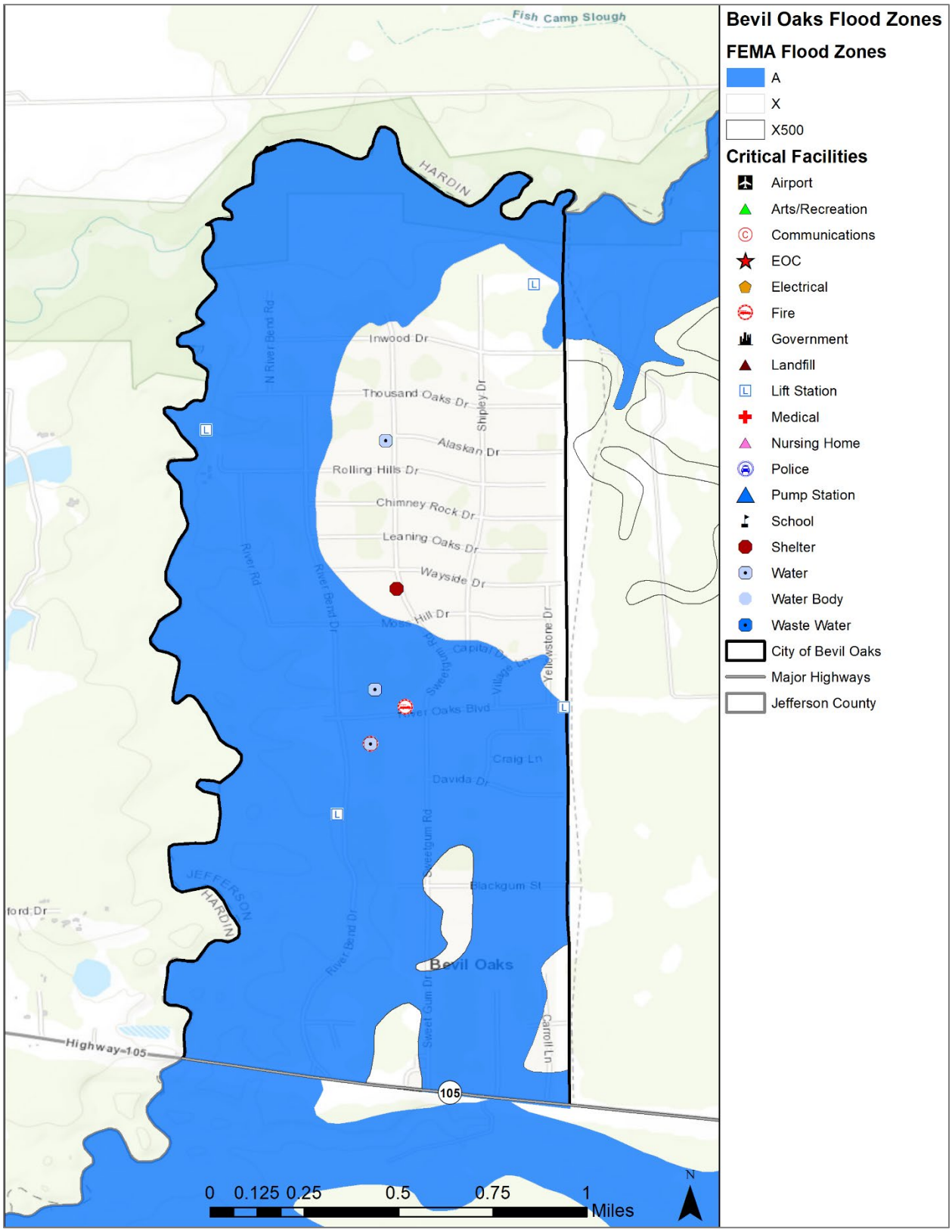


Figure 6-4. Estimated Flood Zones in the City of China

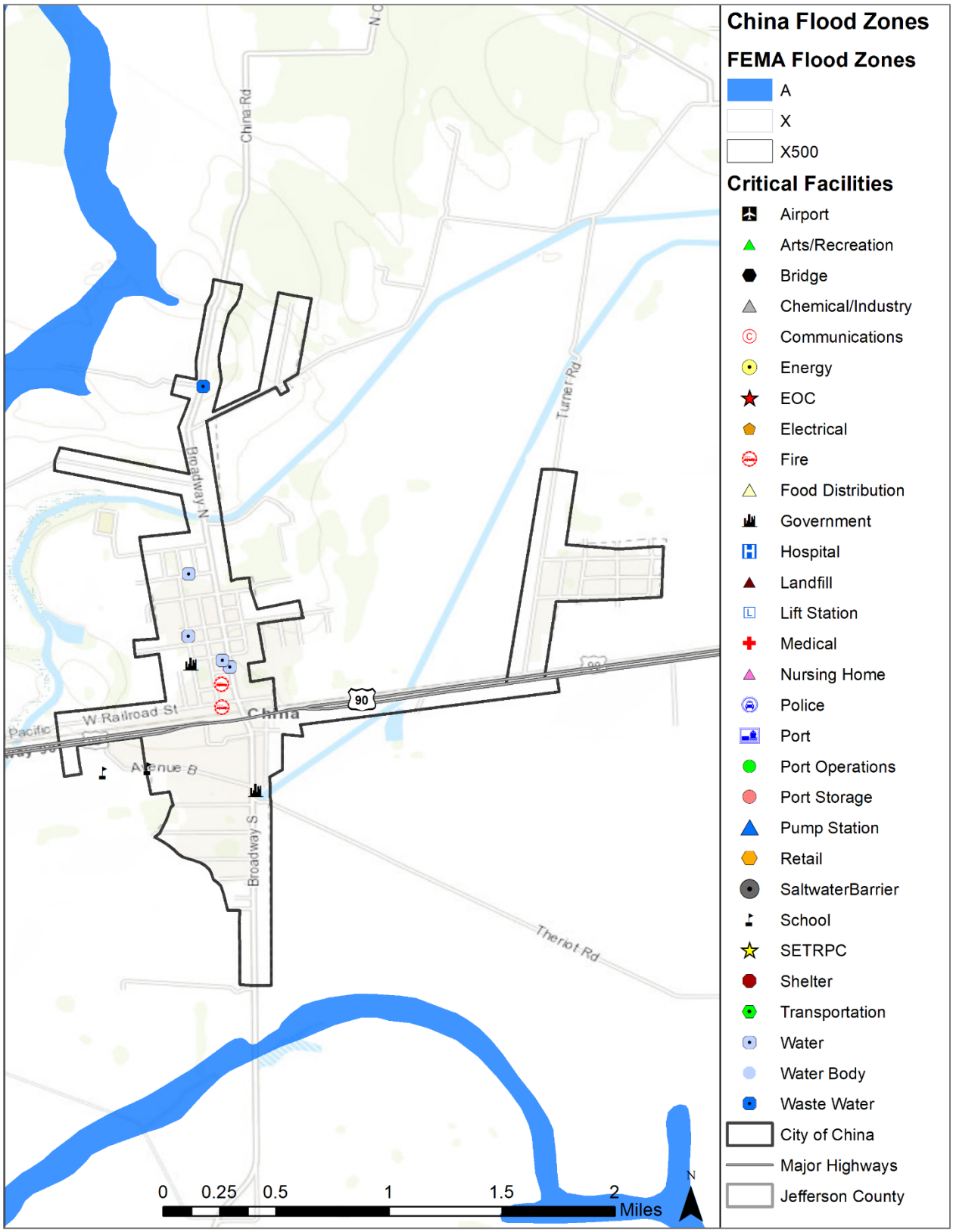


Figure 6-5. Estimated Flood Zones in the City of Groves

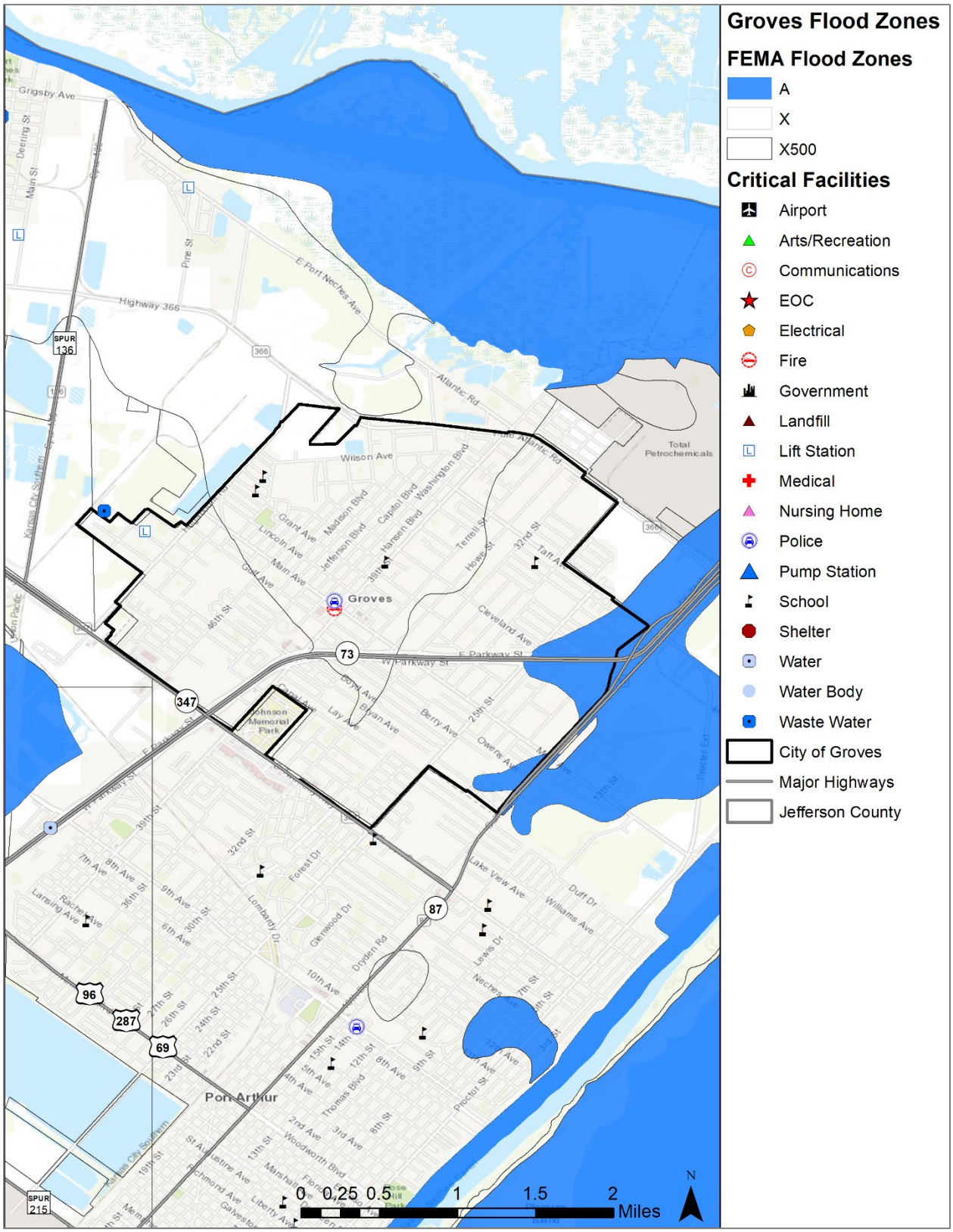


Figure 6-6. Estimated Flood Zones in the City of Nederland

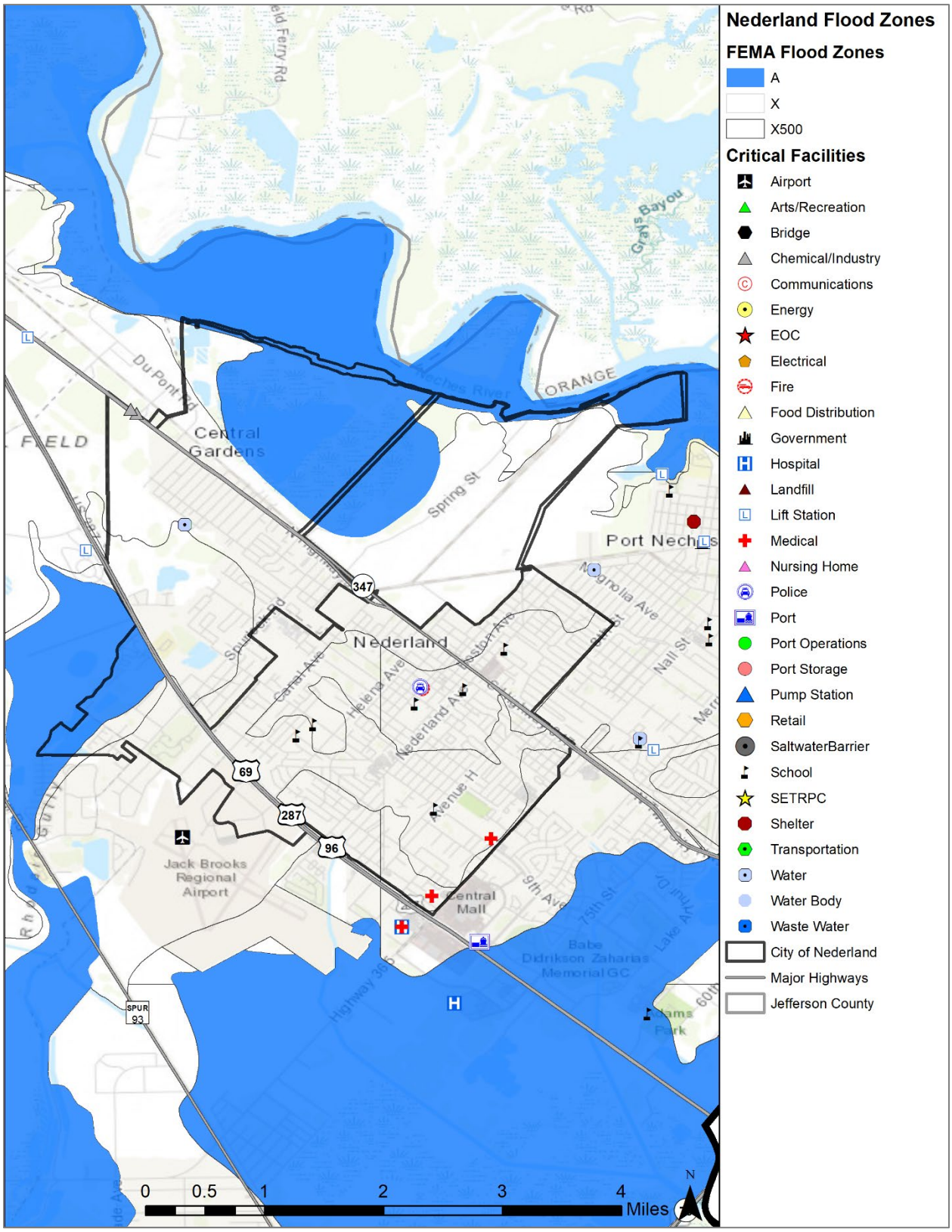


Figure 6-7. Estimated Flood Zones in the City of Nome

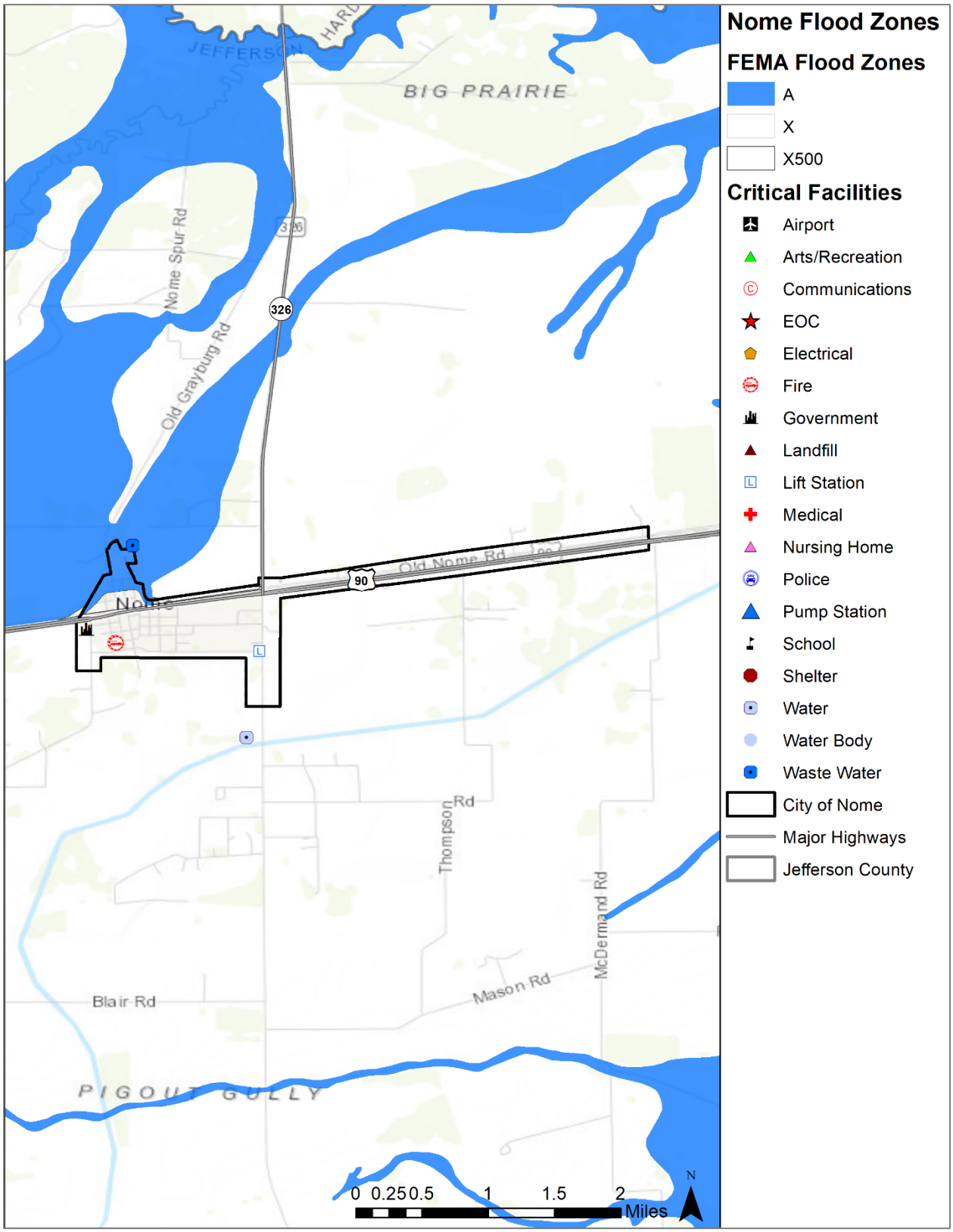


Figure 6-8. Estimated Flood Zones in the City of Port Arthur

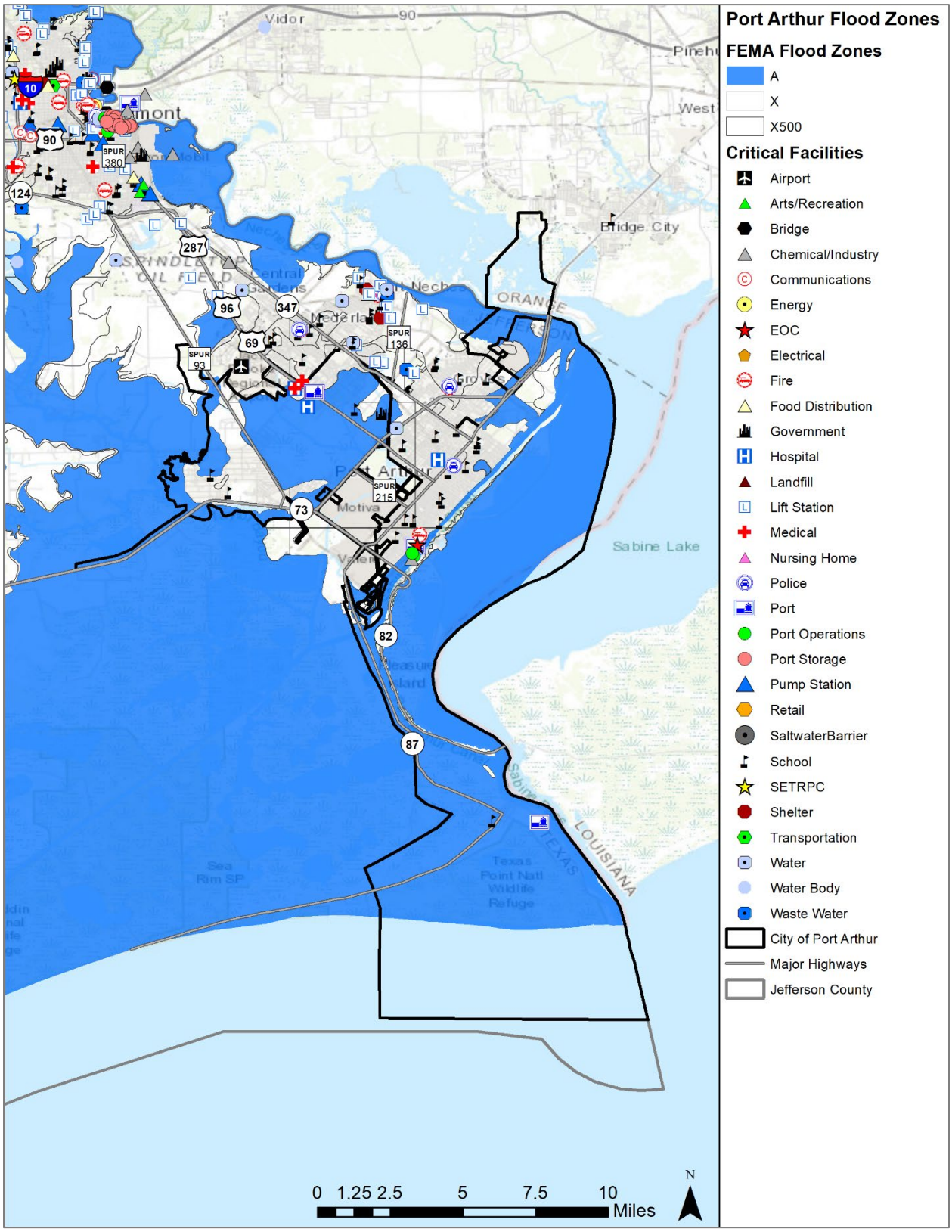


Figure 6-9. Estimated Flood Zones in the City of Port Neches

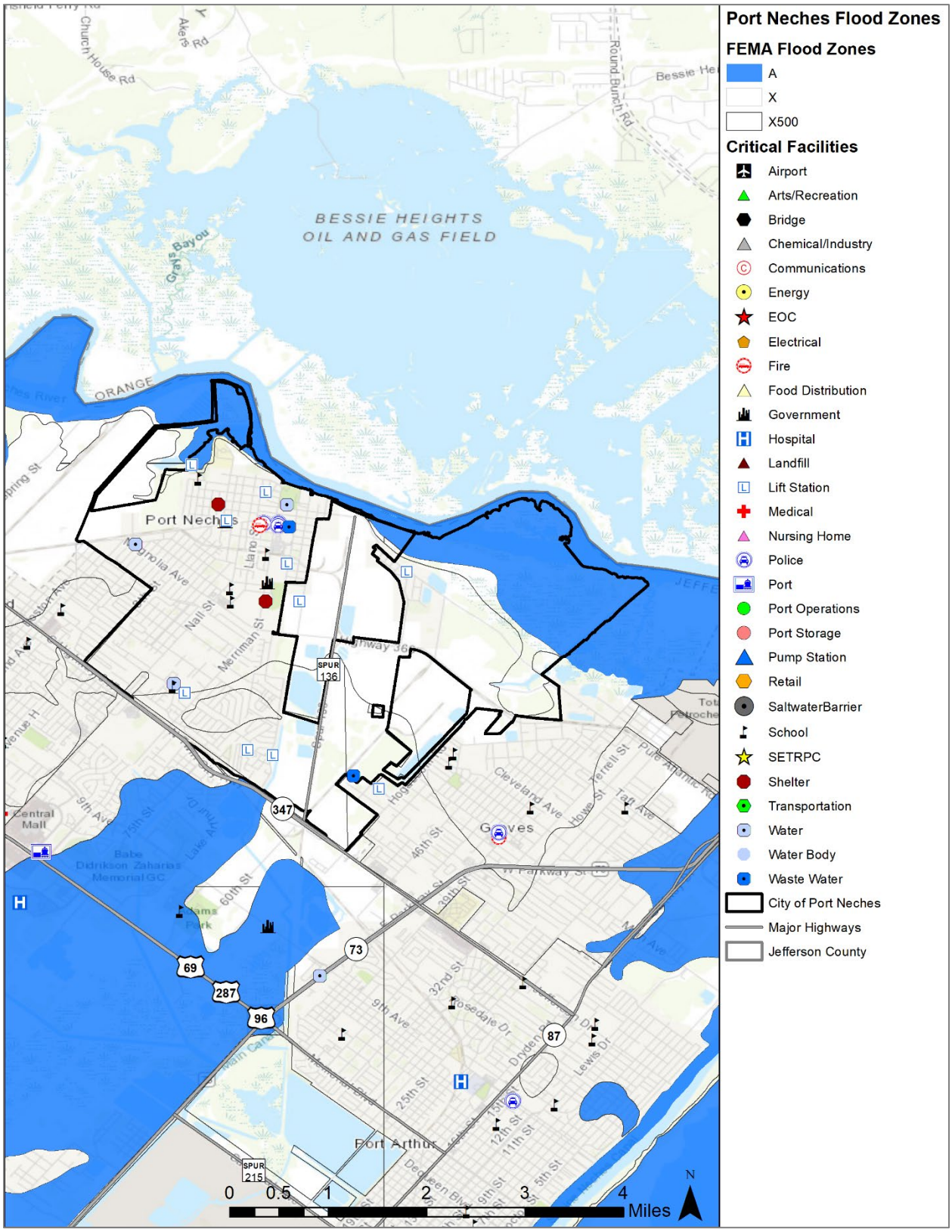


Figure 6-10. Estimated Flood Zones in the City of Taylor Landing

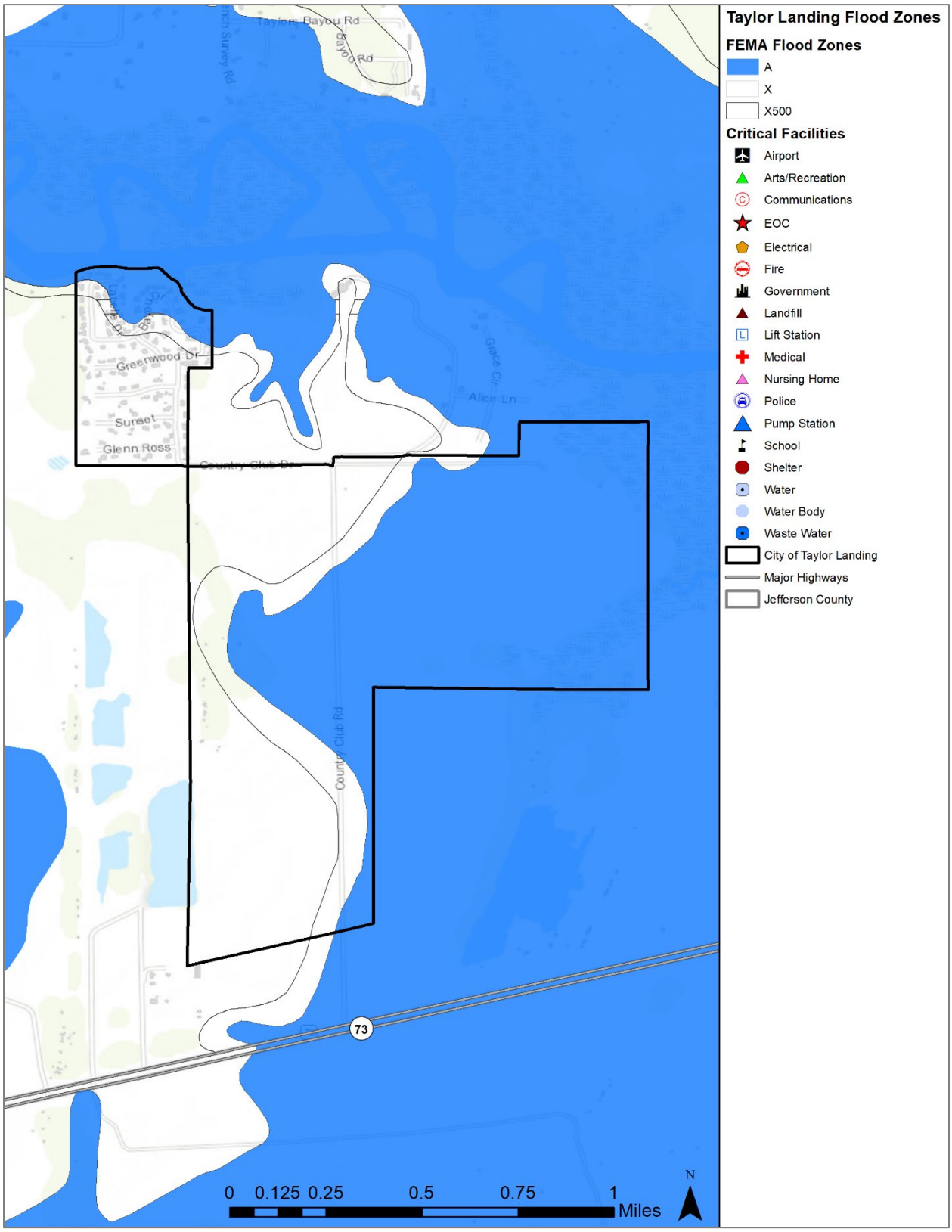


Figure 6-11. Estimated Flood Zones in the Lower Neches Valley Authority

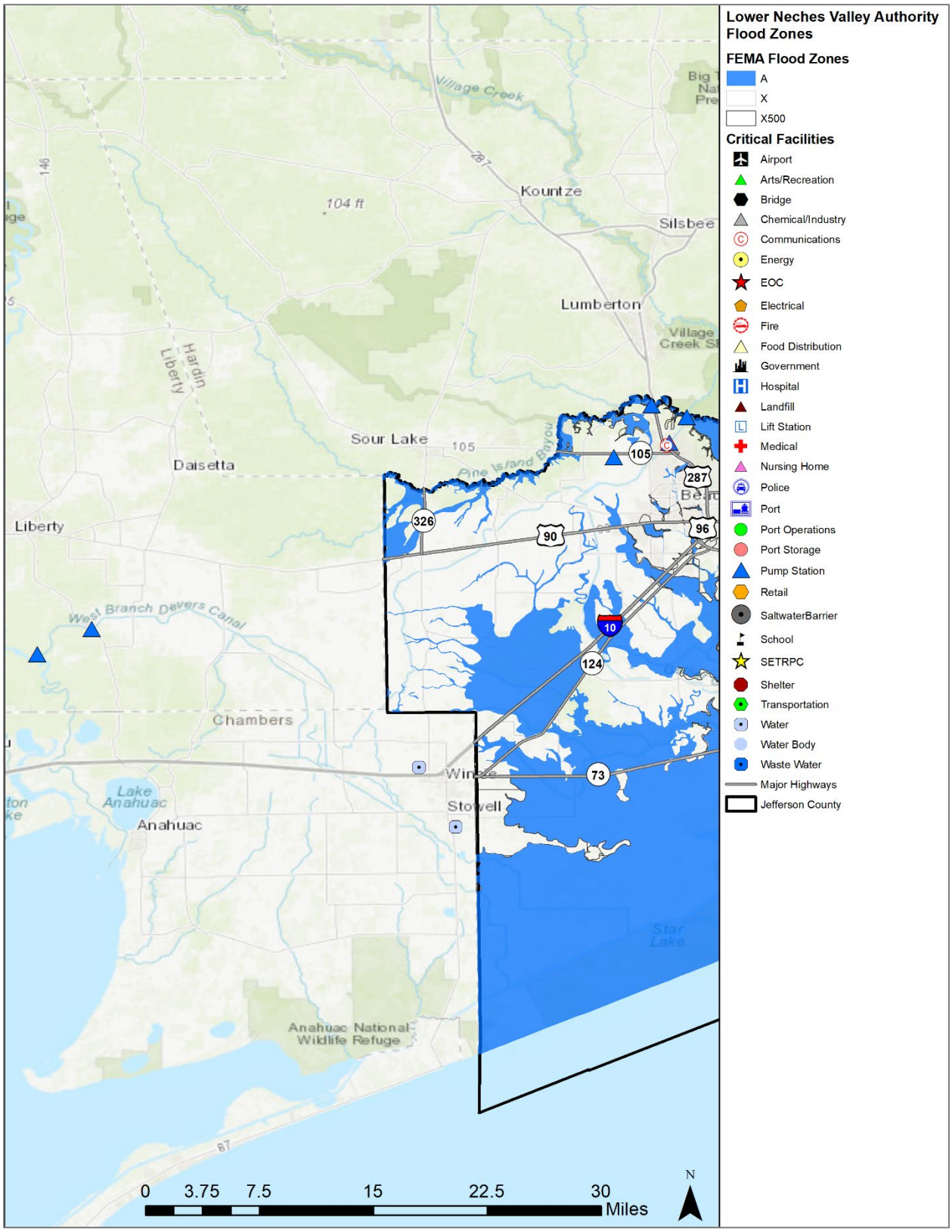


Figure 6-12. Estimated Flood Zones in the Port of Beaumont Navigation District

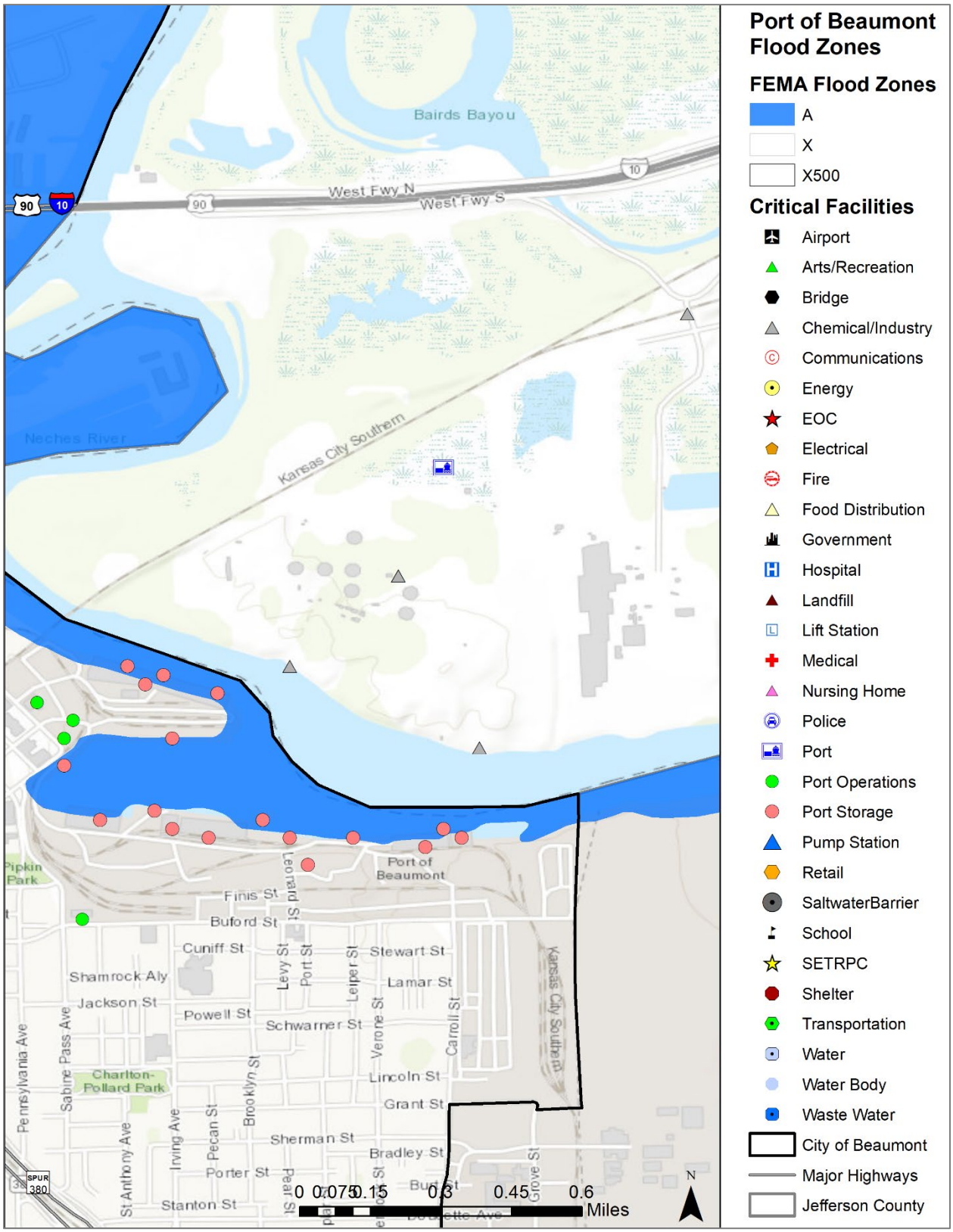


Figure 6-13. Estimated Flood Zones in the Port of Port Arthur Navigation District

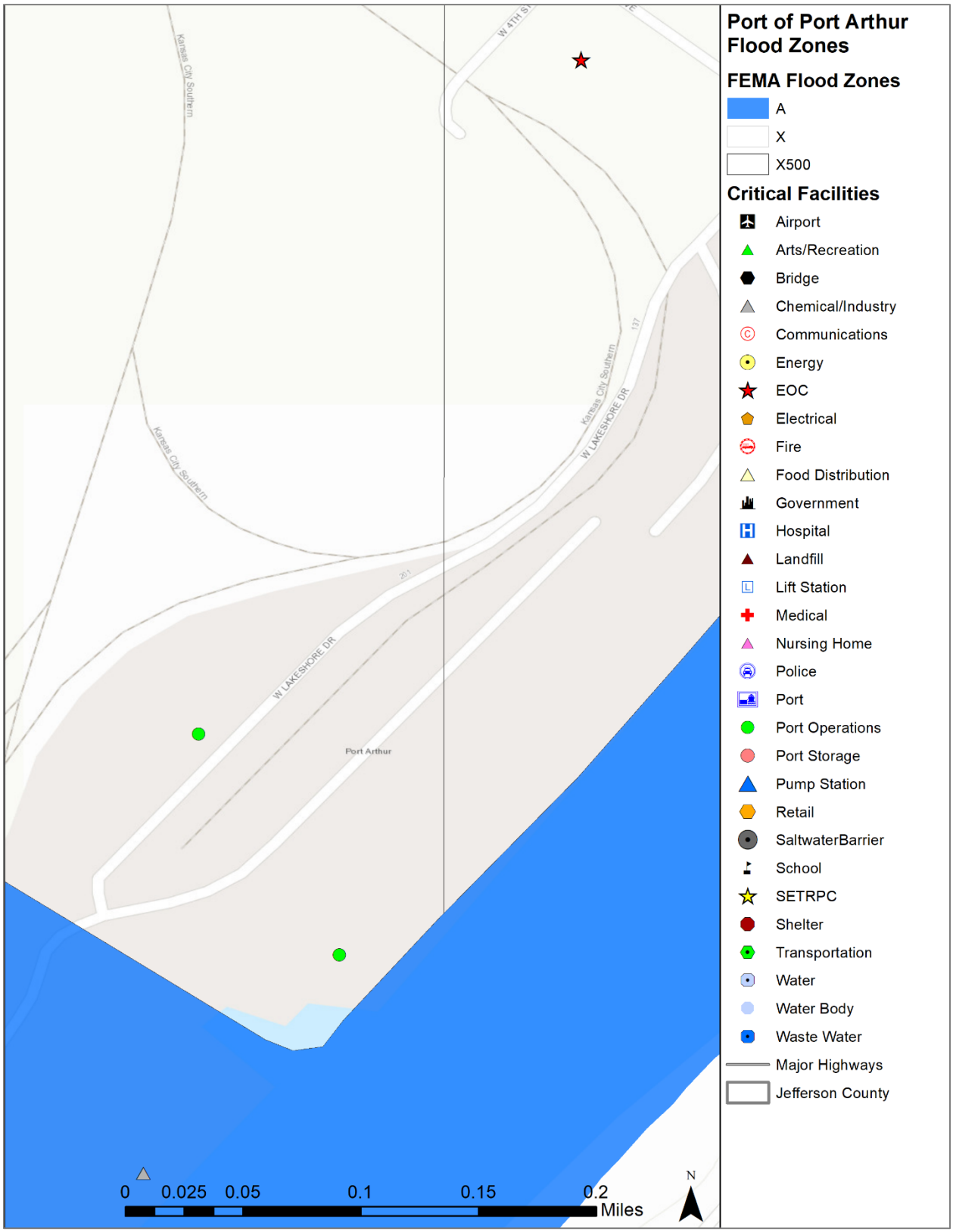
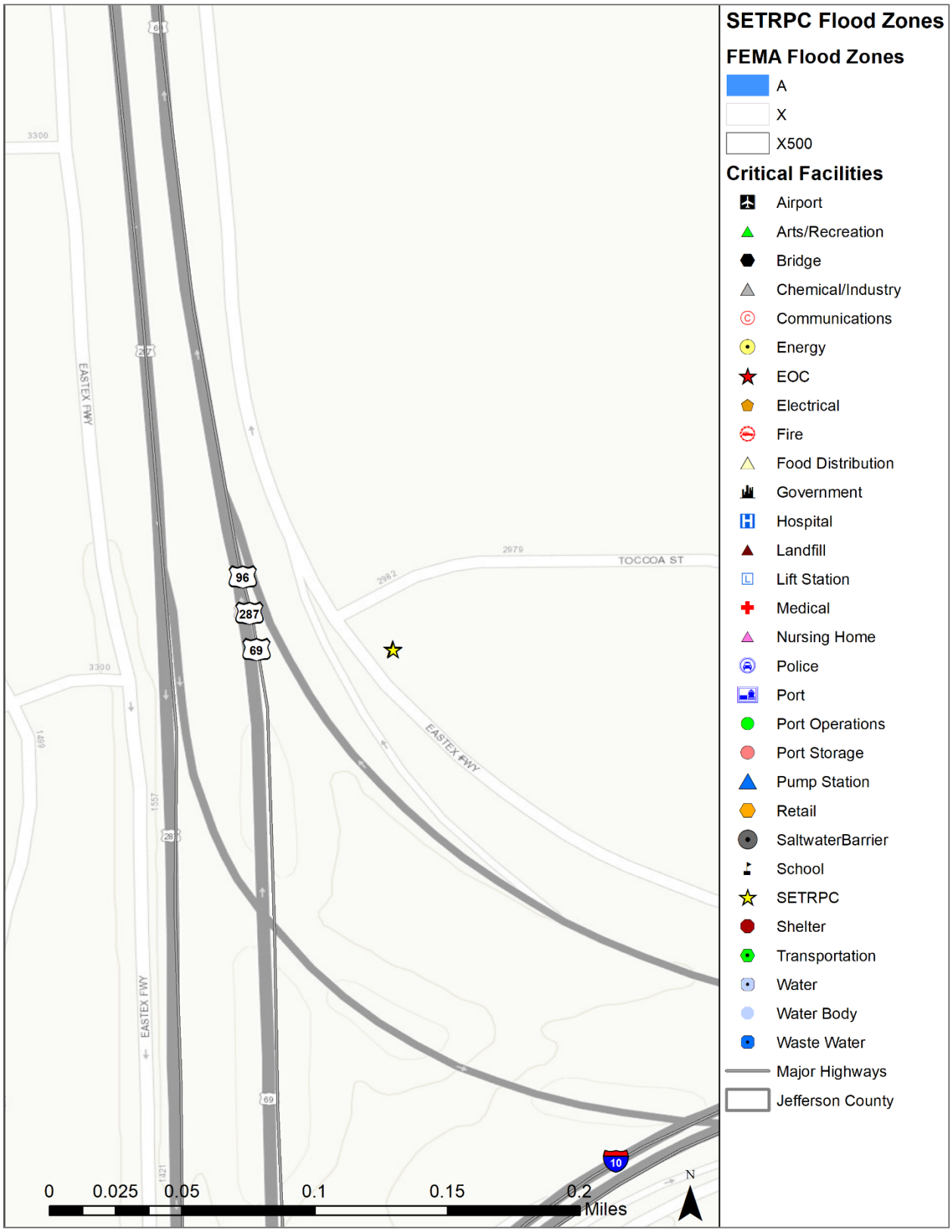


Figure 6-14. Estimated Flood Zones in the SETRPC



EXTENT

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

Determining the intensity and magnitude of a flood event is dependent upon the flood zone and location of the flood hazard area in addition to depths of flood waters. Extent of flood damages can be expected to be more damaging in the areas that will convey a base flood. FEMA categorizes areas on the terrain according to how the area will convey flood water. Flood zones are the categories that are mapped on Flood Insurance Rate Maps. Table 6-1 provides a description of FEMA flood zones and the flood impact in terms of severity or potential harm. Flood Zones A, AE, AH, VE and X are the only hazard areas mapped in the region. Figures 6-1 through 6-14 should be read in conjunction with the extent for flooding in Tables 6-1 and 6-2 to determine the intensity of a potential flood event.

Table 6-1. Flood Zones

INTENSITY	ZONE	DESCRIPTION
HIGH	ZONE A	Areas with a one percent annual chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas, no depths or base flood elevations are shown within these zones.
	ZONE A1-30	These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a Base Flood Elevation (BFE) (old format).
	ZONE AE	The base floodplain where base flood elevations are provided. AE Zones are now used on the new format FIRMs instead of A1-A30 Zones.
	ZONE AO	River or stream flood hazard areas and areas with a one percent or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from one to three feet. These areas have a 26 percent chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
	ZONE AH	Areas with a one percent annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from one to three feet. These areas have a 26 percent chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
	ZONE A99	Areas with a one percent annual chance of flooding that will be protected by a federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.

INTENSITY	ZONE	DESCRIPTION
	ZONE AR	Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements will apply, but rates will not exceed the rates for unnumbered A zones if the structure is built or restored in compliance with Zone AR floodplain management regulations.
HIGH COASTAL	ZONE VE, V1-30	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26 percent chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones.
MODERATE to LOW	ZONE X 500	An area inundated by 500-year flooding; an area inundated by 100-year flooding with average depths of less than one foot or with drainage areas less than one square mile; or an area protected by levees from 100-year flooding.

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

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

The intensity and magnitude of a flood event is also determined by the depth of flood waters. Table 6-2 describes the stream gauge data provided by the United States Geological Survey (USGS).

Table 6-2. Extent for Jefferson County[1]

JURISDICTION[2]	PEAK FLOOD EVENT
Jefferson County	Taylor Bayou, near LaBelle, Texas, reached an overflow elevation of 11.29 feet in September 1963. The average peak flow for the Taylor Bayou is 9.0 feet at this site.
Jefferson County	Hillebrandt Bayou, near Lovell Lake in Jefferson County, Texas, reached an overflow elevation of 12.3 feet in September 1963 near Lovell Lake. The average peak flow for the Hillebrandt Bayou is 8.9 feet at this site.

[1] Severity estimated by averaging floods at certain stage level over the history of flood events. Severity and peak events are based on U.S. Geological Survey data.
[2] Severity is provided for jurisdictions where peak data was provided.

JURISDICTION[2]	PEAK FLOOD EVENT
Jefferson County	Pine Island Bayou reached an overflow elevation of 39.68 feet in August 2017 near Sour Lake, Texas. The average peak flow for the Pine Island Bayou is 28.4 feet at this site.
City of Beaumont	Neches River in Beaumont (Saltwater Barrier) reached an overflow elevation of 21.56 feet in September 2017. The average peak flow for the Neches River is 6.9 feet at this site.
City of Beaumont	Pine Island Bayou in Beaumont Texas (above BI Pump Plant) reached an overflow elevation of 28.97 feet in August 2017. The average peak flow for the Pine Island Bayou is 11.5 feet at this site.

The range of flood intensity that the planning area can experience is high, or Zone A. Based on historical occurrences, the planning area, including the SETRPC and all participating jurisdictions and special districts, could expect to experience up to 9.3 inches of rain within a 7.4-hour period, resulting in flash flooding. The highest recorded rainfall for the planning area occurred during Hurricane Harvey when 60.58 inches of rain fell in the planning area over an 81-hour period.

The data described in Tables 6-1 and 6-2, together with Figures 6-1 through 6-14, and historical occurrences for the area, provides an estimated potential magnitude and severity for the planning area. For example, the City of Port Arthur, as shown in Figure 6-8, has areas designated as Zone A, AE, AH, and VE. Reading this figure in conjunction with Table 6-1 means the area is an area of high risk for flood. It is noted that the SETRPC is not located in a special flood hazard area and has no known localized flood risk.

HISTORICAL OCCURRENCES

Historical evidence indicates that areas within the planning area, including the SETRPC and all participating jurisdictions, are susceptible to flooding, especially in the form of flash flooding. It is important to note that only flood events that have been reported have been factored into this risk assessment, therefore it is likely that additional flood occurrences have gone unreported before and during the recording period. Table 6-3 identifies historical flood events within the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts. Table 6-4 provides the historical flood event summary by jurisdiction.

The Lower Neches Valley Authority reported flood damages from only two events including one in 2017 and one in 2019. No damage description or dollar estimates were available. The Port of Port Arthur Navigation District reported 4 flooding events (including during Hurricane Rita) over the reporting period, but dates and damage estimates were not available. Damage descriptions include flooding of port offices, localized flooding of properties along Houston Avenue, and backlands areas of Berths 3-5 are exposed to flood waters due to tidal surges during significant events. The Port of Beaumont Navigation District storm event damages were related to hurricane events, which are included in Section 5 of the plan. The SETRPC did not report and damages to their facility as a result of flooding. The SETRPC and all three special districts do not experience events separate and apart from those events reported in the NCEI database under the jurisdiction which they are located.

Historical data is provided by team members and the Storm Prediction Center (NOAA), NCEI database for Jefferson County.

Table 6-3. Historical Flood Events, 1996-2021[3]

JURISDICTION	DATE	TIME	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	9/27/1996	9:00 AM	0	0	$155,705	$0
City of Port Arthur	7/30/1997	3:00 PM	0	0	$34,019	$0
City of Port Arthur	9/23/1997	3:45 PM	0	0	$16,936	$0
City of Nederland	1/21/1998	11:00 PM	0	0	$67,575	$0
City of Beaumont	8/14/1998	1:00 PM	0	0	$16,708	$0
Jefferson County	9/13/1998	10:00 AM	0	0	$166,842	$0
City of Beaumont	9/11/1998	1:00 PM	0	0	$166,872	$0
City of Beaumont	10/6/1998	8:30 AM	0	0	$33,293	$0
City of Nederland	4/12/2000	10:00 AM	0	0	$398,428	$0
City of Beaumont	6/7/2001	3:30 AM	0	0	$15,337,247	$0
Jefferson County	9/1/2001	10:00 AM	0	0	$38,279	$0
Jefferson County	9/2/2001	10:00 AM	0	0	$114,836	$0
City of Beaumont	11/28/2001	5:30 PM	0	0	$30,778	$0
Jefferson County	6/27/2002	3:00 AM	0	0	$7,588	$0
Jefferson County	8/15/2002	4:00 AM	0	0	$30,216	$0
City of Beaumont	10/29/2002	12:30 AM	1	0	$7,529,040	$0
City of Beaumont	11/3/2002	11:10 AM	0	0	$1,505,808	$0
City of Port Arthur	12/4/2002	7:00 AM	0	0	$75,457	$0
City of Beaumont	2/21/2003	1:34 AM	0	0	$37,275	$0
Jefferson County	9/12/2003	7:00 AM	0	0	$36,852	$0
City of Beaumont	10/9/2003	3:45 PM	0	0	$1,475,692	$0
City of Port Neches	10/25/2003	2:00 PM	0	0	$147,569	$0
City of Port Arthur	5/11/2004	8:40 PM	0	0	$2,887	$0

[3] Only recorded events with fatalities, injuries, and/or damages are listed, values are in 2022 dollars. Historical events are listed from January 1996 through December 2021.

JURISDICTION	DATE	TIME	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Nederland	5/13/2004	3:45 PM	0	0	$7,218	$0
City of Beaumont	6/26/2004	4:10 PM	0	0	$7,196	$0
City of Nederland	9/23/2004	8:50 PM	0	0	$14,376	$0
City of Beaumont	5/29/2006	3:09 AM	0	0	$67,408	$0
City of Beaumont	5/29/2006	6:18 AM	0	0	$33,704	$0
Jefferson County	5/29/2006	10:25 AM	1	0	$13,482	$0
City of Beaumont	7/23/2006	4:30 PM	0	0	$33,538	$0
City of Beaumont	7/26/2006	1:00 PM	0	0	$2,683	$0
City of Beaumont	10/16/2006	4:15 PM	0	0	$13,528	$0
City of Port Arthur	10/16/2006	6:00 PM	0	0	$6,764	$0
City of Bevil Oaks	2/12/2007	6:00 PM	0	0	$13,415	$0
Jefferson County	7/6/2007	9:30 AM	0	0	$6,553	$0
Jefferson County	9/13/2007	1:00 AM	0	0	$65,471	$0
City of China	1/4/2009	3:25 PM	0	0	$6,465	$0
Jefferson County	4/18/2009	5:30 PM	0	0	$25,605	$0
City of Beaumont	4/27/2009	8:15 PM	0	0	$6,401	$0
City of Beaumont	10/22/2009	8:00 AM	0	0	$126,287	$0
City of Port Arthur	10/22/2009	9:00 AM	0	0	$12,629	$0
City of Beaumont	10/26/2009	9:00 AM	0	0	$12,629	$0
Jefferson County	8/17/2010	3:00 PM	0	0	$1,251	$0
City of Port Arthur	7/19/2011	6:30 AM	0	0	$12,084	$0
Jefferson County	1/25/2012	3:20 PM	0	0	$1,204	$0
City of Bevil Oaks	3/20/2012	12:00 PM	0	0	$11,901	$0
Jefferson County	7/13/2012	6:00 AM	0	0	$2,383	$0
City of Beaumont	5/10/2013	4:00 AM	0	0	$58,598	$0
City of Beaumont	10/31/2013	8:15 AM	0	0	$58,447	$0
City of Beaumont	3/21/2015	9:35 AM	0	0	$17,343	$0

JURISDICTION	DATE	TIME	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Beaumont	5/12/2015	5:25 PM	0	0	$11,480	$0
City of Beaumont	5/21/2015	1:23 PM	0	0	$5,740	$0
Jefferson County	6/17/2015	7:29 PM	0	0	$1,144	$0
City of Port Arthur	6/25/2017	8:30 PM	0	0	$11,145	$0
Jefferson County	8/27/2017	7:12 AM	5	1	$3,316,375,653	$0
City of Groves	1/27/2018	6:10 AM	0	0	$1,010,409	$0
City of Beaumont	6/18/2018	5:41 PM	0	0	$5,417	$0
City of Port Arthur	6/19/2018	8:50 AM	0	0	$108,339	$0
Jefferson County	11/7/2018	5:00 PM	0	0	$10,832	$0
Jefferson County	9/18/2019	9:31 PM	3	0	$318,979,666	$0
City of Beaumont	5/14/2020	2:38 PM	0	0	$79,858	$0
Jefferson County	5/17/2021	9:26 AM	0	0	$101,415	$0
Jefferson County	5/17/2021	12:01 PM	0	0	$5,070,729	$0
TOTALS			**10**	**1**	**$3,669,836,322**	**$0**

Table 6-4. Summary of Historical Flood Events, January 1996-2021

JURISDICTION	NUMBER OF EVENTS	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	34	9	1	$3,641,205,736	$0
City of Beaumont	38	1	0	$26,672,970	$0
City of Bevil Oaks	2	0	0	$25,316	$0
City of China	1	0	0	$6,465	$0
City of Groves	1	0	0	$1,010,409	$0
City of Nederland	4	0	0	$487,597	$0
City of Nome	1	0	0	$0	$0
City of Port Arthur	11	0	0	$280,260	$0
City of Port Neches	2	0	0	$147,569	$0
City of Taylor Landing	0	0	0	$0	$0

JURISDICTION	NUMBER OF EVENTS	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
TOTAL LOSSES	94	10	1	$3,669,836,322	

Based on the list of historical flood events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions and special districts, 24 of the events have occurred since the 2017 Plan.

SIGNIFICANT EVENTS

Flash Flood September 18, 2019 – Jefferson County

Hurricane Imelda moved inland southwest of Galveston into Southeast Texas. Heavy rain remained over Southeast Texas with over 30 inches of rainfall in 12 hours within the Jefferson County planning area. This high amount of rainfall ranks Imelda as the fourth wettest tropical cyclone to affect the lower U.S. region. The maximum accumulation total 45 inches within some areas in Jefferson County. Over 5,100 homes were flooded along with major streets within the planning area. Numerous high-water rescues were conducted throughout Jefferson County. Three fatalities were attributed to the flooding event, while another two residents were injured due to inundated roadways.

Flash Flood August 27, 2017 – Jefferson County

Hurricane Harvey moved across the Gulf of Mexico into the central Texas Coast during the last week of August. After the initial landfall, the cyclone moved back into the gulf a couple days later and then made another landfall in Southwest Louisiana during the morning of the 30th. The first rains from the system moved across the region during the afternoon of the 25th and finally ended during the morning of September 1. One to 5 feet of rain fell across Southeast Texas during the week which in some cases was slightly more than a normal yearly rainfall total. Widespread flooding occurred and a new rainfall record was set regarding the total for a tropical cyclone in the United States.

Over 40 inches of rain fell across the Jefferson County planning area which resulted in flooding of approximately 64,000 homes. Worst hit areas were around Port Arthur, Groves, Bevil Oaks, China, and northeast Beaumont. Record flooding occurred on Pine Island Bayou and the Lower Neches. City and County infrastructures were damaged along with water pumps and treatment plants being inundated. Damage estimates exceeded 3 billion (2022 dollars) for Jefferson County. Five fatalities were attributed to the flooding event.

Flash Flood June 7, 2001 – Jefferson County

Tropical Storm Allison caused minor problems along coastal sections of southeast Texas, but eventually resulted in catastrophic flood losses further inland. Wind gusts of 30 to 40 mph resulted in minor roof damage to less than ten homes along the coast in Jefferson County between the evening of June 5th and the early morning hours of June 6th. A two-foot storm surge resulted in minor beach erosion and portions of Highway 82 between Sabine Pass and Port Arthur to go under water during high tide during the nighttime high tide of June 5th to 6th. The specific flood events that occurred between June 7th and 9th were a result of the remnants of Tropical Storm Allison, as it meandered across southeast and east Texas. Approximately 10 inches of rain fell in less than six hours resulting in widespread flooding across northern Jefferson County. 900 homes were damages but only 10 were classified as destroyed. Roads and bridges also sustained damages as a result of the storm event.

PROBABILITY OF FUTURE EVENTS

Based on 94 recorded historical occurrences within a 26-year reporting period for the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, flooding is highly likely with 3 to 4 events per year anticipated.

VULNERABILITY AND IMPACT

A property's vulnerability to a flood depends on its location and proximity to the floodplain. Structures that lie along banks of a waterway are the most vulnerable and are often repetitive loss structures. The County and all participating jurisdictions encourage development outside of the floodplain, and the impact for flood for the entire planning area is considered "Minor" as facilities and services would be shut down for one week or more and approximately 10 percent of property destroyed or with major damage. However, with one injury and ten fatalities, the impact for flood for the entire planning area, including the SETRPC and all participating jurisdictions and special districts, is considered "Substantial" with multiple deaths possible depending on the size and duration of the event.

Table 6-5 includes the critical facilities identified in Appendix D that were determined to be located within the SFHA by FIRM mapping and further by each participating jurisdiction.

Table 6-5. Critical Facilities in the Floodplain by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	1 Port Authority, 1 Drainage District, 2 Water Districts, 1 Medical Facility, 1 Fire Station, 4 Schools
City of Beaumont	20 Lift Stations, 1 Fire Station, 1 Communications Facility, 1 Transportation Facility, 1 Chemical Manufacturer, 1 Chemical Storage Facility, 1 Saltwater Barrier
City of Bevil Oaks	1 Government Facility, 2 Fire Stations, 3 Lift Stations
City of China	None
City of Groves	None
City of Nederland	None
City of Nome	1 Wastewater and Sewage Plant
City of Port Arthur	2 Schools, 1 Medical Facility
City of Port Neches	1 Public Works Facility and Infrastructure
City of Taylor Landing	None
Lower Neches Valley Authority	2 Pumping Plants
Port of Beaumont Navigation District	1 Break-Bulk Facility
Port of Port Arthur Navigation District	1 Tenant/ Pipeline
SETRPC	None

Historic loss estimates due to flood are presented in Table 6-6 below. Considering 94 flood events over a 26-year period, frequency is approximately three to four events every year.

Table 6-6. Potential Annualized Losses by Jurisdiction

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Jefferson County	$3,641,205,736	$140,046,375
City of Beaumont	$26,672,970	$1,025,883
City of Bevil Oaks	$25,316	$974
City of China	$6,465	$249
City of Groves	$1,010,409	$38,862
City of Nederland	$487,597	$18,754
City of Nome	$0	$0
City of Port Arthur	$280,260	$10,779
City of Port Neches	$147,569	$5,676
Lower Neches Valley Authority	Unavailable	$0
Port of Beaumont Navigation District	Unavailable	$0
Port of Port Arthur Navigation District	Unavailable	$0
SETRPC	$0	$0
Planning Area	**$3,669,836,322**	**$141,147,552**

While all citizens are at risk to the impacts of a flood, forced relocation and disaster recovery drastically impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. An estimated 18.0% of the planning area population live below the poverty level (Table 6-7).

Table 6-7. Populations at Greatest Risk by Jurisdiction[4]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Jefferson County	45,564
City of Beaumont	22,174
City of Bevil Oaks	44

[4] US Census Bureau 2020 data for Jefferson County.

JURISDICTION	POPULATION BELOW POVERTY LEVEL
City of China	114
City of Groves	2,159
City of Nederland	1,491
City of Nome	23
City of Port Arthur	14,606
City of Port Neches	1,247
City of Taylor Landing	0

The severity of a flooding event varies depending on the relative risk to citizens and structures located within each jurisdiction. Table 6-8 depicts the level of impact for Jefferson County and each participating jurisdiction.

Table 6-8. Impact by Jurisdiction

JURISDICTION	IMPACT	DESCRIPTION
Jefferson County	Substantial	It is anticipated that the Jefferson County could anticipate an impact of “minor” with critical facilities would be shut down for one week with more and more than 10 percent of property would be destroyed or damaged. However, the historical injuries and fatalities indicate a “substantial” impact, with multiple deaths possible depending on the size and duration of the event.
City of Beaumont	Substantial	It is anticipated that the City of Beaumont could anticipate an impact of “minor” with critical facilities would be shut down for one week with more and more than 10 percent of property would be destroyed or damaged. However, the historical fatality indicates a “substantial” impact, with multiple deaths possible depending on the size and duration of the event.
City of Bevil Oaks	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
City of China	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
City of Groves	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.

JURISDICTION	IMPACT	DESCRIPTION
City of Nederland	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
City of Nome	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
City of Port Arthur	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
City of Port Neches	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
City of Taylor Landing	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
Lower Neches Valley Authority	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
Port of Beaumont Navigation District	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.
Port of Port Arthur Navigation District	Limited	Any injuries or illnesses would be treatable with first aid, with minor quality of life lost. If critical facilities are shut down it would be for 24 hours or less, and it is expected that less than 10 percent of property would be destroyed or damaged in the city.

ASSESSMENT OF IMPACTS

Flooding is the deadliest natural disaster that occurs in the U.S. each year, and it poses a constant and significant threat to the health and safety of the people in the Jefferson County planning area. The impact of climate change could produce larger, more severe flood events, exacerbating the current flood impacts. Worsening flood conditions can be frequently associated with a variety of impacts, including:

- Flood-related rescues may be necessary at swift and low water crossings or in flooded neighborhoods where roads have become impassable, placing first responders in harm's way.

- Evacuations may be required for entire neighborhoods because of rising floodwaters, further taxing limited response capabilities and increasing sheltering needs for displaced residents.
- Health risks and threats to residents are elevated after the flood waters have receded due to contaminated flood waters (untreated sewage and hazardous chemicals) and mold growth typical in flooded buildings and homes.
- Significant flood events often result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage can result in an increase in structure fires and/or carbon monoxide poisoning as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- Floods can destroy or make residential structures uninhabitable, requiring shelter or relocation of residents in the aftermath of the event.
- First responders are exposed to downed power lines, contaminated and potentially unstable debris, hazardous materials, and generally unsafe conditions, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.
- Emergency operations and services may be significantly impacted due to damaged facilities.
- Significant flooding can result in the inability of emergency response vehicles to access areas of the community.
- Critical staff may suffer personal losses or otherwise impacted by a flood event and unable to report for duty, limiting response capabilities.
- City or county departments may be flooded, delaying response and recovery efforts for the entire community.
- Private sector entities that the jurisdiction and its residents rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Damage to infrastructure may slow economic recovery since repairs may be extensive and lengthy.
- Some businesses not directly damaged by the flood may be negatively impacted while utilities are being restored or water recedes, further slowing economic recovery.
- When the community is affected by significant property damage it is anticipated that funding would be required for infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, and normal day-to-day operating expenses.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Residential structures substantially damaged by a flood may not be rebuilt for years and uninsured or underinsured residential structures may never be rebuilt, reducing the tax base for the community.
- Large floods may result in a dramatic population fluctuation, as people are unable to return to their homes or jobs and must seek shelter and/or work outside of the affected area.

- Businesses that are uninsured or underinsured may have difficulty reopening, which results in a net loss of jobs for the community and a potential increase in the unemployment rate.
- Flooding may cause significant disruptions of clean water and sewer services, elevating health risks and delaying recovery efforts.
- The psycho-social effects on flood victims and their families can traumatize them for long periods of time, creating long term increases in medical treatment and services.
- Extensive or repetitive flooding can lead to decreases in property value for the affected community.
- Flood poses a potential catastrophic risk to annual and perennial crop production and overall crop quality leading to higher food costs.
- Flood related declines in production may lead to an increase in unemployment.
- Large floods may result in loss of livestock, potential increased livestock mortality due to stress and water borne disease, and increased cost for feed.
- Recreation activities along the Neches River, at Sabine Lake, or along the gulf coast may be unavailable and tourism can be unappealing for years following a large flood event, devastating directly related local businesses and negatively impaction economic recovery.
- The McFadden National Wildlife Refuge area may suffer significant wildlife mortality during and following a flood due to damaged or destroyed ecosystems and water contamination.

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

NATIONAL FLOOD INSURANCE PROGRAM (NFIP) PARTICIPATION

Flood insurance offered through the National Flood Insurance Program (NFIP) is the best way for home and business owners to protect themselves financially against the flood hazard. Jefferson County and all participating jurisdictions are currently participating in the NFIP and are in good standing. Lower Neches Valley Authority, Port of Beaumont Navigation District, the Port of Port Arthur Navigation District and the SETRPC are not eligible for participation in the NFIP.

The City of Beaumont, City of Bevil Oaks, and the City of Port Arthur currently have adopted higher standards above the NFIP minimum such as 1 foot of freeboard for new construction and substantial Improvements of structures. Jefferson County and the remaining participating jurisdictions have currently adopted the minimum NFIP standards. These jurisdictions are considering adopting additional higher regulatory NFIP standards to limit floodplain development.

The flood hazard areas throughout the planning area are subject to periodic inundation, which may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, and extraordinary public expenditures for flood protection and relief, of which adversely affect public safety.

These flood losses are created by the cumulative effect of obstructions in floodplains which cause an increase in flood heights and velocities, and by the occupancy of flood hazard areas by uses

vulnerable to floods and hazardous to other lands because they are inadequately elevated, flood-proofed or otherwise protected from flood damage. Mitigation actions are included to address flood maintenance issues as well, including routinely clearing debris from drainage systems and bridges and expanding drainage culverts and storm water structures to more adequately convey flood waters.

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

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

In order to accomplish these tasks, Jefferson County and all participating jurisdictions seek to follow these guidelines to achieve flood mitigation by:

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

NFIP COMPLIANCE AND MAINTENANCE

As mentioned, Jefferson County and all participating jurisdictions have developed mitigation actions that relate to either NFIP maintenance or compliance. Compliance and maintenance actions can be found in Section 18.

Flooding was identified by a majority of the participating communities as a high-risk hazard during hazard ranking activities at the Risk Assessment Workshop. As such, many of the mitigation actions were developed with flood mitigation in mind. A majority of these flood actions address

compliance with the NFIP and implementing flood awareness programs. All participating jurisdictions recognize the need and are working towards adopting higher NFIP regulatory standards to further minimize flood risk in their community. In addition, each jurisdiction is focusing on public flood awareness activities. This includes promoting the availability of flood insurance as well as public education programs aimed at reducing property losses.

Each NFIP participating jurisdiction has a designated floodplain administrator. The floodplain administrators in the planning area will continue to maintain compliance with the NFIP including continued floodplain administration, zoning ordinances, and development regulation. The floodplain ordinance adopted by jurisdictions outline the minimum requirements for development in special flood hazard areas.

REPETITIVE LOSS

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

Repetitive Loss properties are defined as structures that are:

- Any insurable building for which 2 or more claims of more than $1,000 each, paid by the National Flood Insurance Program (NFIP) within any 10-year period, since 1978;
- May or may not be currently insured under the NFIP.

Severe Repetitive Loss properties are defined as residential properties that are:

- Covered under the NFIP and have at least four flood related damage claim payments (building and contents) over $5,000.00 each, and the cumulative amount of such claims payments exceed $20,000; or
- At least two separate claim payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

In either scenario, at least two of the referenced claims must have occurred within any ten-year period and must be greater than 10 days apart.[5] It is noted that the Cities of China, City of Nome, and the City of Taylor Landing do not currently have any repetitive loss properties. Table 6-9 shows repetitive loss and severe repetitive loss properties for the Jefferson County planning area.

Table 6-9. Repetitive Loss and Severe Repetitive Loss Properties

JURISDICTION	BUILDING TYPE	NUMBER OF STRUCTURES	NUMBER OF LOSSES
Jefferson County	Single Family	99	358
	Assumed Condo	3	9

[5] Source: Texas Water Development Board

JURISDICTION	BUILDING TYPE	NUMBER OF STRUCTURES	NUMBER OF LOSSES
	Other Residential	1	3
	Non-Residential	6	13
City of Beaumont	Single Family	388	1,293
	2-4 Family	21	51
	Assumed Condo	8	28
	Other Residential	8	64
	Non-Residential	45	204
City of Bevil Oaks	Single Family	11	28
	Assumed Condo	1	2
City of Groves	Single Family	25	56
	Other Residential	1	2
	Non-Residential	3	7
City of Nederland	Single Family	68	182
	Non-Residential	7	22
City of Port Arthur	Single Family	229	552
	2-4 Family	3	6
	Assumed Condo	4	8
	Other Residential	4	8
	Non-Residential	24	68
City of Port Neches	Single Family	27	71
	Non-Residential	1	4

SECTION 7: THUNDERSTORM WIND

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HAZARD DESCRIPTION

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

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

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

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

LOCATION

Thunderstorms wind events can develop in any geographic location and are considered a common occurrence in Texas. Therefore, a thunderstorm wind event could occur at any location within Jefferson County's planning area, including the SETRPC and all participating jurisdictions and special districts, as these storms develop randomly and are not confined to any geographic area within the County. It is assumed that the Jefferson County planning area is uniformly exposed to the threat of thunderstorms winds.

SECTION 7: THUNDERSTORM WIND

EXTENT

The extent or magnitude of a thunderstorm wind event is measured by the Beaufort Wind Scale. Table 7-1 describes the different intensities of wind in terms of speed and effects, from calm to violent and destructive.

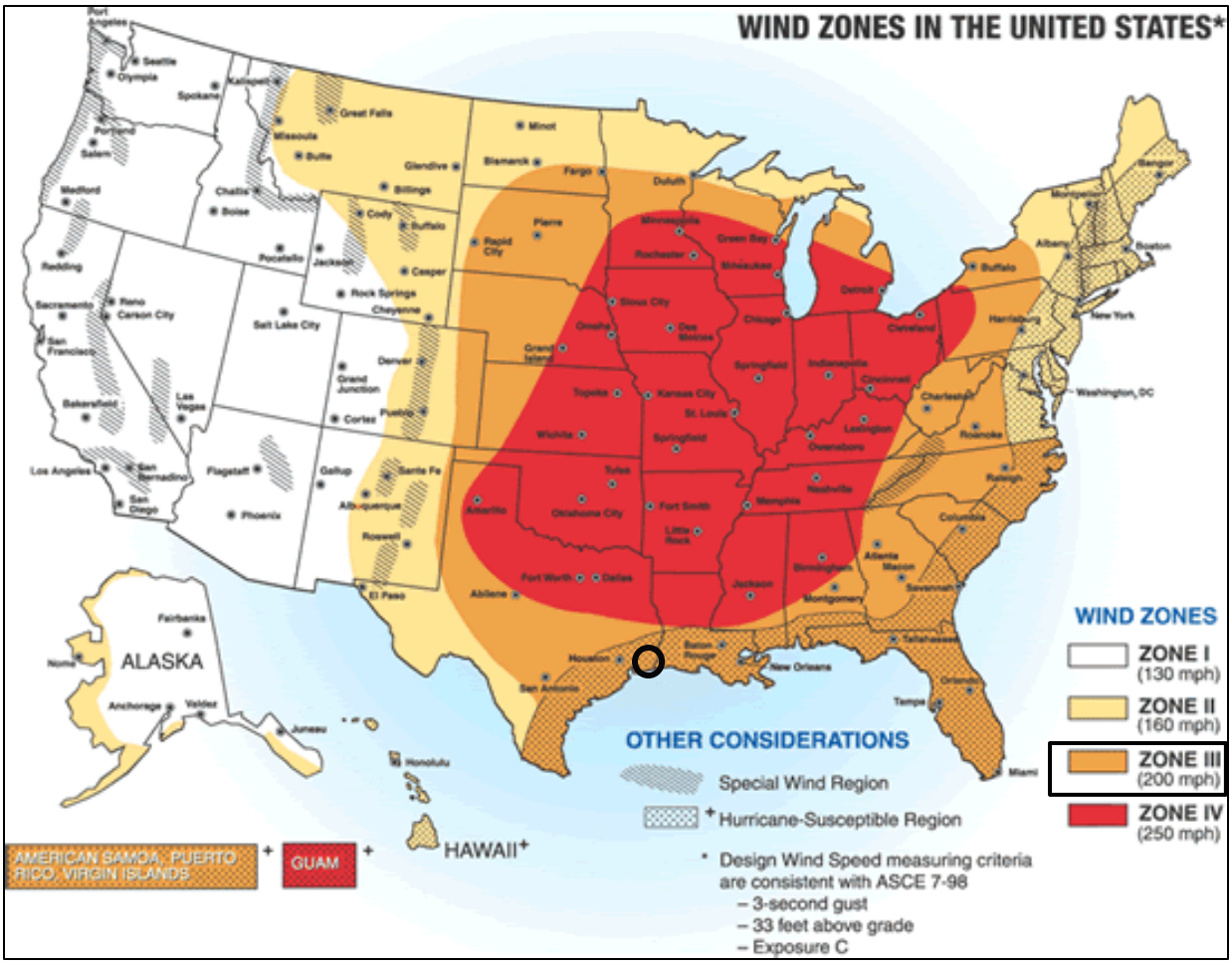
Table 7-1. Beaufort Wind Scale[1]

FORCE	WIND (MHP)	WMO CLASSIFICATION	APPEARANCE OF WIND EFFECTS
0	Less than 1	Calm	Calm, smoke rises vertically
1	1-3	Light Air	Smoke drift indicates wind direction, still wind vanes
2	4-8	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	9-14	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	15-21	Moderate Breeze	Dust, leaves and loose paper lifted, small tree branches move
5	22-28	Fresh Breeze	Small trees in leaf begin to sway
6	29-36	Strong Breeze	Larger tree branches moving, whistling in wires
7	37-44	Near Gale	Whole trees moving, resistance felt walking against wind
8	45-53	Gale	Whole trees in motion, resistance felt walking against wind
9	54-62	Strong Gale	Slight structural damage occurs, slate blows off roofs
10	63-72	Storm	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	73-83	Violent Storm	If experienced on land, widespread damage
12	84+	Hurricane	Violence and destruction

Figure 7-1 displays the wind zones as derived from NOAA.

[1] Source: World Meteorological Organization

Figure 7-1. Wind Zones in the United States[2]



On average, the planning area experiences three to four thunderstorm wind events every year. The County is located in Zone III, meaning they can experience winds up to 200 mph. Jefferson County has experienced a significant wind event or an event with winds in the range of "Force 12" on the Beaufort Wind Scale with winds at or above 84 mph. Based on historical occurrences for thunderstorm wind events, a Force 12 on the Beaufort Wind scale is the maximum force anticipated for future events in the planning area, including the SETRPC and all participating jurisdictions and special districts.

HISTORICAL OCCURRENCES

Tables 7-2, 7-3, and 7-4 depict historical occurrences of thunderstorm wind events for the Jefferson County planning area according to the National Centers for Environmental Information (NCEI) data. Since January 1955, 230 thunderstorm wind events are known to have impacted the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, based upon NCEI records. Table 7-3 presents information on known historical events impacting the Jefferson County planning area with resulting damages, injuries or fatalities.

[2] Jefferson County is indicated by the circle.

SECTION 7: THUNDERSTORM WIND

It is important to note that high wind events associated with other hazards, such as tornadoes, are not accounted for in this section.

The NCEI is a national data source organized under the National Oceanic and Atmospheric Administration. The NCEI is the largest archive available for climate data; however, it is important to note that the only incidents recorded are those that are reported to the NCEI from 1955 through December 2021 have been factored into this risk assessment. In the tables that follow throughout this section, some occurrences seem to appear multiple times in one table. This is due to reports from various locations throughout the County. In addition, property damage estimates are not always available. Where an estimate has been provided in a table for losses, the dollar amounts have been altered to indicate the damage in 2022 dollars. Historical thunderstorm wind data for all of the participating jurisdictions are provided on a County-wide basis per the NCEI database. The SETRPC, Lower Neches Valley Authority, Port of Beaumont Navigation District, and the Port of Port Arthur Navigation District did not report any damages to facilities or assets due to thunderstorm wind events. The SETRPC and all three special districts do not experience events separate and apart from those events reported in the NCEI database under the jurisdiction in which they are located.

Table 7-2. Historical Thunderstorm Wind Events with Reported Damages, 1955-2021

MAXIMUM WIND SPEED RECORDED (MPH)	NUMBER OF REPORTED EVENTS
0-30	79
31-40	3
41-50	46
51-60	53
61-70	11
71-80	0
81-90	2
91-100+	1
Unknown	35

Table 7-3. Historical Thunderstorm Wind Events, 1955-2021[3]

JURISDICTION	DATE	TIME	MAGNITUDE (MPH)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	9/9/1987	2:00 PM	0	0	3	$0	$0
Jefferson County	11/16/1987	9:45 AM	0	0	4	$0	$0

[3] Only recorded events with fatalities, injuries or damages are listed. Magnitude is listed when available. Damage values are in 2022 dollars.

SECTION 7: THUNDERSTORM WIND

JURISDICTION	DATE	TIME	MAGNITUDE (MPH)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Beaumont	3/9/1994	3:35 AM	0	0	0	$92,732	$9,273
City of Beaumont	5/13/1994	7:10 PM	51	0	0	$9,254	$9,254
City of Beaumont	9/9/1994	2:00 PM	50	0	0	$3,655	$0
City of Port Arthur	3/13/1995	11:00 AM	70	0	2	$126,223	$0
City of Beaumont	5/29/1996	9:15 PM	Unknown	0	0	$17,433	$0
City of Beaumont	8/12/1996	8:40 PM	Unknown	0	0	$8,678	$0
City of China	4/5/1997	2:39 AM	Unknown	0	0	$8,521	$0
City of Beaumont	8/21/1997	5:30 PM	Unknown	0	0	$33,956	$0
City of Groves	8/22/1997	4:25 PM	Unknown	0	0	$16,978	$0
City of Nederland	12/3/1997	5:12 AM	Unknown	0	1	$84,626	$0
City of Port Arthur	2/10/1998	2:30 PM	Unknown	0	0	$33,725	$0
City of Port Arthur	2/10/1998	2:40 PM	57	0	0	$16,862	$0
City of Nederland	2/22/1998	12:30 AM	Unknown	0	0	$16,862	$0
City of Port Arthur	3/16/1998	1:00 PM	Unknown	0	0	$168,313	$0
City of China	7/14/1998	1:50 PM	Unknown	0	0	$250,922	$0
City of Beaumont	8/13/1998	3:52 PM	Unknown	0	0	$25,061	$0
City of Beaumont	8/14/1998	12:00 PM	Unknown	1	1	$125,307	$0
City of Beaumont	8/29/1998	8:00 PM	Unknown	0	0	$83,538	$0
City of Beaumont	5/10/1999	7:00 AM	Unknown	0	0	$164,262	$0
City of Beaumont	5/29/1999	11:10 AM	Unknown	0	0	$8,213	$0
City of Beaumont	7/12/1999	1:50 PM	Unknown	0	0	$8,188	$0
City of Groves	8/3/1999	4:50 PM	Unknown	0	0	$163,377	$0
City of Beaumont	8/20/1999	6:30 PM	Unknown	0	0	$81,689	$0
City of Beaumont	8/31/1999	1:15 PM	Unknown	0	0	$40,844	$0

SECTION 7: THUNDERSTORM WIND

JURISDICTION	DATE	TIME	MAGNITUDE (MPH)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Port Arthur	4/3/2000	3:30 AM	52	0	0	$31,874	$0
City of Beaumont	7/23/2000	2:05 PM	Unknown	0	0	$3,160	$0
Jefferson County	8/11/2000	4:30 PM	Unknown	0	0	$3,160	$0
City of Bevil Oaks	9/2/2000	6:55 PM	Unknown	0	0	$3,143	$0
City of Nederland	9/2/2000	5:50 PM	Unknown	0	0	$3,143	$0
Jefferson County	12/16/2000	5:00 PM	Unknown	0	0	$156,898	$0
City of Nome	2/28/2001	6:30 AM	Unknown	0	0	$38,283	$0
City of Port Arthur	3/14/2001	6:15 PM	Unknown	0	0	$7,747	$0
City of Port Arthur	3/14/2001	5:45 PM	63	0	0	$7,747	$0
City of Beaumont	5/26/2001	3:00 PM	Unknown	0	0	$15,363	$0
City of China	10/11/2001	11:30 AM	Unknown	0	0	$15,363	$0
Jefferson County	5/17/2002	8:17 AM	Unknown	0	0	$37,959	$0
City of Groves	7/16/2002	8:00 AM	65	0	0	$2,273,762	$0
City of Beaumont	8/26/2002	6:10 PM	Unknown	0	0	$37,770	$0
City of Beaumont	8/27/2002	12:00 PM	Unknown	0	0	$7,554	$0
City of Beaumont	10/28/2002	11:25 PM	Unknown	0	0	$7,529	$0
City of Nederland	10/29/2002	1:07 AM	Unknown	0	0	$7,529	$0
City of Port Arthur	12/23/2002	11:15 PM	Unknown	0	0	$7,546	$0
City of Port Arthur	12/30/2002	10:45 PM	Unknown	0	0	$7,546	$0
City of Beaumont	5/11/2004	5:00 PM	50	0	0	$36,092	$0
City of Groves	11/27/2004	12:25 AM	50	0	0	$28,587	$0
City of Beaumont	5/29/2005	7:45 PM	50	0	0	$35,108	$0
City of Beaumont	6/15/2005	5:20 PM	50	0	0	$2,807	$0
City of China	8/7/2005	5:15 PM	50	0	0	$2,780	$0
Jefferson County	4/29/2006	11:39 AM	50	0	0	$67,743	$0

SECTION 7: THUNDERSTORM WIND

JURISDICTION	DATE	TIME	MAGNITUDE (MPH)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	7/17/2006	5:00 PM	50	0	0	$6,708	$0
Jefferson County	8/27/2007	4:10 PM	50	0	0	$2,626	$0
City of Beaumont	8/27/2007	4:50 PM	50	0	0	$26,261	$0
Jefferson County	6/25/2008	11:55 AM	50	0	0	$6,238	$0
Jefferson County	8/3/2008	5:00 PM	57	0	0	$12,461	$0
City of Beaumont	2/1/2009	1:50 PM	50	0	0	$6,433	$0
City of Beaumont	7/18/2009	4:25 PM	52	0	0	$6,339	$0
Jefferson County	10/9/2009	11:15 AM	56	0	0	$252,574	$0
Jefferson County	10/9/2009	11:50 AM	47	0	0	$1,263	$0
City of Beaumont	8/16/2010	12:40 PM	52	0	1	$31,263	$0
City of Beaumont	8/16/2010	12:40 PM	52	0	0	$6,253	$0
City of Beaumont	8/16/2010	12:45 PM	52	0	0	$1,251	$0
City of Port Arthur	8/16/2010	1:30 PM	52	0	0	$1,251	$0
Jefferson County	8/23/2010	6:30 PM	52	0	0	$3,752	$0
Jefferson County	1/9/2011	12:00 PM	46	0	0	$12,397	$0
City of Beaumont	3/30/2011	3:00 AM	48	0	0	$1,222	$0
City of Groves	10/31/2013	8:33 AM	61	0	0	$5,845	$0
City of Groves	4/27/2016	5:44 AM	50	0	0	$5,705	$0
City of Beaumont	2/20/2017	11:30 AM	50	0	0	$11,207	$0
Jefferson County	3/25/2017	6:30 AM	50	0	0	$5,599	$0
City of Beaumont	3/29/2017	5:04 PM	50	0	0	$8,958	$0
City of Beaumont	6/24/2017	8:15 AM	50	0	0	$11,145	$0
Jefferson County	4/14/2018	2:45 AM	96	0	0	$435,853	$0
City of Port Arthur	7/11/2018	5:08 PM	50	0	0	$16,250	$0
Jefferson County	12/26/2018	1:56 PM	39	0	0	$5,433	$0
Jefferson County	12/26/2018	1:53 PM	39	0	0	$5,433	$0

JURISDICTION	DATE	TIME	MAGNITUDE (MPH)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	4/7/2019	1:06 PM	50	0	0	$3,205	$0
Jefferson County	4/7/2019	1:17 PM	50	0	0	$1,068	$0
Jefferson County	4/7/2019	1:24 PM	50	0	0	$1,068	$0
City of Bevil Oaks	4/7/2019	1:05 PM	50	0	0	$10,683	$0
Jefferson County	5/9/2019	12:07 AM	81	0	0	$26,651	$0
Jefferson County	5/9/2019	11:50 PM	60	0	0	$1,066,035	$0
City of China	5/28/2020	11:27 AM	50	0	0	$4,259	$0
City of Beaumont	8/5/2020	5:35 PM	50	0	0	$15,755	$0
Jefferson County	12/19/2020	1:10 PM	50	0	0	$4,192	$0
City of Beaumont	12/19/2020	1:26 PM	50	0	1	$20,962	$0
City of Beaumont	12/19/2020	1:20 PM	50	0	0	$5,241	$0
Jefferson County	4/23/2021	11:55 PM	50	0	0	$2,045	$0
TOTALS			**(Max Extent)**	**1**	**13**	**$6,486,296**	**$18,527**

Table 7-4. Summary of Historical Thunderstorm Wind Events, 1955-2021

JURISDICTION	NUMBER OF EVENTS	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	138	96	0	7	$2,120,361	$0
City of Beaumont	51	63	1	3	$1,000,483	$18,527
City of Bevil Oaks	2	50	0	0	$13,826	$0
City of China	5	50	0	0	$281,845	$0
City of Groves	8	65	0	0	$2,494,254	$0
City of Nederland	4	Unknown	0	1	$112,160	$0
City of Nome	1	Unknown	0	0	$38,283	$0
City of Port Arthur	20	70	0	2	$425,084	$0
City of Port Neches	1	50	0	0	$0	$0
City of Taylor Landing	0	N/A	0	0	$0	$0
TOTAL LOSSES	**230**	**(Max Extent)**	**1**	**13**	**$6,504,823**	

Based on the list of historical thunderstorm wind events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions and special districts, 28 of the events have occurred since the 2017 Plan.

SIGNIFICANT EVENTS

May 9, 2019 – Jefferson County

Multiple strong upper level distrubances crossed in the Southeast Texas region causing secere weather and flooding. Damage started just north of FM 365 with tree damage continued to be noted eastward into parts of Port Arthur, Groves and Nederland. Wind speeds were estimated to be between around 60-80 mph as it moved through the region.

July 16, 2002 – Groves

Several thunderstorm and high winds blew down numerous trees and power lines within the City of Groves. Significant damage occurred to the Groves Middle School where the gynnasium lost part of the roof, and one wall. Total damage estimates were reported to be $1.5 million in cost.

February 28, 2001 – Nome

A thunderstorm caused damage estimates totaling $25,000 within the City of Nome. Reported damages occurred due to falling trees and roof damage due to the storm passing throughout the community.

March 13, 1995 – Port Arthur

A microburst produced wind speeds estimating over 70 mph. Structural damage occurred to some buildings, including broken windows and numerous trees knocked down. The path was 200 yards and 2 miles long. Two people were injured as a result of the storm.

PROBABILITY OF FUTURE EVENTS

Most thunderstorm winds occur during the months of March, April, May, and September. Based on available records of historic events, there have been 230 events in a 67-year reporting period, which provides a probability of three to four events every year. Even though the intensity of thunderstorm wind events is not always damaging for the Jefferson County planning area, the frequency of occurrence for a thunderstorm wind event is highly likely. This means that an event is probable within the next year for the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts.

VULNERABILITY AND IMPACT

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

Trees, power lines and poles, signage, manufactured housing, radio towers, concrete block walls, storage barns, windows, garbage recepticles, brick facades, and vehicles, unless reinforced, are vulnerable to thunderstorm wind events. More severe damage involves windborne debris; in some instances, patio furniture and other lawn items have been reported to have been blown around by wind and, very commonly, debris from damaged structures in turn have caused damage to

other buildings not directly impacted by the event. In numerous instances roofs have been reported as having been torn off of buildings. The portable buildings typically used at schools and construction sites would be more vulnerable to thunderstorm wind events than typical site-built structures and could potentially pose a greater risk for wind-blown debris.

The US Census data indicates a total of 3,545 manufactured homes located in the Jefferson County planning area (3.3%), including all participating jurisdictions (Table 7-5). In addition, 59.2% (approximately 64,430 structures) of the single family residential (SFR) structures in the entire planning area were built before 1980. These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damages during significant wind events.

Table 7-5. Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Jefferson County[4]	3,545	64,430
City of Beaumont	1,166	30,675
City of Bevil Oaks	31	418
City of China	44	239
City of Groves	20	5,126
City of Nederland	243	5,220
City of Nome	3	136
City of Port Arthur	299	15,842
City of Port Neches	112	3,558
City of Taylor Landing	0	41
Lower Neches Valley Authority	2	0
Port of Beaumont Navigation District	5	0
Port of Port Arthur Navigation District	8	0
SETRPC	0	0

While all citizens are at risk to the impacts of thunderstorm wind, forced relocation and disaster recovery drastically impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. An estimated 18.0% of the planning area population live below the poverty level (Table 7-6).

[4] County totals includes all jurisdictions and unincorporated areas within the county.

Table 7-6. Populations at Greatest Risk by Jurisdiction[5]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Jefferson County	45,564
City of Beaumont	22,174
City of Bevil Oaks	44
City of China	114
City of Groves	2,159
City of Nederland	1,491
City of Nome	23
City of Port Arthur	14,606
City of Port Neches	1,247
City of Taylor Landing	0

The following critical facilities would be vulnerable to thunderstorm wind events in each participating jurisdiction:

Table 7-7. Critical Facilities at Risk by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	10 Fire Stations, 1 Sheriff's Department, 5 Police Stations, 67 Schools, 9 Medical Facilities, 1 Emergency Service District, 4 Water Districts, 3 Drainage District, 3, Utility Districts, 4 Port Authorities, 1 Government Facility, 1 Airport
City of Beaumont	13 Fire Stations, 1 Police Station, 32 Schools, 5 Medical Facilities, 6 Emergency Medical Services (EMS), 1 EOC, 1 Event Center, 1 Stadium, 1 Mall, 2 Water Treatment Facilities, 3 Water Wells, 1 Wastewater Treatment Facility, 2 Pump Stations, 75 Lift Stations, 1 Waste Operation Facility, 1 Landfill, 8 Chemical Facilities, 8 Communication Facilities, 1 Electrical Facility, 16 Government Facilities, 4 Federal Facilities, 1, Animal Shelter, 1 County Dispatch Facility, 1 Airport, 1 Canal, 1 Maritime Transport Facility, 2 Traffic and Transit Operation Facilities, 5 Railroad and Infrastructure, 2 Highway Transport and Infrastructure, 4 Lower Neches Valley Facilities and Infrastructure
City of Bevil Oaks	1 Emergency Service District, 1 Fire Station

[5] US Census Bureau 2020 data for Jefferson County.

JURISDICTION	CRITICAL FACILITIES
City of China	1 Emergency Service District, 1 Fire Station, 1 Water Plant, 1 Wastewater Plant, 8 Lift Stations, 3 Wells
City of Groves	1 Fire Station, 1 Police Station, 3 Schools
City of Nederland	1 Fire Station, 1 Police Station, 8 Schools, 3 Medical Facilities
City of Nome	1 Fire Station, 1 Water Treatment Plant, 1 Wastewater and Sewage Plant, 5 Lift Stations, 1 Government Building
City of Port Arthur	1 Fire Station, 1 Police Station, 14 Schools, 1 Medical Facility, 1 Drainage District, 2 Port Authority and Navigation Districts
City of Port Neches	1 Fire Station, 2 Police Stations, 5 Schools, 1 EOC, 1 Water Treatment Plant, 3 Water Towers, 1 Wastewater Treatment Plant, 10 Lift Stations, 3 Government Facilities, 2 Federal Facilities, 2 Commercial Facilities, 3 Industrial Facilities, 2 Public Works Facilities and Infrastructure
City of Taylor Landing	1 Electric Facility, 1 Fiber Optic Facility, 2 Sewer Plant and Infrastructures
Lower Neches Valley Authority	1 Communication Center, 1 Water Plant, 1 Water Treatment Plant, 5 Pumping Plants
Port of Beaumont Navigation District	2 Administrative Facilities, 2 Facility Operations Facilities, 1 Maintenance Building, 2 Security Offices, 1 Army Building, 6 Transit Sheds, 7 Terminals, 2 Barge Docs, 2 Bulkhead-Aprons, 1 Dock / Ramp
Port of Port Arthur Navigation District	1 Administrative Facility, 1 Command Center, 1 Terminal, 1 Tenant/ Pipeline
SETRPC	SETRPC Facility

A thunderstorm wind event can also result in traffic disruptions, injuries and in rare cases, fatalities. Impact of thunderstorms winds experienced in the Jefferson County planning area has resulted in thirteen injuries and one fatality. Impact of thunderstorm wind events experienced in the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, would be “Limited,” and injuries and illnesses would be treatable with first aid, less than ten percent of property damaged or destroyed, and facilities would be shut down for 24 hours or less. However, the historical fatality and multiple injuries indicate a “Substantial” impact, with multiple deaths and injuries possible depending on the size and duration of an event. Overall, the average loss estimate (in 2022 dollars) is $6,504,823, having an approximate annual loss estimate of $97,087 (Table 7-8).

Table 7-8. Potential Annualized Losses by Jurisdiction

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Jefferson County	$2,120,361	$31,647
City of Beaumont	$1,019,010	$15,209

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
City of Bevil Oaks	$13,826	$206
City of China	$281,845	$4,207
City of Groves	$2,494,254	$37,228
City of Nederland	$112,160	$1,674
City of Nome	$38,283	$571
City of Port Arthur	$425,084	$6,345
City of Port Neches	$0	$0
City of Taylor Landing	$0	$0
Lower Neches Valley Authority	$0	$0
Port of Beaumont Navigation District	$0	$0
Port of Port Arthur Navigation District	$0	$0
SETRPC	$0	$0
Planning Area	**$6,504,823**	**$97,087**

ASSESSMENT OF IMPACTS

Thunderstorm wind events have the potential to pose a significant risk to people and can create dangerous and difficult situations for public health and safety officials. The impact of climate change could produce larger, more severe thunderstorm wind events, exacerbating the current thunderstorm wind impacts. Worsening thunderstorm wind conditions can be frequently associated with a variety of impacts, including:

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.
- During exceptionally heavy wind events, first responders may be prevented from responding to calls, as the winds may reach a speed in which their vehicles and equipment are unsafe to operate.
- Thunderstorm wind events often result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.

- Extended power outage often results in an increase in structure fires and carbon monoxide poisoning, as individuals attempt to cook or heat their homes with alternate, unsafe cooking or heating devices, such as grills.
- First responders are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions.
- Emergency operations and services may be significantly impacted due to damaged facilities and/or loss of communications.
- Critical staff may be unable to report for duty, limiting response capabilities.
- City or county departments may be damaged, delaying response and recovery efforts for the entire community.
- Private sector entities that the City and its residents rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Some businesses not directly damaged by thunderstorm wind events may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.
- Older structures built to less stringent building codes may suffer greater damage as they are typically more vulnerable to thunderstorm winds.
- Large scale wind events can have significant economic impact on the affected area, as it must now fund expenses such as infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, and normal day-to-day operating expenses.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damages without a backup power source.
- Recreational areas and parks may be damaged or inaccessible due to downed trees or debris, causing temporary impacts to area businesses.

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

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HAZARD DESCRIPTION

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

According to FEMA, an average of 300 people are injured and 80 people are killed in the United States each year by lightning. Direct lightning strikes also have the ability to cause significant damage to buildings, critical facilities, and infrastructure. Lightning is also responsible for igniting wildfires that can result in widespread damages to property before firefighters have the ability to contain and suppress the resultant fire.

LOCATION

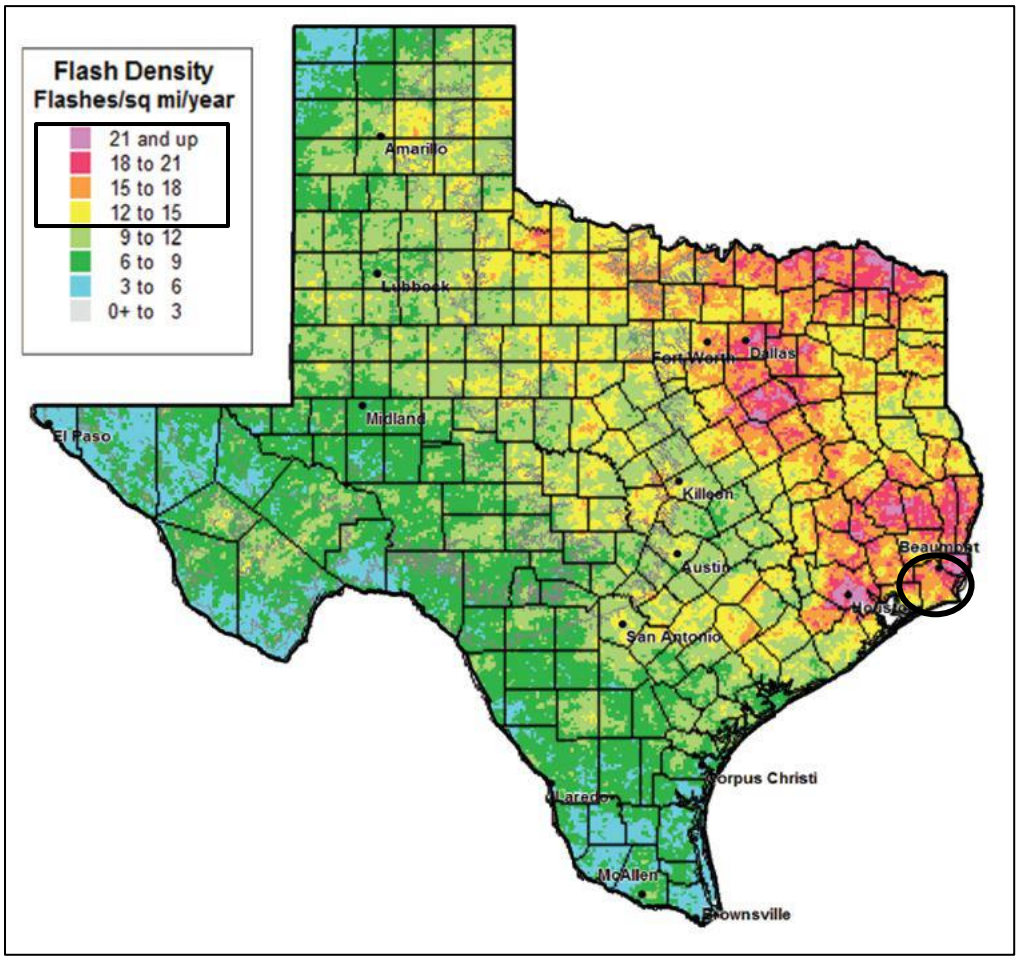
Lightning can strike in any geographic location and is considered a common occurrence in Texas. The Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, is in a region of the country that is moderately susceptible to a lightning strike. Therefore,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

EXTENT

According to the NOAA, the average number of cloud-to-ground flashes for the State of Texas between 2006 and 2016 was 11.3 flashes per square mile. Vaisala’s U.S. National Lightning Detection Network lightning flash density map (Figure 8-1) shows a range of twelve to twenty-one (or more) cloud-to-ground lightning flashes per square mile per year for the entire Jefferson County planning area. This rate equates to approximately 13,356 to 23,373 flashes per year for the entire planning area.

SECTION 8: LIGHTNING

Figure 8-1. Lightning Flash Density, 2006-2016



The extent for lightning can be expressed in terms of the number of strikes in an interval. NOAA utilizes lightning activity levels (LALs) on a scale from 1-6. LAL rankings reflect the frequency of cloud-to-ground lightning either forecast or observed (Table 8-1).

Table 8-1. NOAA Lightning Activity Levels (LAL)

LAL	CLOUD & STORM DEVELOPMENT	LIGHTNING STRIKES/ 15 MIN
1	No thunderstorms.	-
2	Cumulus clouds are common but only a few reach the towering cumulus stage. A single thunderstorm must be confirmed in the observation area. The clouds produce mainly virga, but light rain will occasionally reach the ground. Lightning is very infrequent.	1-8
3	Towering cumulus covers less than two-tenths of the sky. Thunderstorms are few, but two to three must occur within the observation area. Light to moderate rain will reach the ground, and lightning is infrequent.	9-15

LAL	CLOUD & STORM DEVELOPMENT	LIGHTNING STRIKES/ 15 MIN
4	Towering cumulus covers two to three-tenths of the sky. Thunderstorms are scattered and more than three must occur within the observation area. Moderate rain is common and lightning is frequent.	16-25
5	Towering cumulus and thunderstorms are numerous. They cover more than three-tenths and occasionally obscure the sky. Rain is moderate to heavy and lightning is frequent and intense.	>25
6	Similar to LAL 3 except thunderstorms are dry.	

The NCEI does not include the LAL for historical lightning events, therefore in order to determine the extent of lightning strikes, the yearly average range of estimated number of lightning strikes within the planning area (13,356 to 23,373 flashes) and a cloud-to-ground flash density of twelve to twenty-one (or more) per square mile were divided by the number[1] of thunderstorm events that occur annually in the planning area. Jefferson County, including all participating jurisdictions and special districts, should expect an average range of twelve to twenty-two lightning strikes within 15 minutes at any given time during a lightning or combined lightning and thunderstorm event, indicating lightning strikes have an average LAL range of 3 to 4. The highest being a 4 on the LAL for all participating jurisdictions and special districts in the future.

HISTORICAL OCCURRENCES

Since January 1996, there has only been twelve recorded events for the Jefferson County planning area. It is highly likely multiple lightning occurrences have gone unreported before and during the recording period. The Lower Neches Valley Authority reported two lightning events (4/28/2020 and 8/17/2021) that caused damages to their facilities or assets. No damage details or dollar estimates were available for the events. No other events or damages were reported for the Lower Neches Valley Authority. No events were reported by the Port of Beaumont Navigation District, the Port of Port Arthur Navigation District or the SETRPC.

The NCEI is a national data source organized under the National Oceanic and Atmospheric Administration and considered a reliable resource for hazards. However, the flash density for the planning area along with input from local team members indicates regular lightning occurrences that simply have not been reported.

Table 8-2 Historical Lightning Events, 1996- 2021[2]

JURISDICTION	DATE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
City of Beaumont	8/12/1996	1	0	$17,356	$0

[1] Analysis includes the highest number of events recorded in a given year during the reporting period in order to account for typical under reporting of thunderstorm and lightning events.
[2] Damages are reported in 2022 dollars.

JURISDICTION	DATE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
City of Beaumont	7/12/1999	1	0	$0	$0
City of Port Arthur	8/29/2007	0	1	$0	$0
City of Port Arthur	7/23/2009	7	1	$6,339	$0
City of Beaumont	7/5/2011	0	0	$36,252	$0
City of Beaumont	7/6/2011	0	0	$120,839	$0
City of Beaumont	7/6/2011	0	0	$302,099	$0
City of Groves	7/19/2011	0	0	$84,588	$0
City of Beaumont	8/19/2014	0	0	$5,739	$0
Jefferson County	12/23/2014	0	0	$58,132	$0
City of Port Neches	6/30/2015	0	0	$1,144	$0
Jefferson County	5/27/2020	0	1	$0	$0
TOTALS	**12**	**9**	**3**	**$632,488**	**$0**

Based on the list of historical lightning events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions and special districts, one event has occurred since the 2017 Plan.

SIGNIFICANT EVENTS

May 27, 2020 – Jefferson County

A cut off upper low slowly moved across Texas and produced multiple days of severe weather. Lightning struck causing one fatality and wind damage throughout the planning area.

July 6, 2011 – Jefferson County

An upper-level disturbance produced thunderstorms that had numerous lightning strikes in Southeast Texas. Excessive lighting caused a fire at an apartment complex where one unit housing eight apartments was on fire and the roof partially collapsed. In addition, residential home in Beaumont was struck, resulting in a structural fire.

July 23, 2009 – Jefferson County

Scattered strong thunderstorms developed over Southeast Texas, which one storm moving across Sabine Pass producing a lightning strike that injured seven people and killed one resident.

PROBABILITY OF FUTURE EVENTS

Based on historical records and input from the planning team the probability of occurrence for future lightning events in the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, is considered highly likely, or an event probable in the next year. The planning team stated that lightning occurs regularly in the area. According to NOAA, the Jefferson County planning area is located in an area of the country that experiences

twelve to twenty-one or more lightning flashes per square mile per year (approximately 13,356 to 23,373 flashes per year). Given this estimated probability of events, it can be expected that future lightning events will continue to threaten life and cause minor property damages throughout the planning area, including the SETRPC and all participating jurisdictions and special districts.

VULNERABILITY AND IMPACT

Vulnerability is difficult to evaluate since lightning events can occur at different strength levels, in random locations, and can create a broad range of damages depending on the strike location. Due to the randomness of these events, all existing and future structures and facilities in the Jefferson County planning area could potentially be impacted and remain vulnerable to possible injury and property loss from lightning strikes. The Jefferson County planning area has 12 reported lightning events per the NCEI, however the county, including the SETRPC and all participating jurisdictions and special districts, are vulnerable and could be impacted by lightning.

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

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

While all citizens are at risk to the impacts of lightning, forced relocation and disaster recovery drastically impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. An estimated 18.0% of the planning area population live below the poverty level (Table 8-3).

Table 8-3. Populations at Greatest Risk by Jurisdiction[3]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Jefferson County	45,564
City of Beaumont	22,174
City of Bevil Oaks	44
City of China	114

[3] US Census Bureau 2020 data for Jefferson County

JURISDICTION	POPULATION BELOW POVERTY LEVEL
City of Groves	2,159
City of Nederland	1,491
City of Nome	23
City of Port Arthur	14,606
City of Port Neches	1,247
City of Taylor Landing	0

The following critical facilities would be vulnerable to lightning events in each participating jurisdiction:

Table 8-4. Critical Facilities at Risk by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	10 Fire Stations, 1 Sheriff's Department, 5 Police Stations, 67 Schools, 9 Medical Facilities, 1 Emergency Service District, 4 Water Districts, 3 Drainage District, 3 Utility Districts, 4 Port Authorities, 1 Government Facility, 1 Airport
City of Beaumont	13 Fire Stations, 1 Police Station, 32 Schools, 5 Medical Facilities, 6 Emergency Medical Services (EMS), 1 EOC, 1 Event Center, 1 Stadium, 1 Mall, 2 Water Treatment Facilities, 3 Water Wells, 1 Wastewater Treatment Facility, 2 Pump Stations, 75 Lift Stations, 1 Waste Operation Facility, 1 Landfill, 8 Chemical Facilities, 8 Communication Facilities, 1 Electrical Facility, 16 Government Facilities, 4 Federal Facilities, 1, Animal Shelter, 1 County Dispatch Facility, 1 Airport, 1 Canal, 1 Maritime Transport Facility, 2 Traffic and Transit Operation Facilities, 5 Railroad and Infrastructure, 2 Highway Transport and Infrastructure, 4 Lower Neches Valley Facilities and Infrastructure
City of Bevil Oaks	1 Emergency Service District, 1 Fire Station
City of China	1 Emergency Service District, 1 Fire Station, 1 Water Plant, 1 Wastewater Plant, 8 Lift Stations, 3 Wells
City of Groves	1 Fire Station, 1 Police Station, 3 Schools
City of Nederland	1 Fire Station, 1 Police Station, 8 Schools, 3 Medical Facilities
City of Nome	1 Fire Station, 1 Water Treatment Plant, 1 Wastewater and Sewage Plant, 5 Lift Stations, 1 Government Building
City of Port Arthur	1 Fire Station, 1 Police Station, 14 Schools, 1 Medical Facility, 1 Drainage District, 2 Port Authority and Navigation Districts

JURISDICTION	CRITICAL FACILITIES
City of Port Neches	1 Fire Station, 2 Police Stations, 5 Schools, 1 EOC, 1 Water Treatment Plant, 3 Water Towers, 1 Wastewater Treatment Plant, 10 Lift Stations, 3 Government Facilities, 2 Federal Facilities, 2 Commercial Facilities, 3 Industrial Facilities, 2 Public Works Facilities and Infrastructure
City of Taylor Landing	1 Electric Facility, 1 Fiber Optic Facility, 2 Sewer Plant and Infrastructures
Lower Neches Valley Authority	1 Communication Center, 1 Water Plant, 1 Water Treatment Plant, 5 Pumping Plants
Port of Beaumont Navigation District	2 Administrative Facilities, 2 Facility Operations Facilities, 1 Maintenance Building, 2 Security Offices, 1 Army Building, 6 Transit Sheds, 7 Terminals, 2 Barge Docs, 2 Bulkhead-Aprons, 1 Dock / Ramp
Port of Port Arthur Navigation District	1 Administrative Facility, 1 Command Center, 1 Terminal, 1 Tenant/ Pipeline
SETRPC	SETRPC Facility

Impact of lightning experienced in the Jefferson County planning area has resulted in nine injuries and three fatalities. The damages created by lightning events experienced in the planning area indicate a “Limited” impact, with minimal quality of life lost and facilities shut down for 24 hours or less. However, the historical injuries and fatalities indicate a “Substantial” impact with multiple fatalities possible depending on the severity of the event Overall, the average loss estimate for Jefferson County, including the SETRPC and all participating jurisdictions and special districts, (in 2022 dollars) is $632,488 having an approximate annual loss estimate of $24,326 (Table 8-5).

Table 8-5. Potential Annualized Losses by Jurisdiction[4]

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATE
Jefferson County	$58,132	$2,236
City of Beaumont	$482,285	$18,549
City of Bevil Oaks	$0	$0
City of China	$0	$0
City of Groves	$84,588	$3,253
City of Nederland	$0	$0
City of Nome	$0	$0
City of Port Arthur	$6,339	$244

[4] Damage values are in 2022 dollars.

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATE
City of Port Neches	$1,144	$44
City of Taylor Landing	$0	$0
Lower Neches Valley Authority	$0	$0
Port of Beaumont Navigation District	$0	$0
Port of Port Arthur Navigation District	$0	$0
SETRPC	$0	$0
PLANNING AREA	**$632,488**	**$24,326**

ASSESSMENT OF IMPACTS

Lightning events have the potential to pose a significant risk to people and can create dangerous and difficult situations for public health and safety officials. The impact of climate change could produce more frequent and severe lightning events, exacerbating the current lightning impacts. Additional impacts to the planning area can include:

- Individuals exposed to the storm can be directly struck, posing significant health risks and potential death.
- Structures can be damaged or crushed by falling trees damaged by lightning, which can result in physical harm to the occupants.
- Lightning strikes can result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage often results in an increase in structure fires and carbon monoxide poisoning as individuals attempt to cook or heat their homes with alternate, unsafe cooking or heating devices, such as grills.
- Lightning strikes can be associated with structure fires and wildfires, creating additional risk to residents and first responders.
- Emergency operations and services may be significantly impacted due to power outages and/or loss of communications.
- City or county departments may be damaged, delaying response and recovery efforts for the entire community.
- Economic disruption due to power outages and fires negatively impacts the programs and services provided by the community due to short and long term loss in revenue.
- Some businesses not directly damaged by lightning events may be negatively impacted while utilities are being restored, further slowing economic recovery.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damages without a backup power source.

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

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HAZARD DESCRIPTION

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

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

Table 9-1. Variations among Tornadoes

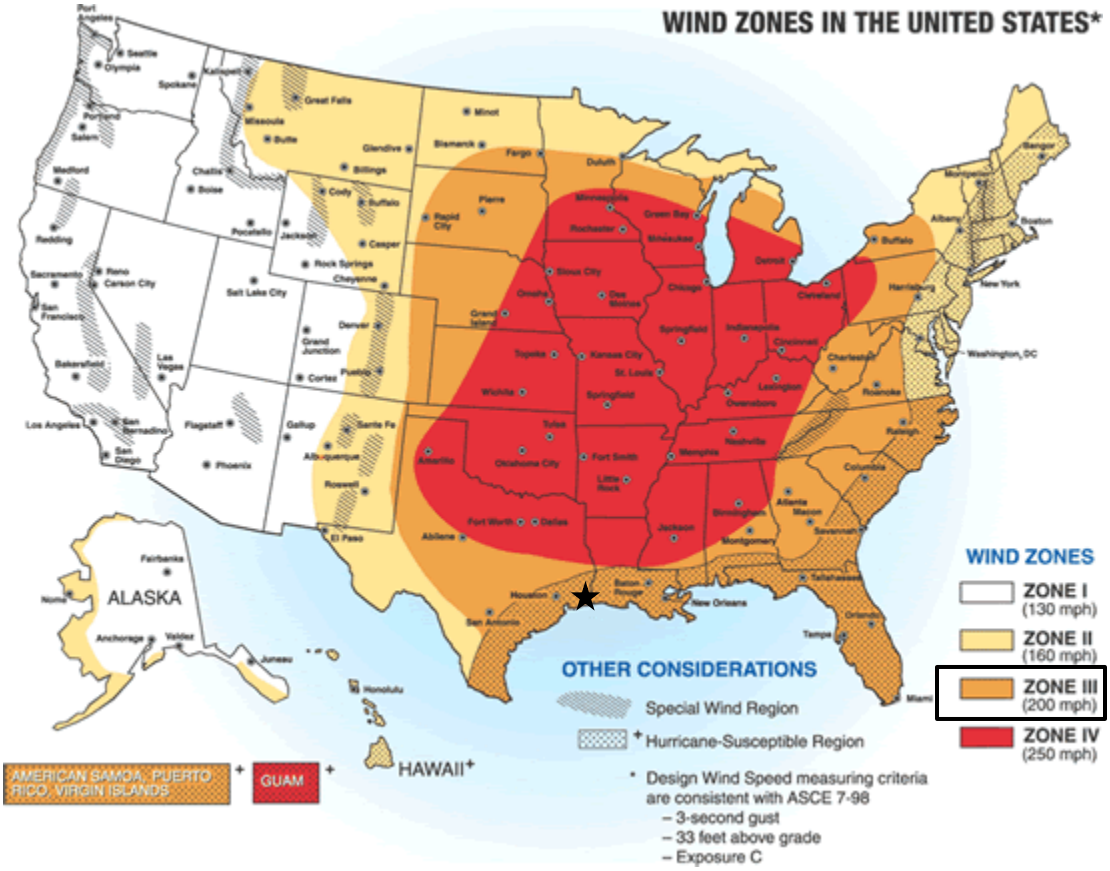
WEAK TORNADOES	STRONG TORNADOES	VIOLENT TORNADOES
• 69% of all tornadoes • Less than 5% of tornado deaths • Lifetime 1-10+ minutes • Winds less than 110 mph	• 29% of all tornadoes • Nearly 30% of all tornado deaths • May last 20 minutes or longer • Winds 110 – 205 mph	• 2% of all tornadoes • 70% of all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

LOCATION

Tornadoes do not have any specific geographic boundary and can occur throughout the County uniformly. It is assumed that the entire Jefferson County planning area including the SETRPC

and all participating jurisdictions and special districts, are uniformly exposed to tornado activity. The entire Jefferson County planning area is located in Wind Zone III (Figure 9-1), where tornado winds can be as high as 200 mph.

Figure 9-1. FEMA Wind Zones in the United States[1]



EXTENT

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

[1] Jefferson County is indicated by the star.

Table 9-2. The Fujita Tornado Scale[2]

F-SCALE NUMBER	INTENSITY	WIND SPEED (MPH)	TYPE OF DAMAGE DONE	PERCENT OF APPRAISED STRUCTURE VALUE LOST DUE TO DAMAGE
F0	Gale Tornado	40 – 72	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.	None Estimated
F1	Moderate Tornado	73 – 112	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off roads; attached garages may be destroyed.	0% – 20%
F2	Significant Tornado	113 – 157	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.	50% – 100%
F3	Severe Tornado	158 – 206	Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.	100%
F4	Devastating Tornado	207 – 260	Well-constructed homes leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.	100%
F5	Incredible Tornado	261 – 318	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles flying through the air in excess of 330 yards; trees debarked; steel reinforced concrete badly damaged.	100%

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

SECTION 9: TORNADO

Tornado magnitudes prior to 2005 were determined using the traditional version of the Fujita Scale (Table 9-2). Since February 2007, the Fujita Scale has been replaced by the Enhanced Fujita Scale (Table 9-3), which retains the same basic design and six strength categories as the previous scale. The newer scale reflects more refined assessments of tornado damage surveys, standardization, and damage consideration to a wider range of structures.

Table 9-3. Enhanced Fujita Scale for Tornadoes

STORM CATEGORY	DAMAGE LEVEL	3 SECOND GUST (MPH)	DESCRIPTION OF DAMAGES	PHOTO EXAMPLE
EF0	Gale	65 – 85	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.	
EF1	Weak	86 – 110	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off roads; attached garages may be destroyed.	
EF2	Strong	111 – 135	Considerable damage; roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.	
EF3	Severe	136 – 165	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.	
EF4	Devastating	166 – 200	Well-constructed homes leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.	
EF5	Incredible	200+	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles flying through the air in excess of 330 yards; trees debarked; steel reinforced concrete badly damaged.	

Both the Fujita Scale and Enhanced Fujita Scale should be referenced in reviewing previous occurrences since tornado events prior to 2007 will follow the original Fujita Scale. The largest

magnitude reported within the planning area is an F3 on the Fujita Scale, a “Severe Tornado.” Based on the planning area location in Wind Zone III, the planning area, including the SETRPC and all participating jurisdictions and special districts, could experience anywhere from an EF0 to EF4 depending on the wind speed.

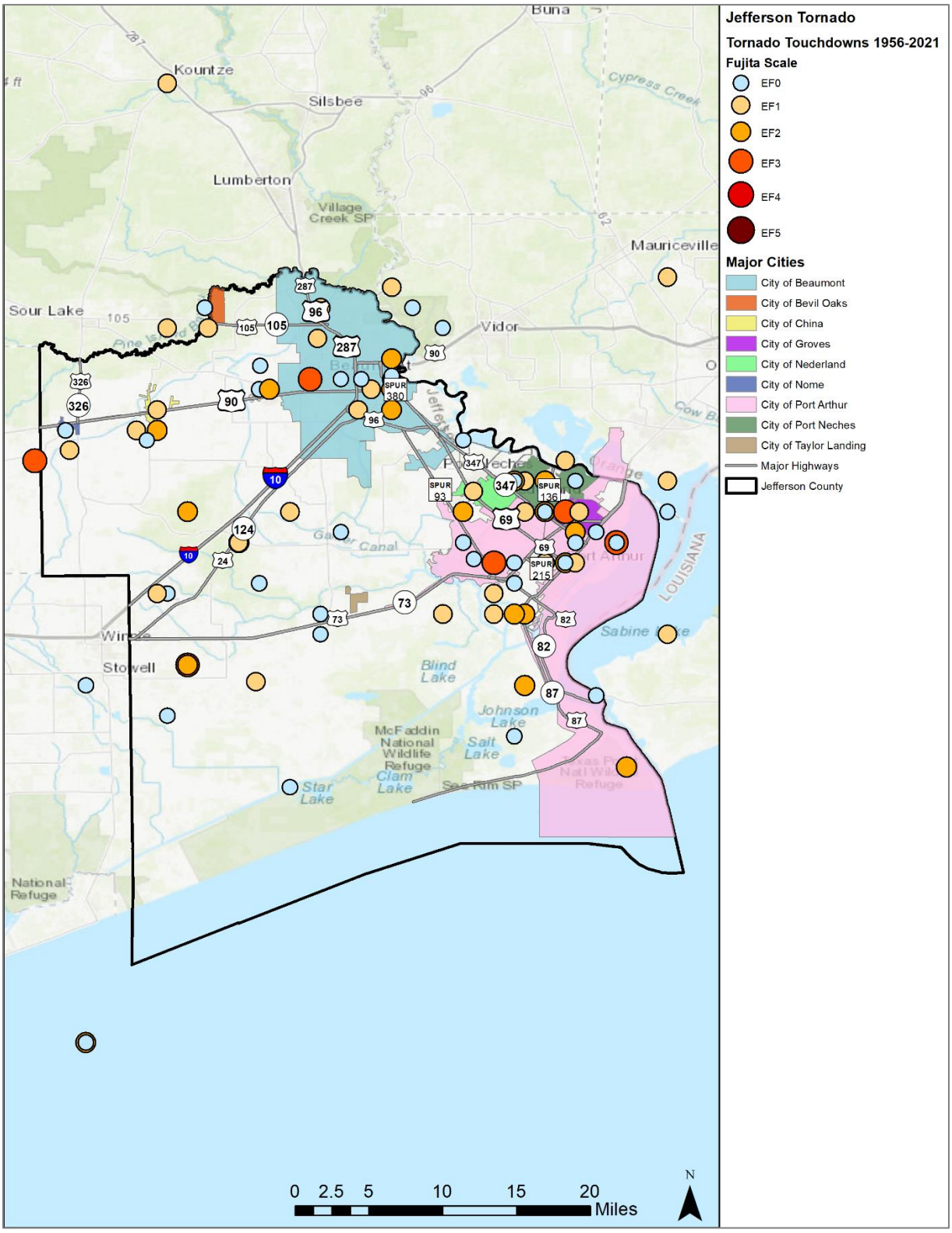
The events in Jefferson County (converted from the Fujita Scale) have been between EF0 and EF5 (Table 9-4). Therefore, the range of intensity that the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, would be expected to mitigate is a tornado event that would be a low to incredible risk, an EF0 to EF5. Historically, the strongest tornado to strike the planning area was a F3, which could be an EF4 or EF5 on the Enhanced Fujita Scale with the highest wind speed. This is the strongest event the planning area can anticipate in the future.

HISTORICAL OCCURRENCES

Only reported tornadoes were factored into the Risk Assessment. It is likely that a high number of occurrences have gone unreported over the past 67 years. Historical tornado data for the county, participating jurisdictions and is provided within a jurisdiction-wide basis per the NCEI database. The SETRPC, Lower Neches Valley Authority, Port of Beaumont Navigation District, and the Port of Port Arthur Navigation District did not report any historical damages as a result of a tornado.

Figure 9-2 identifies the locations of previous occurrences in the Jefferson County planning area from 1955 through 2021. A total of 105 events have been recorded by the Storm Prediction Center (NOAA) and NCEI databases for the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts.

Figure 9-2. Spatial Historical Tornado Events, 1955-2021[3]



[3] Source: NOAA Records

Table 9-4. Historical Tornado Events, 1955-2021[4]

JURISDICTION	DATE	TIME	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	2/14/1956	12:30 PM	F2	0	0	$254,667	$0
Jefferson County	10/4/1956	3:25 PM	F1	0	2	$248,185	$0
Jefferson County	11/5/1956	11:50 AM	F2	0	0	$24,818	$0
Jefferson County	3/17/1957	5:50 PM	F2	0	0	$24,551	$0
Jefferson County	11/7/1957	8:45 PM	F1	0	0	$240,320	$0
Jefferson County	11/7/1957	9:15 PM	F3	2	59	$24,031,954	$0
Jefferson County	11/7/1957	9:23 PM	F3	0	1	$2,403,195	$0
Jefferson County	6/14/1959	4:32 PM	F0	0	0	$23,454	$0
Jefferson County	7/2/1959	1:15 PM	F2	0	0	$233,735	$0
Jefferson County	1/28/1960	9:40 AM	F1	0	0	$23,294	$0
Jefferson County	8/19/1960	1:07 PM	F1	0	0	$23,058	$0
Jefferson County	8/10/1962	3:45 PM	F1	0	6	$0	$0
Jefferson County	7/23/1963	3:00 PM	F1	0	1	$0	$0
Jefferson County	8/5/1964	6:20 PM	F2	0	6	$2,201,637	$0
Jefferson County	7/5/1965	10:35 AM	F1	0	0	$2,160	$0
Jefferson County	7/13/1967	2:52 PM	F2	0	0	$204,344	$0
Jefferson County	9/21/1967	10:47 AM	F1	0	1	$2,031	$0
Jefferson County	9/21/1967	11:39 AM	F0	0	0	$2,031	$0
Jefferson County	2/1/1968	6:05 PM	F2	0	0	$199,564	$0
Jefferson County	3/23/1969	11:05 AM	F3	0	1	$189,060	$0
Jefferson County	7/15/1969	4:10 PM	F1	0	0	$1,854,640	$0

[4] Only recorded events with fatalities, injuries or damages are listed. Magnitude is listed when available. Damage values are in 2022 dollars.

JURISDICTION	DATE	TIME	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	7/30/1969	5:00 PM	F1	0	0	$185,464	$0
Jefferson County	2/1/1970	9:30 AM	F2	0	2	$179,607	$0
Jefferson County	10/11/1970	2:47 PM	F2	0	0	$17,322,525	$0
Jefferson County	10/11/1970	3:30 PM	F3	0	19	$17,322,525	$0
Jefferson County	12/30/1970	10:30 AM	F2	0	0	$171,484	$0
Jefferson County	5/6/1971	2:00 PM	F1	0	0	$169,357	$0
Jefferson County	5/24/1971	9:00 AM	F0	0	0	$16,936	$0
Jefferson County	5/12/1972	7:23 AM	F2	0	2	$1,640,643	$0
Jefferson County	7/29/1972	3:00 PM	F1	0	0	$1,628,896	$0
Jefferson County	11/13/1972	5:25 AM	F2	0	0	$16,096,875	$0
Jefferson County	5/26/1973	3:45 AM	F2	0	3	$1,554,687	$0
Jefferson County	6/11/1973	9:05 PM	F1	0	0	$15,441,346	$0
Jefferson County	6/20/1973	2:10 PM	F0	0	0	$154,413	$0
Jefferson County	8/9/1973	12:46 PM	F0	0	0	$15,133	$0
Jefferson County	11/27/1973	1:00 PM	F1	0	0	$148,694	$0
Jefferson County	2/21/1974	8:11 AM	F1	0	0	$144,599	$0
Jefferson County	6/21/1974	12:20 PM	F0	0	0	$13,929	$0
Jefferson County	10/28/1974	1:30 PM	F2	0	2	$133,563	$0
Jefferson County	10/28/1974	1:55 PM	F2	0	3	$1,335,631	$0
Jefferson County	1/10/1975	4:30 AM	F1	0	0	$131,000	$0
Jefferson County	4/10/1975	12:42 PM	F0	0	0	$12,902	$0
Jefferson County	5/14/1975	4:20 PM	F0	0	0	$154	$0
Jefferson County	6/6/1976	6:50 PM	F1	0	0	$120,160	$0
Jefferson County	7/5/1978	1:58 PM	F0	0	0	$10,388	$0

JURISDICTION	DATE	TIME	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	10/22/1979	4:44 AM	F2	0	0	$9,075,898	$0
Jefferson County	6/20/1980	1:45 PM	F1	0	0	$82,528	$0
Jefferson County	6/20/1980	1:45 PM	F1	0	0	$82,528	$0
Jefferson County	9/5/1980	4:45 PM	F1	0	0	$812,509	$0
Jefferson County	9/6/1980	4:00 AM	F2	0	0	$81,251	$0
Jefferson County	4/23/1981	11:15 AM	F2	0	2	$766,002	$0
Jefferson County	7/7/1982	2:10 PM	F0	0	0	$84	$0
Jefferson County	1/31/1983	2:00 PM	F3	0	1	$6,978,604	$0
Jefferson County	5/20/1983	1:35 PM	F0	0	0	$688	$0
Jefferson County	5/20/1983	1:40 PM	F0	0	0	$6,880,116	$0
Jefferson County	5/20/1983	1:45 PM	F2	1	9	$6,880,116	$0
Jefferson County	5/20/1983	1:15 PM	F0	0	0	$6,880,116	$0
Jefferson County	5/20/1983	2:01 PM	F1	0	3	$6,880,116	$0
Jefferson County	12/13/1983	10:25 AM	F0	0	0	$81	$0
Jefferson County	4/10/1984	11:30 PM	F0	0	0	$661,986	$0
Jefferson County	2/18/1987	4:50 AM	F1	0	0	$611,566	$0
Jefferson County	6/1/1992	8:05 AM	F0	0	0	$4,868	$0
Jefferson County	6/30/1992	3:45 PM	F0	0	0	$48,681	$0
Jefferson County	11/11/1992	5:00 AM	F0	0	0	$48,064	$0
City of Port Arthur	7/14/1997	3:05 PM	F0	0	3	$85,048	$0
City of Nome	1/1/1999	11:45 PM	F3	0	5	$830,806	$0
Jefferson County	4/3/2000	3:08 AM	F1	0	1	$159,371	$0
City of Groves	4/3/2000	3:20 AM	F1	0	0	$4,781,138	$0
City of Beaumont	10/13/2001	3:55 AM	F1	0	0	$1,536,314	$0

JURISDICTION	DATE	TIME	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Beaumont	11/18/2003	1:00 AM	F0	0	0	$147,969	$0
City of China	10/16/2006	5:00 AM	F1	0	0	$405,852	$0
City of Beaumont	8/18/2009	12:57 PM	EF1	0	10	$25,297,497	$0
City of Nome	6/9/2010	4:32 AM	EF1	0	0	$125,251	$0
City of Port Arthur	10/27/2021	7:54 AM	EF0	0	0	$161,805	$0
TOTALS	**105**		**F3**	**3**	**142**	**$186,444,462**	**$0**

Table 9-5. Summary of Historical Events, 1955-2021[5]

JURISDICTION	Number of Events	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	90	F3	3	124	$153,072,782	$0
City of Beaumont	4	EF1	0	10	$26,981,780	$0
City of Bevil Oaks	1	F0	0	0	$0	$0
City of China	2	F1	0	0	$405,852	$0
City of Groves	1	F1	0	0	$4,781,138	$0
City of Nederland	1	F1	0	0	$0	$0
City of Nome	2	F30	0	5	$956,057	$0
City of Port Arthur	3	F0	0	3	$246,853	$0
City of Port Neches	1	F0	0	0	$0	$0
City of Taylor Landing	0	None Reported	0	0	$0	$0
TOTAL LOSSES	**105**	**(Max Extent)**	**3**	**142**	**$186,444,462**	

Based on the list of historical tornado events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions and special districts, there has been four recorded events since the 2017 Plan.

[5] Damages reported in 2022 dollars.

SECTION 9: TORNADO

SIGNIFICANT EVENTS

August 18, 2009 – Jefferson County

A tornado moved across the northern portions of Beaumont. Damages consisted of commercial businesses, vehicles, and roof damage. Damage estimates totaled approximately $20,000,000 and resulting in ten related injuries. No fatalities reported.

October 16, 2006 – City of China

An abundance of moisture and high winds resulted in several tornadoes and flash floods across Southeast Texas. A tornado destroyed five mobile homes and damaged an additional twenty homes just east of China. Trees and power lines were also torn down. Damage estimates totaled approximately $300,000.

PROBABILITY OF FUTURE EVENTS

Tornadic storms can occur at any time of year and at any time of day, but they are typically more common in the spring months during the late afternoon and evening hours. A smaller, high frequency period can emerge in the fall during the brief transition between the warm and cold seasons. According to historical records, Jefferson County, including all participating jurisdictions and special districts, can experience a tornado touchdown approximately once to twice a year. This frequency supports a "Highly Likely" probability of future events for Jefferson County, including all participating jurisdictions and special districts, or an event probable in the next year.

VULNERABILITY AND IMPACT

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

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

- Manufactured Homes;
- Homes on crawlspaces (more susceptible to lift); and
- Buildings with large spans, such as shopping malls, gymnasiums, and factories.

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

The Jefferson County planning area features multiple mobile or manufactured home parks throughout the planning area, including most participation jurisdictions. These parks are typically more vulnerable to tornado events than typical site-built structures. In addition, manufactured homes are located sporadically throughout the planning area including most participating

jurisdictions and unincorporated areas of the county which would also be more vulnerable. The US Census data indicates a total of 3,545 manufactured homes located in the Jefferson County planning area (3.3%), including participating jurisdictions (Table 9-6). In addition, 59.2% (approximately 64,430structures) of the single family residential (SFR) structures in the entire planning area were built before 1980. These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damages during significant wind events.

Table 9-6. Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Jefferson County	3,545	64,430
City of Beaumont	1,166	30,675
City of Bevil Oaks	31	418
City of China	44	239
City of Groves	20	5,126
City of Nederland	243	5,220
City of Nome	3	136
City of Port Arthur	299	15,842
City of Port Neches	112	3,558
City of Taylor Landing	0	41
Lower Neches Valley Authority	2	0
Port of Beaumont Navigation District	5	0
Port of Port Arthur Navigation District	8	0
SETRPC	0	0

While all citizens are at risk to the impacts of a tornado, forced relocation and disaster recovery drastically impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. An estimated 18.0% of the planning area population live below the poverty level (Table 9-7).

Table 9-7. Populations at Greatest Risk by Jurisdiction[6]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Jefferson County	45,564
City of Beaumont	22,174
City of Bevil Oaks	44
City of China	114
City of Groves	2,159
City of Nederland	1,491
City of Nome	23
City of Port Arthur	14,606
City of Port Neches	1,247
City of Taylor Landing	0

The following critical facilities would be vulnerable to tornado events in each participating jurisdiction:

Table 9-8. Critical Facilities at Risk by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	10 Fire Stations, 1 Sheriff's Department, 5 Police Stations, 67 Schools, 9 Medical Facilities, 1 Emergency Service District, 4 Water Districts, 3 Drainage District, 3, Utility Districts, 4 Port Authorities, 1 Government Facility, 1 Airport
City of Beaumont	13 Fire Stations, 1 Police Station, 32 Schools, 5 Medical Facilities, 6 Emergency Medical Services (EMS), 1 EOC, 1 Event Center, 1 Stadium, 1 Mall, 2 Water Treatment Facilities, 3 Water Wells, 1 Wastewater Treatment Facility, 2 Pump Stations, 75 Lift Stations, 1 Waste Operation Facility, 1 Landfill, 8 Chemical Facilities, 8 Communication Facilities, 1 Electrical Facility, 16 Government Facilities, 4 Federal Facilities, 1, Animal Shelter, 1 County Dispatch Facility, 1 Airport, 1 Canal, 1 Maritime Transport Facility, 2 Traffic and Transit Operation Facilities, 5 Railroad and Infrastructure, 2 Highway Transport and Infrastructure, 4 Lower Neches Valley Facilities and Infrastructure
City of Bevil Oaks	1 Emergency Service District, 1 Fire Station

[6] US Census Bureau 2020 data for Jefferson County.

JURISDICTION	CRITICAL FACILITIES
City of China	1 Emergency Service District, 1 Fire Station, 1 Water Plant, 1 Wastewater Plant, 8 Lift Stations, 3 Wells
City of Groves	1 Fire Station, 1 Police Station, 3 Schools
City of Nederland	1 Fire Station, 1 Police Station, 8 Schools, 3 Medical Facilities
City of Nome	1 Fire Station, 1 Water Treatment Plant, 1 Wastewater and Sewage Plant, 5 Lift Stations, 1 Government Building
City of Port Arthur	1 Fire Station, 1 Police Station, 14 Schools, 1 Medical Facility, 1 Drainage District, 2 Port Authority and Navigation Districts
City of Port Neches	1 Fire Station, 2 Police Stations, 5 Schools, 1 EOC, 1 Water Treatment Plant, 3 Water Towers, 1 Wastewater Treatment Plant, 10 Lift Stations, 3 Government Facilities, 2 Federal Facilities, 2 Commercial Facilities, 3 Industrial Facilities, 2 Public Works Facilities and Infrastructure
City of Taylor Landing	1 Electric Facility, 1 Fiber Optic Facility, 2 Sewer Plant and Infrastructures
Lower Neches Valley Authority	1 Communication Center, 1 Water Plant, 1 Water Treatment Plant, 5 Pumping Plants
Port of Beaumont Navigation District	2 Administrative Facilities, 2 Facility Operations Facilities, 1 Maintenance Building, 2 Security Offices, 1 Army Building, 6 Transit Sheds, 7 Terminals, 2 Barge Docs, 2 Bulkhead-Aprons, 1 Dock / Ramp
Port of Port Arthur Navigation District	1 Administrative Facility, 1 Command Center, 1 Terminal, 1 Tenant/ Pipeline
SETRPC	SETRPC Facility

The average loss estimate of property and crop is $186,444,462 (in 2022 dollars), having an approximate annual loss estimate of $2,782,753 (Table 9-9). Based on historic damages, the impact of tornado on the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, can be considered “Limited,” with less than 10 percent of property expected to be destroyed and critical facilities shut down for 24-hours or less. However, with 142 injuries and 3 fatalities from historical events, the impact for the planning area is considered “Substantial” with multiple fatalities possible depending on the severity of the event.

Table 9-9. Potential Annualized Losses by Jurisdiction

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Jefferson County	$153,072,782	$2,284,668
City of Beaumont	$26,981,780	$402,713
City of Bevil Oaks	$0	$0
City of China	$405,852	$6,057

City of Groves	$4,781,138	$71,360
City of Nederland	$0	$0
City of Nome	$956,057	$14,270
City of Port Arthur	$246,853	$3,684
City of Port Neches	$0	$0
City of Taylor Landing	$0	$0
Lower Neches Valley Authority	$0	$0
Port of Beaumont Navigation District	$0	$0
Port of Port Arthur Navigation District	$0	$0
SETRPC	$0	$0
Planning Area	**$186,444,462**	**$2,782,753**

ASSESSMENT OF IMPACTS

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

- Individuals exposed to the storm can be struck by flying debris, falling limbs, or downed trees causing serious injury or death.
- Structures can be damaged or crushed by falling trees, which can result in physical harm to the occupants.
- Manufactured homes may suffer substantial damage as they would be more vulnerable than typical site-built structures.
- Significant debris and downed trees can result in emergency response vehicles being unable to access areas of the community.
- Downed power lines may result in roadways being unsafe for use, which may prevent first responders from answering calls for assistance or rescue.
- Tornadoes often result in widespread power outages increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outages can result in an increase in structure fires and/or carbon monoxide poisoning as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- Tornadoes can destroy or make residential structures uninhabitable, requiring shelter or relocation of residents in the aftermath of the event.
- First responders must enter the damage area shortly after the tornado passes to begin rescue operations and to organize cleanup and assessments efforts, therefore they

are exposed to downed power lines, unstable and unusual debris, hazardous materials, and generally unsafe conditions, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.

- Emergency operations and services may be significantly impacted due to damaged facilities, loss of communications, and damaged emergency vehicles and equipment.
- City or county departments may be damaged or destroyed, delaying response and recovery efforts for the entire community.
- Private sector entities that the City and its residents rely on, such as utility providers, financial institutions, and medical care providers may not be fully operational and may require assistance from neighboring communities until full services can be restored.
- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Damage to infrastructure may slow economic recovery since repairs may be extensive and lengthy.
- Some businesses not directly damaged by the tornado may be negatively impacted while roads and utilities are being restored, further slowing economic recovery.
- When the community is affected by significant property damage it is anticipated that funding would be required for infrastructure repair and restoration, temporary services and facilities, overtime pay for responders, and normal day-to-day operating expenses.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Residential structures destroyed by a tornado may not be rebuilt for years, reducing the tax base for the community.
- Large or intense tornadoes may result in a dramatic population fluctuation, as people are unable to return to their homes or jobs and must seek shelter and/or work outside of the affected area.
- Businesses that are uninsured or underinsured may have difficulty reopening, which results in a net loss of jobs for the community and a potential increase in the unemployment rate.
- Recreation activities may be unavailable, and tourism can be unappealing for years following a large tornado, devastating directly related local businesses.

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

SECTION 10: HAIL

Hazard Description 1
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HAZARD DESCRIPTION

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

LOCATION

Hailstorms are an extension of severe thunderstorms that could potentially cause severe damage. As a result, they are not confined to any specific geographic location and can vary greatly in size, location, intensity, and duration. Therefore, the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, are equally at risk to the hazard of hail.

EXTENT

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

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

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

The intensity scale in Table 10-1 ranges from H0 to H10, with increments of intensity or damage potential in relation to hail size (distribution and maximum), texture, fall speed, speed of storm translation, and strength of the accompanying wind. Based on available data regarding the previous occurrences for the area, the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, may experience hailstorms ranging from an H0 to an H10. The County can mitigate a storm from low risk or hard hail to a super hailstorm with baseball size hail that leads to extensive structural damage and could cause fatal injuries. The largest hail event in the Jefferson County planning area resulted in hail measuring 4.0 inches in diameter, or a H10, which is considered very destructive. This is the worst extent the planning area can anticipate in the future.

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

SECTION 10: HAIL

HISTORICAL OCCURRENCES

Historical evidence shown in Figure 10-1 demonstrates that the planning area is vulnerable to hail events overall, which typically result from severe thunderstorm activity. A total of 129 reported historical hail events impacted the Jefferson County planning area between 1956 through 2021 (Summary Table 10-2). These events were reported to NCEI and NOAA databases and may not represent all hail events to have occurred during the past 66 years. Only those events for the Jefferson County planning area with latitude and longitude available were plotted (Figure 10-1). The SETRPC, Lower Neches Valley Authority, Port of Beaumont Navigation District, and the Port of Port Arthur Navigation District did not report any historical damages as a result of hail.

Figure 10-1. Spatial Historical Hail Events, 1956-2021

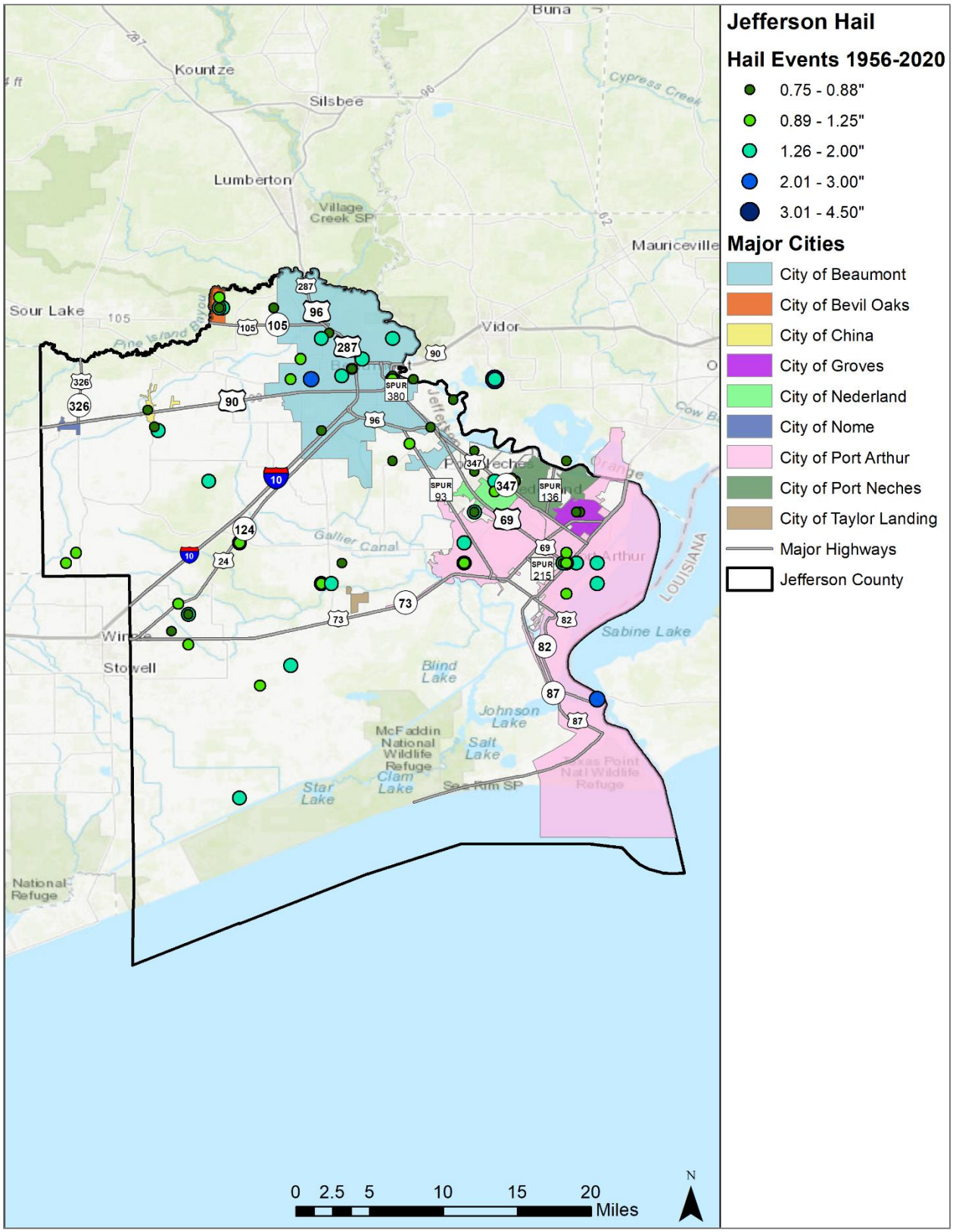

Table 10-2. Historical Hail Events Summary, 1956-2021[2]

JURISDICTION	NUMBER of EVENTS	MAGNITUDE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	72	4.0 inches	0	0	$0	$0
City of Beaumont	19	1.75 inches	0	0	$0	$0
City of Bevil Oaks	6	1.75 inches	0	0	$0	$0
City of China	2	0.75 inches	0	0	$0	$0
City of Groves	6	1.00 inches	0	0	$0	$0
City of Nederland	4	0.88 inches	0	0	$0	$0
City of Nome	0	N/A	0	0	$0	$0
City of Port Arthur	19	2.75 inches	0	0	$0	$0
City of Port Neches	1	0.75 inches	0	0	$0	$0
City of Taylor Landing	0	N/A	0	0	$0	$0
Lower Neches Valley Authority	0	N/A	0	0	$0	$0
Port of Beaumont Navigation District	0	N/A	0	0	$0	$0
Port Arthur Navigation District	0	N/A	0	0	$0	$0
SETRPC	0	N/A	0	0	$0	$0
TOTAL LOSSES	**129**	**(Max Extent)**	**0**	**0**	**$0**	

Based on the list of historical hail events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions and special districts, 13 of the events have occurred since the 2017 Plan.

[2] The historical events for the planning area did not result in reported damages, injuries or fatalities and therefor was not included in this report. The list of 129 historical events is available upon request.

SECTION 10: HAIL

SIGNIFICANT EVENTS

November 7, 2018 – Jefferson County/Bevil Oaks

A warm and moist air mass lifted north from the gulf ahead of a cold front. Scattered storms developed during the afternoon with a couple becoming severe. Quarter sized hail was reported in Bevil Oaks.

April 27, 2015 – Jefferson County/City of Beaumont

A large upper-level trough stalled over the southwest states while multiple short waves rotated around the larger trough over a few days. This produced several rounds of severe weather with tornadoes, hail, and high winds reported. The first round entered the region by late morning on the 24th as a long-lived super cell tracked from Tyler County into Louisiana and then into the gulf. The second round of severe weather produced one report of wind damage while the 3rd and 4th rounds produced widespread wind damage, a tornado, and copious amounts of hail. A report was relayed by Beaumont media of penny to quarter sized hail in Nederland.

May 6, 1969 – Jefferson County

Hail ranging in size from three-quarters inch in diameter to three inches in diameter damaged property within five-mile-wide strip about 30 miles long from the central portion of Beaumont in Jefferson County to Vidor in Orange County, and to Deweyville in Newton County. In Beaumont, the hail was heaviest in the city's west end. Beaumont Motor Company and Mid City Motor Company sustained minor damage to an estimated 600 automobiles.

PROBABILITY OF FUTURE EVENTS

Based on available records of historic events, 129 events in a 66-year reporting period for Jefferson County provides a probability of one to two events per year. This frequency supports a highly likely probability of future events for the Jefferson County planning area including the SETRPC and all participating jurisdictions and special districts.

VULNERABILITY AND IMPACT

Damage from hail approaches 1 billion dollars in the U.S. each year. Much of the damage inflicted by hail is to crops. Even relatively small hail can shred plants to ribbons in a matter of minutes. Vehicles, roofs of buildings and homes, and landscaping are the most typical damages caused by hail.

Utility systems on roofs at school districts and critical facilities would be vulnerable and could be damaged. Hail could cause a significant threat to people as they could be struck by hail and falling trees and branches. Outdoor activities and events may elevate the risk to residents and visitors when a hailstorm strikes with little warning. Portable buildings typically utilized by schools and commercial sites such as construction areas would be more vulnerable to hail events than the typical site-built structures.

The Jefferson County planning area features mobile or manufactured home parks throughout the planning area. These parks are typically more vulnerable to hail events than typical site-built structures. In addition, manufactured homes are located sporadically throughout the planning area including all participating jurisdictions which would also be more vulnerable. The US Census data indicates a total of 3,545 manufactured homes located in the Jefferson County planning area (3.3%), including participating jurisdictions (Table 10-3). In addition, 59.2% (approximately 64,430

structures) of the single family residential (SFR) structures in the entire planning area were built before 1980. These structures would typically be built to lower or less stringent construction standards than newer construction and may be more susceptible to damages during significant wind events.

Table 10-3. Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Jefferson County	3,545	64,430
City of Beaumont	1,166	30,675
City of Bevil Oaks	31	418
City of China	44	239
City of Groves	20	5,126
City of Nederland	243	5,220
City of Nome	3	136
City of Port Arthur	299	15,842
City of Port Neches	112	3,558
City of Taylor Landing	0	41
Lower Neches Valley Authority	2	0
Port of Beaumont Navigation District	5	0
Port of Port Arthur Navigation District	8	0
SETRPC	0	0

While all citizens are at risk to the impacts of hail, forced relocation and disaster recovery drastically impacts low-income residents who lack the financial means to travel, afford a long-term stay away from home, and to rebuild or repair their homes. An estimated 18.0% of the planning area population live below the poverty level (Table 10-4).

Table 10-4. Populations at Greatest Risk by Jurisdiction[3]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Jefferson County	45,564
City of Beaumont	22,174

[3] US Census Bureau 2020 data for Jefferson County.

JURISDICTION	POPULATION BELOW POVERTY LEVEL
City of Bevil Oaks	44
City of China	114
City of Groves	2,159
City of Nederland	1,491
City of Nome	23
City of Port Arthur	14,606
City of Port Neches	1,247
City of Taylor Landing	0

The following critical facilities would be vulnerable to hail events in each participating jurisdiction:

Table 10-5. Critical Facilities at Risk by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	10 Fire Stations, 1 Sheriff's Department, 5 Police Stations, 67 Schools, 9 Medical Facilities, 1 Emergency Service District, 4 Water Districts, 3 Drainage District, 3, Utility Districts, 4 Port Authorities, 1 Government Facility, 1 Airport
City of Beaumont	13 Fire Stations, 1 Police Station, 32 Schools, 5 Medical Facilities, 6 Emergency Medical Services (EMS), 1 EOC, 1 Event Center, 1 Stadium, 1 Mall, 2 Water Treatment Facilities, 3 Water Wells, 1 Wastewater Treatment Facility, 2 Pump Stations, 75 Lift Stations, 1 Waste Operation Facility, 1 Landfill, 8 Chemical Facilities, 8 Communication Facilities, 1 Electrical Facility, 16 Government Facilities, 4 Federal Facilities, 1, Animal Shelter, 1 County Dispatch Facility, 1 Airport, 1 Canal, 1 Maritime Transport Facility, 2 Traffic and Transit Operation Facilities, 5 Railroad and Infrastructure, 2 Highway Transport and Infrastructure, 4 Lower Neches Valley Facilities and Infrastructure
City of Bevil Oaks	1 Emergency Service District, 1 Fire Station
City of China	1 Emergency Service District, 1 Fire Station, 1 Water Plant, 1 Wastewater Plant, 8 Lift Stations, 3 Wells
City of Groves	1 Fire Station, 1 Police Station, 3 Schools
City of Nederland	1 Fire Station, 1 Police Station, 8 Schools, 3 Medical Facilities
City of Nome	1 Fire Station, 1 Water Treatment Plant, 1 Wastewater and Sewage Plant, 5 Lift Stations, 1 Government Building

JURISDICTION	CRITICAL FACILITIES
City of Port Arthur	1 Fire Station, 1 Police Station, 14 Schools, 1 Medical Facility, 1 Drainage District, 2 Port Authority and Navigation Districts
City of Port Neches	1 Fire Station, 2 Police Stations, 5 Schools, 1 EOC, 1 Water Treatment Plant, 3 Water Towers, 1 Wastewater Treatment Plant, 10 Lift Stations, 3 Government Facilities, 2 Federal Facilities, 2 Commercial Facilities, 3 Industrial Facilities, 2 Public Works Facilities and Infrastructure
City of Taylor Landing	1 Electric Facility, 1 Fiber Optic Facility, 2 Sewer Plant and Infrastructures
Lower Neches Valley Authority	1 Communication Center, 1 Water Plant, 1 Water Treatment Plant, 5 Pumping Plants
Port of Beaumont Navigation District	2 Administrative Facilities, 2 Facility Operations Facilities, 1 Maintenance Building, 2 Security Offices, 1 Army Building, 6 Transit Sheds, 7 Terminals, 2 Barge Docs, 2 Bulkhead-Aprons, 1 Dock / Ramp
Port of Port Arthur Navigation District	1 Administrative Facility, 1 Command Center, 1 Terminal, 1 Tenant/ Pipeline
SETRPC	SETRPC Facility

Hail has been known to cause injury to humans and occasionally has been fatal. Overall, the average loss estimate of property and crops in the planning area is considered negligible. Based on historic loss and damages, the impact of hail damages on the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, can be considered “Limited” severity of impact meaning injuries and illness can be treated with first aid, community critical facilities are shut down for 24-hours or less, and less than ten percent of property destroyed or with major damage.

Table 10-6. Potential Annualized Losses by Jurisdiction

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATE
Jefferson County	$0	$0
City of Beaumont	$0	$0
City of Bevil Oaks	$0	$0
City of China	$0	$0
City of Groves	$0	$0
City of Nederland	$0	$0

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATE
City of Nome	$0	$0
City of Port Arthur	$0	$0
City of Port Neches	$0	$0
City of Taylor Landing	$0	$0
Lower Neches Valley Authority	$0	$0
Port of Beaumont Navigation District	$0	$0
Port of Port Arthur Navigation District	$0	$0
SETRPC	$0	$0
Planning Area	**$0**	**$0**

ASSESSMENT OF IMPACTS

Hail events have the potential to pose a significant risk to people and can create dangerous situations. The impact of climate change could produce larger, more severe hail events, exacerbating the current hail impacts. Worsening hail conditions can be frequently associated with a variety of impacts, including:

- Hail may create hazardous road conditions during and immediately following an event, delaying first responders from providing for or preserving public health and safety.
- Individuals and first responders who are exposed to the storm may be struck by hail, falling branches, or downed trees resulting in injuries or possible fatalities.
- Residential structures can be damaged by falling trees, which can result in physical harm to occupants.
- Large hail events will likely cause extensive roof damage to residential structures along with siding damage and broken windows, creating a spike in insurance claims and a rise in premiums.
- Automobile damage may be extensive depending on the size of the hail and length of the storm.
- Hail events can result in power outages over widespread areas increasing the risk to more vulnerable portions of the population who rely on power for health and/or life safety.
- Extended power outage can result in an increase in structure fires and/or carbon monoxide poisoning, as individuals attempt to cook or heat their home with alternate, unsafe cooking or heating devices, such as grills.
- First responders are exposed to downed power lines, damaged structures, hazardous spills, and debris that often accompany hail events, elevating the risk of injury to first responders and potentially diminishing emergency response capabilities.
- Downed power lines and large debris, such as downed trees, can result in the inability of emergency response vehicles to access areas of the community.

- Hazardous road conditions may prevent critical staff from reporting for duty, limiting response capabilities.
- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Some businesses not directly damaged by the hail event may be negatively impacted while roads are cleared and utilities are being restored, further slowing economic recovery.
- Businesses that are more reliant on utility infrastructure than others may suffer greater damages without a backup power source.
- Hazardous road conditions will likely lead to increases in automobile accidents, further straining emergency response capabilities.
- Depending on the severity and scale of damage caused by large hail events, damage to power transmission and distribution infrastructure can require days or weeks to repair.
- A significant hail event could significantly damage agricultural crops, resulting in extensive economic losses for the community and surrounding area.
- Hail events may injure or kill livestock and wildlife.
- A large hail event could impact the accessibility of recreational areas and parks due to extended power outages or debris clogged access roads.

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

SECTION 11: EXTREME HEAT

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HAZARD DESCRIPTION

Extreme heat is a prolonged period of excessively high temperatures and exceptionally humid conditions. Extreme heat during the summer months is a common occurrence throughout the State of Texas, and Jefferson County is no exception. The entire planning area, including the SETRPC and all participating jurisdictions and special districts, typically experience extended heat waves. A heat wave is an extended period of extreme heat and is often accompanied by high humidity.

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

LOCATION

Though a death from extreme heat has not been recorded at a specific location in the County, there is no specific geographic scope to the extreme heat hazard. Extreme heat could occur anywhere within the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts.

EXTENT

The magnitude or intensity of an extreme heat event is measured according to temperature in relation to the percentage of humidity. According to the National Oceanic Atmospheric Administration (NOAA), this relationship is referred to as the “Heat Index” and is depicted in Figure

SECTION 11: EXTREME HEAT

11-1. This index measures how hot it feels outside when humidity is combined with high temperatures.

Figure 11-1. Extent Scale for Extreme Summer Heat[1]

Relative Humidity (%)	Temperatures (°F)	Temperatures (°F)	Temperatures (°F)	Temperatures (°F)
40	80 - 88: CAUTION	90 - 96: EXTREME CAUTION	98 - 106: DANGER	108 - 110: EXTREME DANGER
45	80 - 88: CAUTION	90 - 94: EXTREME CAUTION	96 - 104: DANGER	106 - 110: EXTREME DANGER
50	80 - 86: CAUTION	88 - 94: EXTREME CAUTION	96 - 102: DANGER	104 - 110: EXTREME DANGER
55	80 - 86: CAUTION	88 - 92: EXTREME CAUTION	94 - 100: DANGER	102 - 110: EXTREME DANGER
60	80 - 84: CAUTION	86 - 90: EXTREME CAUTION	92 - 98: DANGER	100 - 110: EXTREME DANGER
65	80 - 84: CAUTION	86 - 90: EXTREME CAUTION	92 - 96: DANGER	98 - 110: EXTREME DANGER
70	80 - 84: CAUTION	86 - 88: EXTREME CAUTION	90 - 94: DANGER	96 - 110: EXTREME DANGER
75	80 - 82: CAUTION	84 - 88: EXTREME CAUTION	90 - 94: DANGER	96 - 110: EXTREME DANGER
80	80 - 82: CAUTION	84 - 86: EXTREME CAUTION	88 - 92: DANGER	94- 110: EXTREME DANGER
85	80 - 82: CAUTION	84 - 86: EXTREME CAUTION	88 - 90: DANGER	92- 110: EXTREME DANGER
90	80: CAUTION	82 - 84: EXTREME CAUTION	86 - 90: DANGER	92- 110: EXTREME DANGER
95	80: CAUTION	82 - 84: EXTREME CAUTION	86 - 88: DANGER	90- 110: EXTREME DANGER
100	80: CAUTION	82 - 84: EXTREME CAUTION	86 - 88: DANGER	90- 110: EXTREME DANGER

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

The Extent Scale in Figure 11-1 displays varying categories of caution depending on the relative humidity combined with the temperature. For example, when the temperature is at 90 degrees Fahrenheit (°F) or lower, caution should be exercised if the humidity level is at or above 40 percent.

The shaded zones on the chart indicate varying symptoms or disorders that could occur depending on the magnitude or intensity of the event. “Caution” is the first category of intensity, and it indicates when fatigue due to heat exposure is possible. “Extreme Caution” indicates that sunstroke, muscle cramps, or heat exhaustion are possible, and a “Danger” level means that these symptoms are likely. “Extreme Danger” indicates that heat stroke is likely. The National Weather Service (NWS) initiates alerts based on the Heat Index as shown in Table 11-1.

Table 11-1. Heat Index and Warnings

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

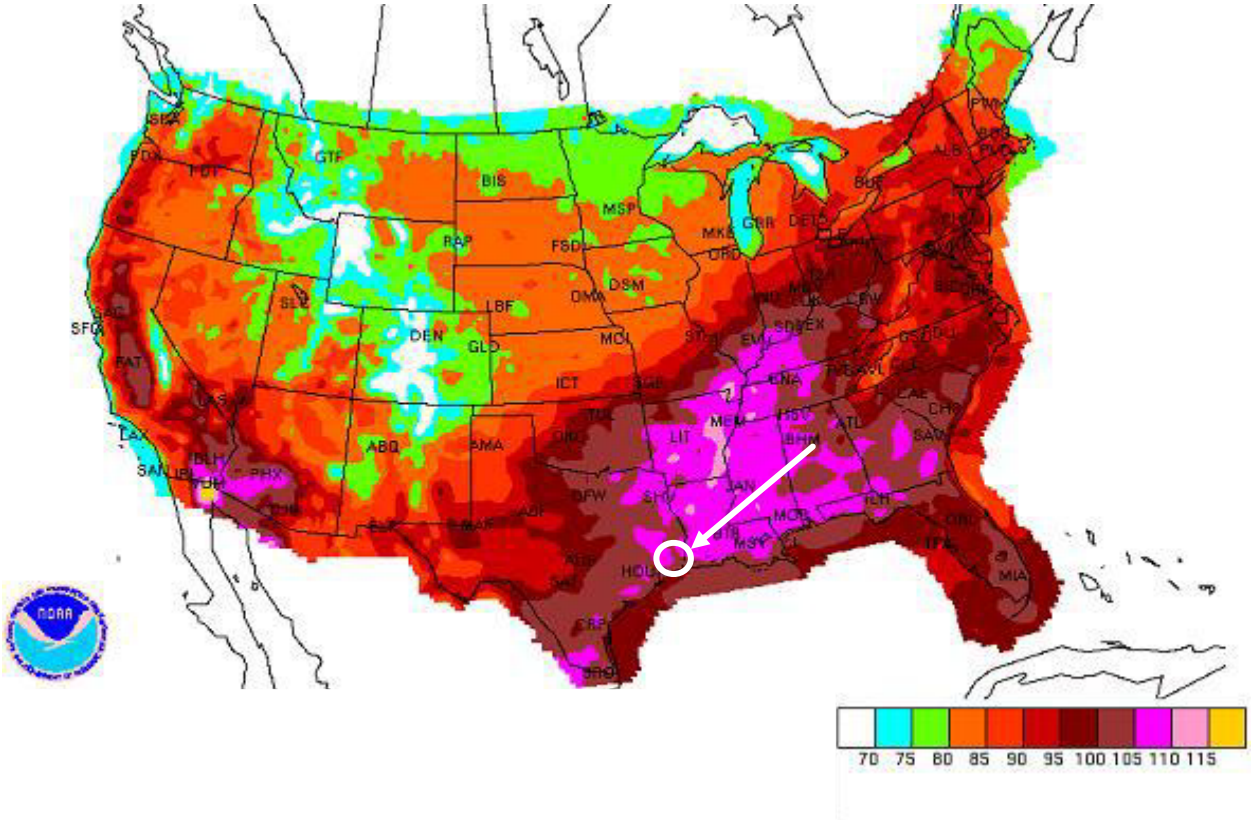
[1] Source: NOAA

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

Jefferson County's terrain is relatively level terrain with limited elevation variations in the Coastal Plain or Gulf Prairie region of extreme southeastern Texas. The subtropical, humid climate features warm, moist summers tempered by Gulf breezes. Due to its geography, and its warm, sunny, humid subtropical climate, the Jefferson County planning area can expect an extreme heat event each summer. Citizens, especially children and the elderly should exercise caution by staying out of the heat for prolonged periods when a heat advisory or excessive heat warning is issued. Also at risk are those working or remaining outdoors.

Figure 11-2 displays the daily maximum heat index as derived from NOAA based on data compiled from 1838 to 2015. The white circle shows the Jefferson County planning area. The primary pink and partial brown colors indicate a daily maximum heat index of 100-110 degrees F. The Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, could experience extreme heat from 90° to 110° and should mitigate to the extent of "danger", which can include sunstroke, muscle cramps, heat exhaustion and potential heatstroke with prolonged exposure. The record high temperature for the Jefferson County planning area was 108°F in 2000. This is the highest temperature (danger category) the planning area can expect.

Figure 11-2. Average Daily Maximum Heat Index Days[2]



HISTORICAL OCCURRENCES

Every summer, the hazard of heat-related illness becomes a significant public health issue throughout much of the US. Mortality from all causes increases during heat waves, and excessive heat is an important contributing factor to deaths from other causes, particularly among the elderly. Table 11-2 depicts historical occurrences of mortality from heat from 1994 to 2004 from the Texas Department of State Health Services and 2005 through December 2021 from the NCEI database.

Table 11-2. Extreme Heat Related Deaths in Texas

YEAR	DEATHS
1994	1
1995	12
1996	10
1997	2

[2] Source: NRDC and the white circle indicates the Jefferson County planning area.

YEAR	DEATHS
1998	66
1999	22
2000	71
2001	20
2002	1
2003	0
2004	3
2005	49
2006	2
2007	2
2008	7
2009	120
2010	4
2011	46
2012	3
2013	2
2014	0
2015	5
2016	6
2017	3
2018	7
2019	7
2020	2
2021	0

Because the Texas Department of State Health Services reports on total events statewide, previous occurrences for extreme heat are derived from the NCEI database. According to heat

related incidents located solely within Jefferson County, there is only two heat waves[3] on record for the Jefferson County planning area (Table 11-3). The SETRPC, Lower Neches Valley Authority, Port of Beaumont Navigation District, and the Port of Port Arthur Navigation District did not report any historical damages as a result of extreme heat.

Historical extreme heat information, as provided by the NCEI, shows extreme heat activity across a multi-county forecast area for each event, the appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by the event. Historical extreme heat data for all participating jurisdictions are provided on a County-wide basis per the NCEI database. Only extreme heat events that have been reported have been factored into this Risk Assessment. It is highly likely additional extreme heat occurrences have gone unreported before and during the recording period. Due to the limited number of reported events, average high temperatures have been analyzed in order to determine the probability of future events.

Table 11-3. Historical Extreme Heat Events, 1996-2021

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	8/29/2000	0	0	$0	$0
Jefferson County	9/1/2000	0	0	$0	$0
TOTALS		**0**	**0**	**$0**	**$0**

Based on the list of historical extreme heat events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions and special districts, no events were reported to the NCEI since the 2017 Plan.

SIGNIFICANT EVENTS

August 29, 2000 – Jefferson County

Record heat occurred in late August across southeast Texas. Aided by drought, a heat wave persisted in the late summer of 2000 along the southern tier of the United States from August to early September. Near the end of the period, daily, monthly, and even all-time record high temperatures were broken, with highs commonly peaking well over 100°F. At the Southeast Texas Regional Airport, the all-time record high of 108 was tied on August 31st. The first record event occurred on July 14, 1902.

PROBABILITY OF FUTURE EVENTS

Average high temperatures for the planning area through the summer months indicate a probability of one event or more every year. This frequency supports a highly likely probability of future events.

[3] Even though the County experiences heat waves each summer, NCEI data only records events reported. Based on reports, only one event is on record.

VULNERABILITY AND IMPACT

There is no defined geographic boundary for extreme heat events. While the entire Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, is exposed to extreme temperatures, existing buildings, infrastructure, and critical facilities are not likely to sustain significant damage from extreme heat events. Therefore, any estimated property losses associated with the extreme heat hazard are anticipated to be minimal across the area.

Extreme temperatures do however present a significant threat to life and safety for the population of the County as a whole. Heat casualties for example are typically caused by a lack of adequate air-conditioning or heat exhaustion. The most vulnerable population to heat casualties are the elderly or infirmed who frequently live on low fixed incomes and cannot afford to run air-conditioning on a regular basis. This population is sometimes isolated, with no immediate family or friends to look out for their well-being. Children may also be more vulnerable if left unattended in vehicles. In addition, populations living below the poverty level are unable to run air-conditioning on a regular basis and are limited in their ability to seek medical treatment. Another segment of the population at risk are those whose jobs consist of strenuous labor outdoors. Additionally, livestock and crops can become stressed, decreasing in quality or in production, during times of extreme heat.

The population over 65 in the Jefferson County planning area is estimated at 14.4% of the total population and children under the age of 5 are estimated at 7.0%, or an estimated total of 54,055 potentially vulnerable residents in the planning area based on age. In addition, an estimated 18.0% of the planning area population live below the poverty level (Table 11-4). Under privileged populations disproportionately impacted by extreme heat events as they are less likely to be able to afford air conditioning during the hot summer months as well as less likely to have access to medical care.

Table 11-4. Populations at Greater Risk by Jurisdiction

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5	POPULATION BELOW POVERTY LEVEL
Jefferson County	36,446	17,609	45,564
City of Beaumont	17,869	8,790	22,174
City of Bevil Oaks	241	68	44
City of China	285	22	114
City of Groves	2,790	1,014	2,159
City of Nederland	2,702	1,100	1,491
City of Nome	166	20	23
City of Port Arthur	7,002	4,412	14,606
City of Port Neches	1,984	789	1,247
City of Taylor Landing	96	7	0

SECTION 11: EXTREME HEAT

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

The potential impact of extreme heat for the entire Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, can be considered “Limited”. It is possible that critical facilities and infrastructure could be shut down for 24 hours if cooling units are running constantly, leading to a temporary power outage. Less than ten percent of residential and commercial property could be damaged if extreme heat events lead to structure fires. Based on historical records over a 26-year period, annualized property and crop losses for the Jefferson County planning area are negligible. In terms of vulnerability to structures, the impact from extreme heat is considered negligible

ASSESSMENT OF IMPACTS

The greatest risk from extreme heat is to public health and safety. The impact of climate change could produce longer, more severe heat waves, exacerbating the current impacts. Worsening extreme heat conditions can be frequently associated with a variety of impacts, including:

- Vulnerable populations, particularly the elderly and children under 5, can face serious or life-threatening health problems from exposure to extreme heat including hyperthermia, heat cramps, heat exhaustion, and heat stroke (or sunstroke).
- Response personnel, including utility workers, public works personnel, and any other professions where individuals are required to work outside, are more subject to extreme heat related illnesses since their exposure would typically be greater.
- High energy demand periods can outpace the supply of energy, potentially creating the need for rolling brownouts which would elevate the risk of illness to vulnerable residents.
- Highways and roads may be damaged by excessive heat causing asphalt roads to soften and concrete roads to shift or buckle.
- Vehicles engines and cooling systems typically run harder during extreme heat events resulting in increases in mechanical failures.
- Extreme heat events during times of drought can exacerbate the environmental impacts associated with drought, decreasing water and air quality and further degrading wildlife habitat.
- Extreme heat increases ground-level ozone (smog), increasing the risk of respiratory illnesses.
- Food suppliers can anticipate an increase in food costs due to increases in production costs and crop and livestock losses.
- Fisheries may be negatively impacted by extreme heat, suffering damage to fish habitats (either natural or man-made) and a loss of fish and/or other aquatic organisms due to decreased water flows or availability.
- Negatively impacted water suppliers may face increased costs resulting from the transport of water resources or development of supplemental water resources.

- Tourism and recreational activities predominant in the McFadden National Wildlife Refuge, around Sabine Lake, and along the Neches River may be negatively impacted during extreme heat events, reducing seasonal revenue.

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

SECTION 12: WILDFIRE

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HAZARD DESCRIPTION

A wildfire event can rapidly spread out of control and occurs most often in the summer when the brush is dry and flames can move unchecked through a highly vegetative area. Wildfires can start as a slow burning fire along the forest floor, killing and damaging trees. The fires often spread more rapidly as they reach the tops of trees with wind carrying the flames from tree to tree. Usually, dense smoke is the first indication of a wildfire.

A wildfire event often begins unnoticed and spreads quickly, lighting brush, trees, and homes on fire. For example, a wildfire may be started by a campfire that was not doused properly, a tossed cigarette, burning debris, or arson.

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

LOCATION

A wildfire event can be a potentially damaging consequence of drought. Wildfires can vary greatly in terms of size, location, intensity, and duration. While wildfires are not confined to any specific geographic location, they are most likely to occur in open grasslands. The threat to people and property from a wildfire event is greater in the fringe areas where developed areas meet open grass lands, such as the WUI. (Figures 12-1 through 12-10). It is estimated that 29.9 percent of the total population in Jefferson County live within the WUI. However, the entire Jefferson County planning area is at some risk for wildfires.

Figure 12-1. Wildland Urban Interface Map – Jefferson County

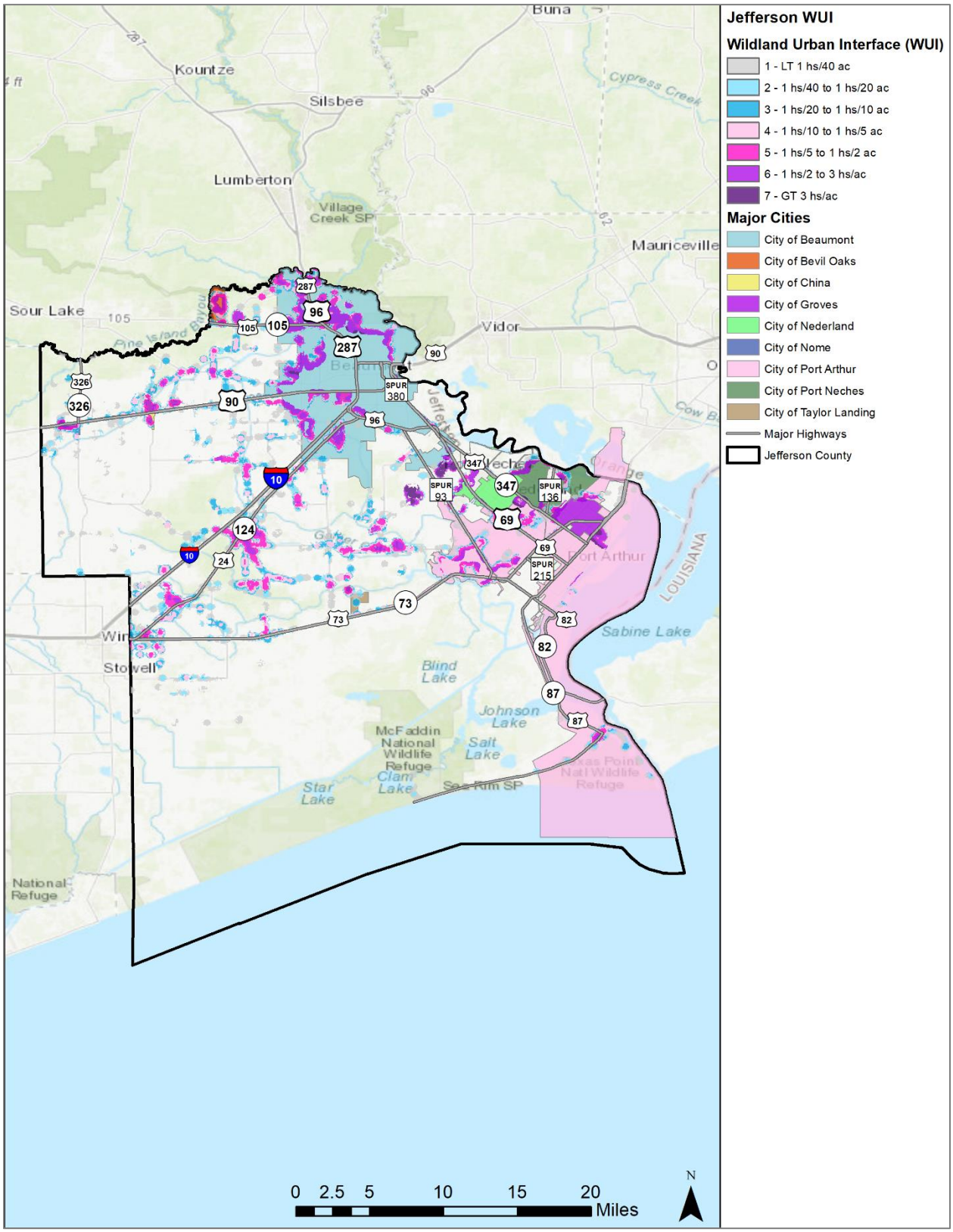
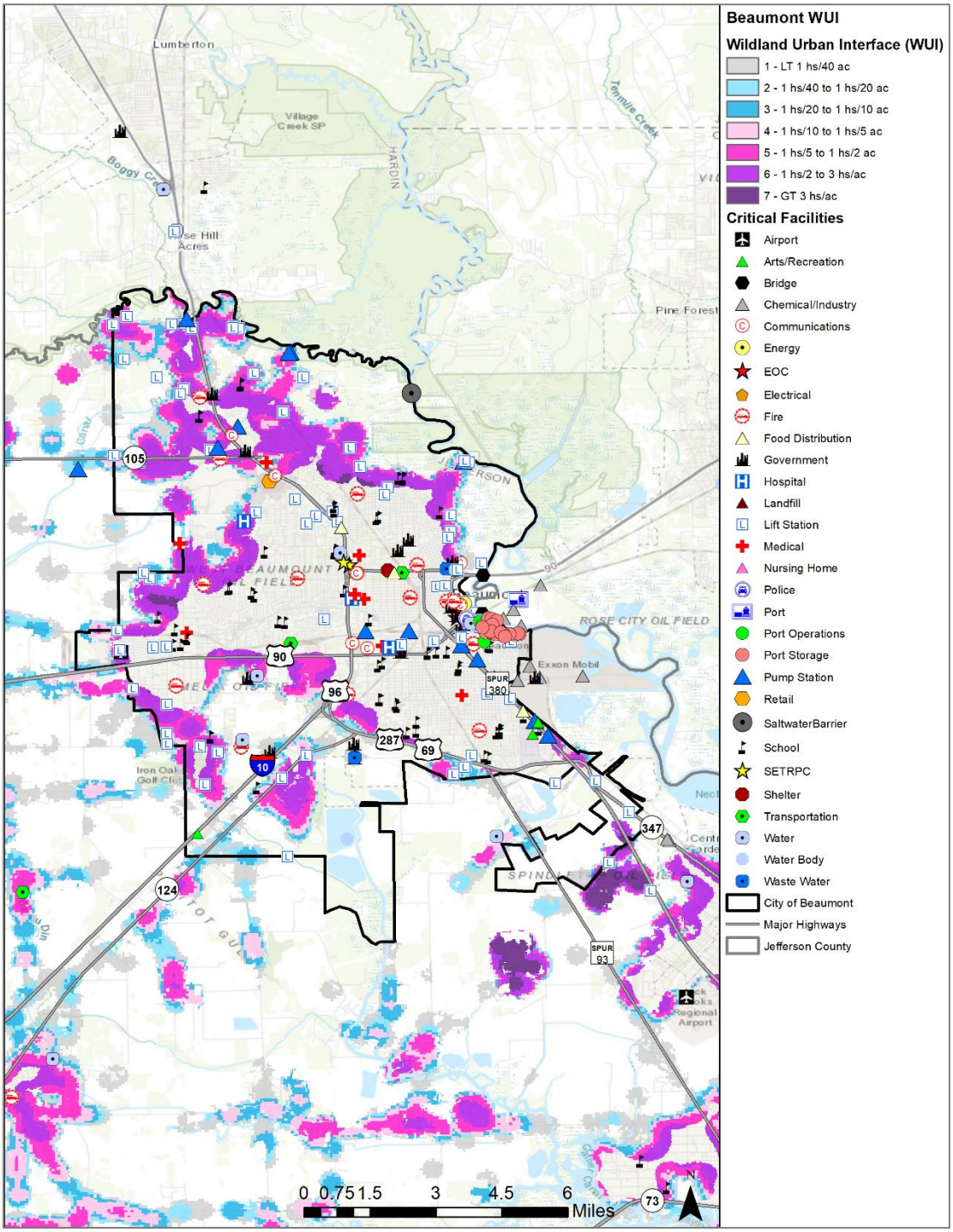
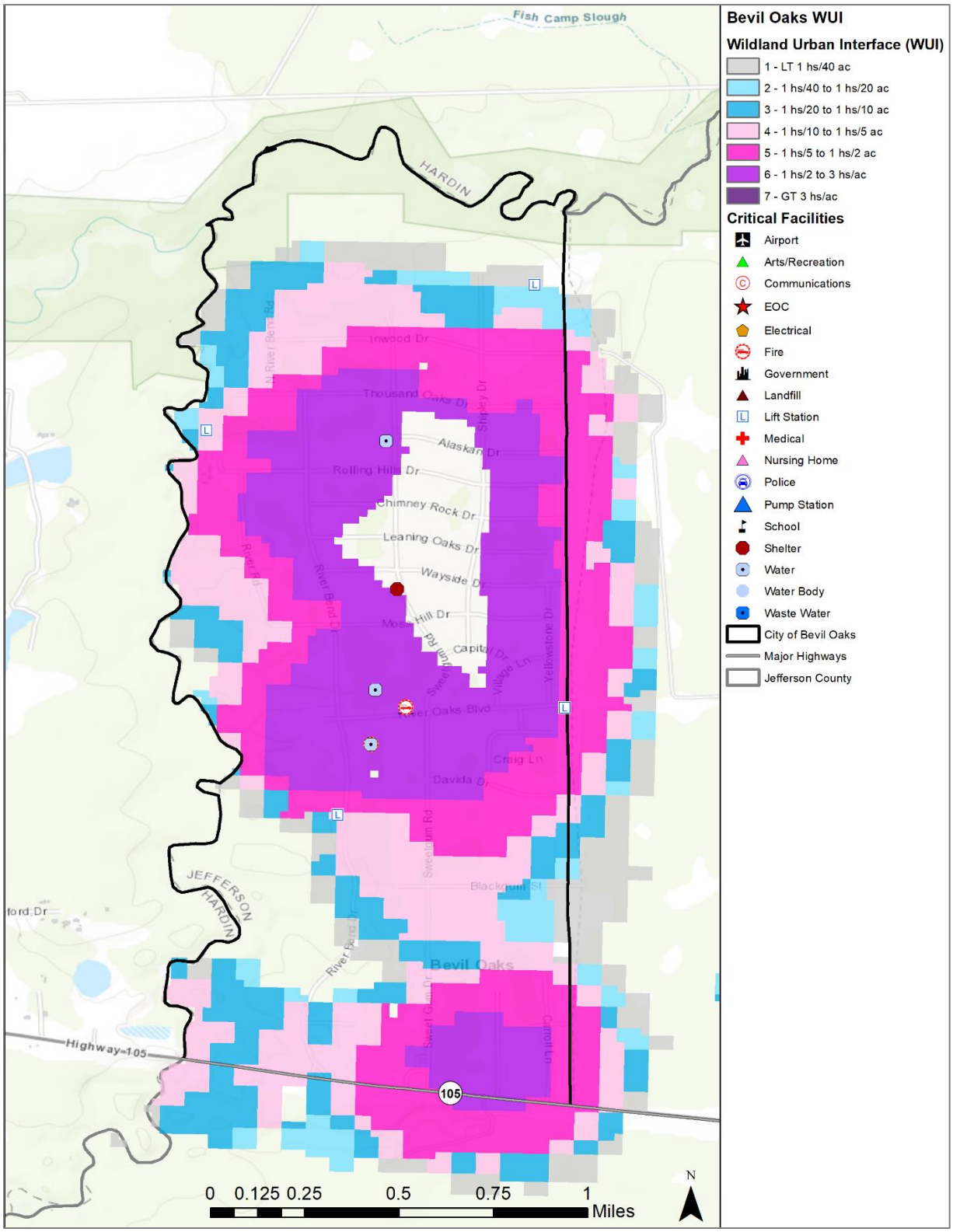


Figure 12-2. Wildland Urban Interface Map – City of Beaumont, Lower Neches Valley Authority, Port of Beaumont Navigation District, and SETRPC



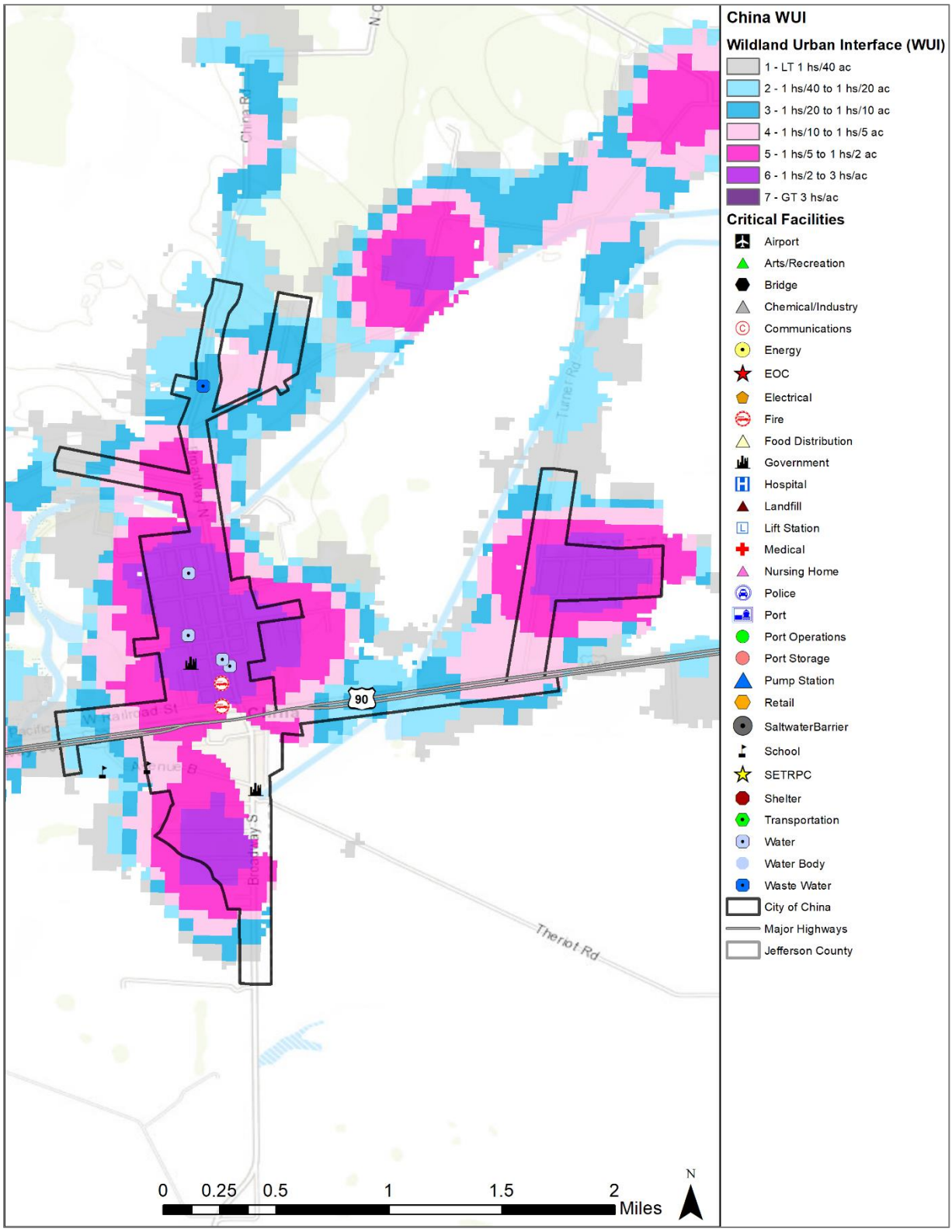
It is estimated that 23.4 percent of the total population in the City of Beaumont live within the WUI. However, the entire City of Beaumont is at some risk for wildfires. The Lower Neches Valley Authority has 4 facilities located in the WUI including three pump stations and a communications center. It is noted that the Port of Beaumont Navigation District and the SETRPC facilities are located outside of the WUI.

Figure 12-3. Wildland Urban Interface Map – City of Bevil Oaks



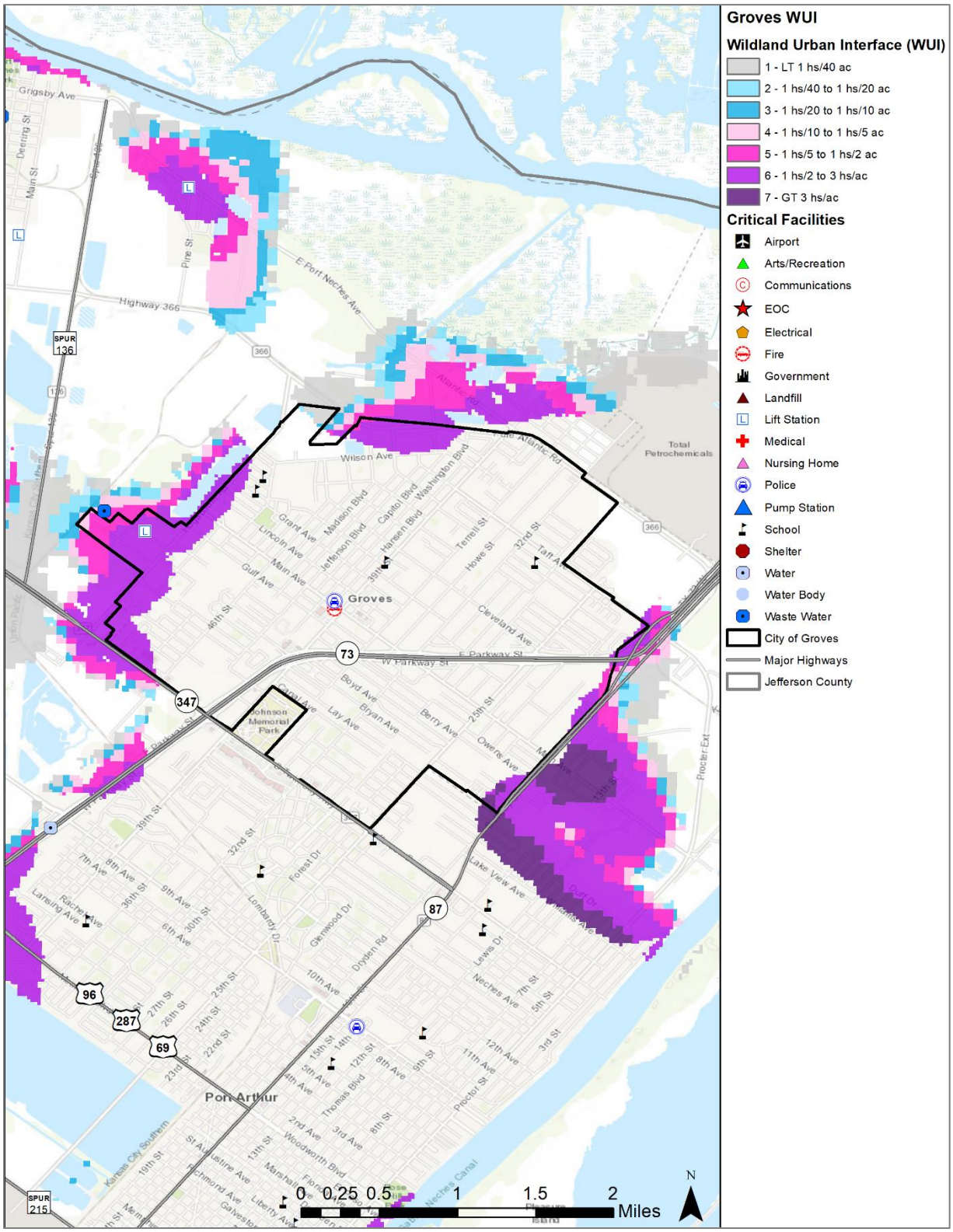
It is estimated that 83.5 percent of the total population in the City of Bevil Oaks live within the WUI. However, the entire City of Bevil Oaks is at some risk for wildfires.

Figure 12-4. Wildland Urban Interface Map – City of China



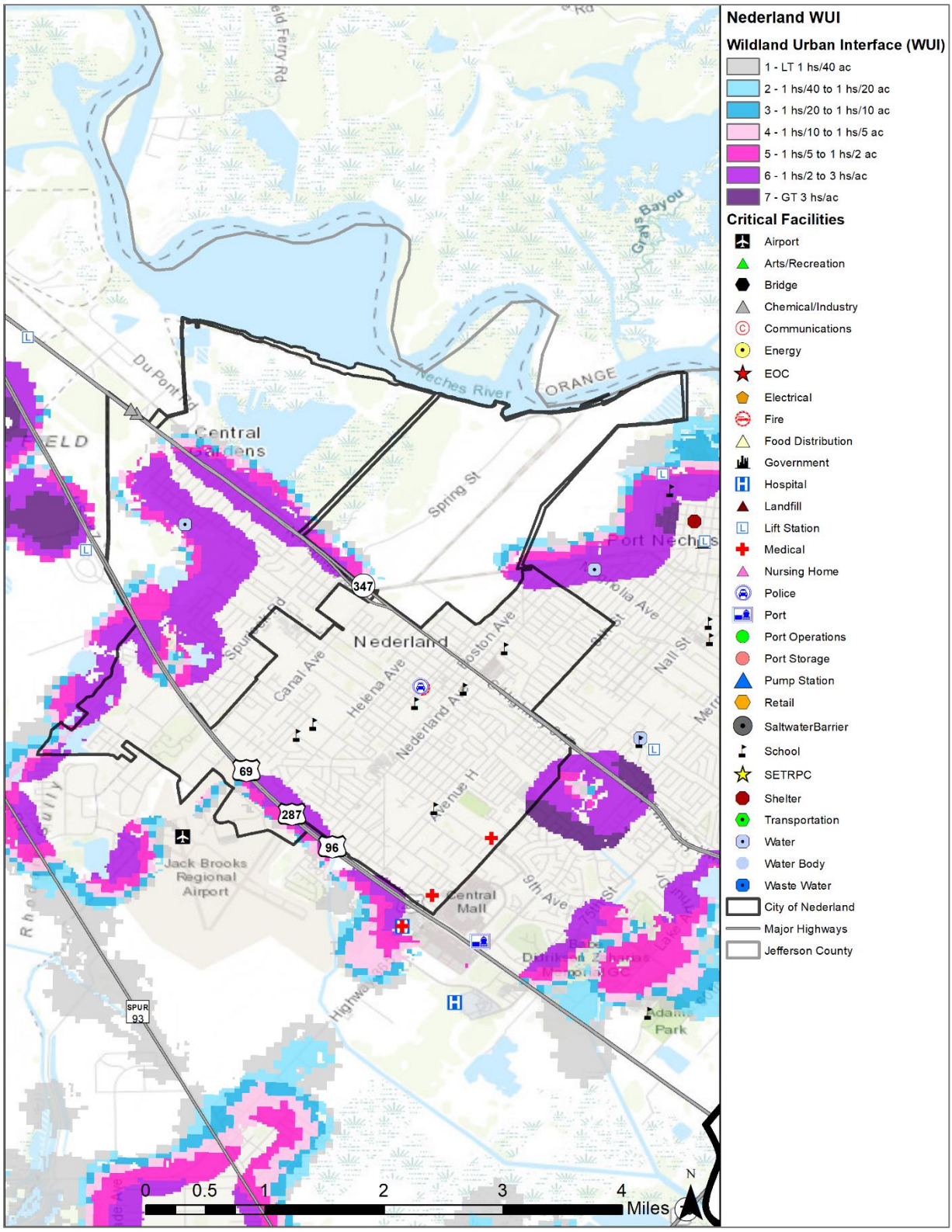
It is estimated that 95.0 percent of the total population in the City of China live within the WUI. However, the entire City of China is at some risk for wildfires.

Figure 12-5. Wildland Urban Interface Map – City of Groves



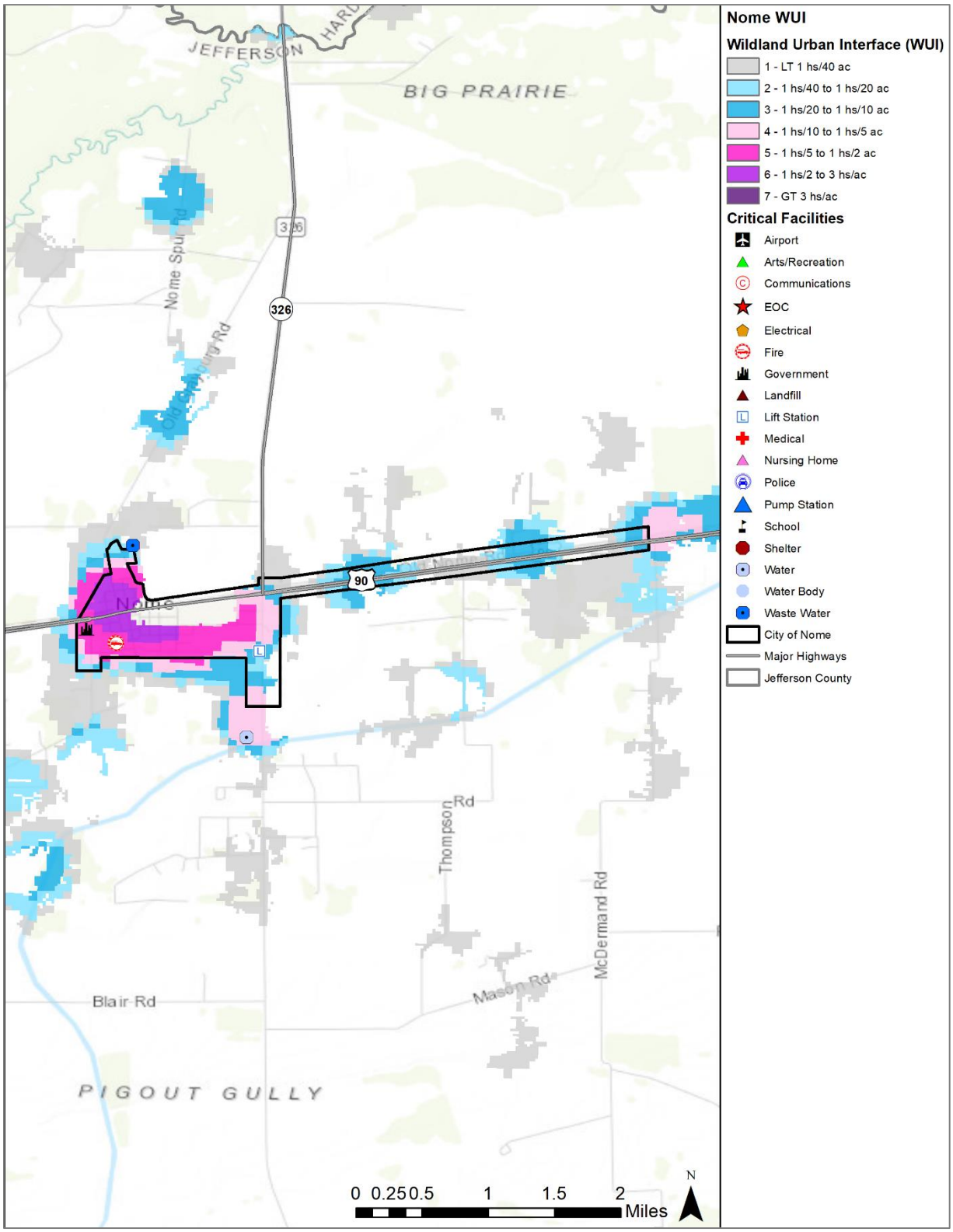
It is estimated that 6.6 percent of the total population in the City of Groves live within the WUI. However, the entire City of Groves is at some risk for wildfires.

Figure 12-6. Wildland Urban Interface Map – City of Nederland



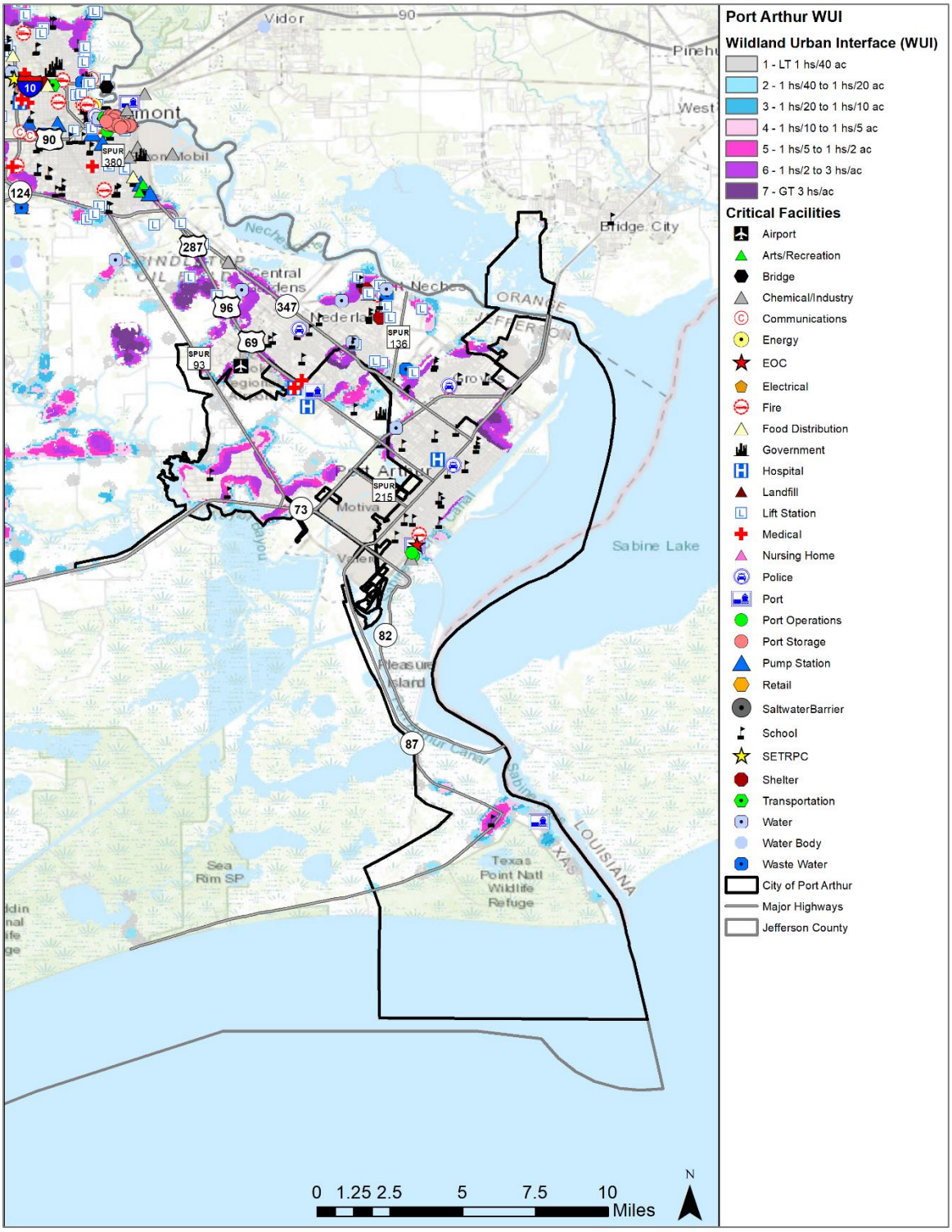
It is estimated that 4.1 percent of the total population in the City of Nederland live within the WUI. However, the entire City of Nederland is at some risk for wildfires.

Figure 12-7. Wildland Urban Interface Map – City of Nome



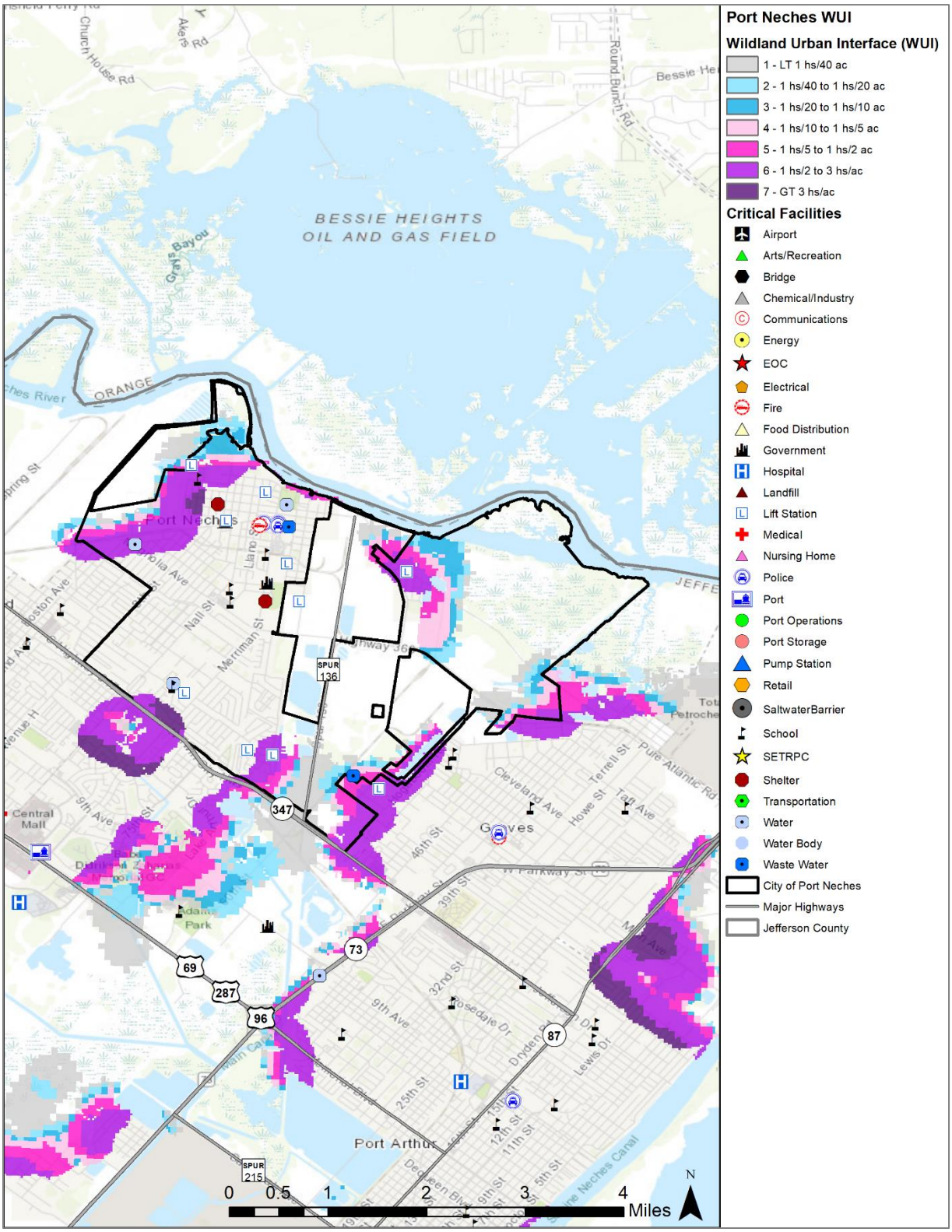
It is estimated that 85.5 percent of the total population in the City of Nome live within the WUI. However, the entire City of Nome is at some risk for wildfires.

Figure 12-8. Wildland Urban Interface Map – City of Port Arthur and Port of Port Arthur Navigation District



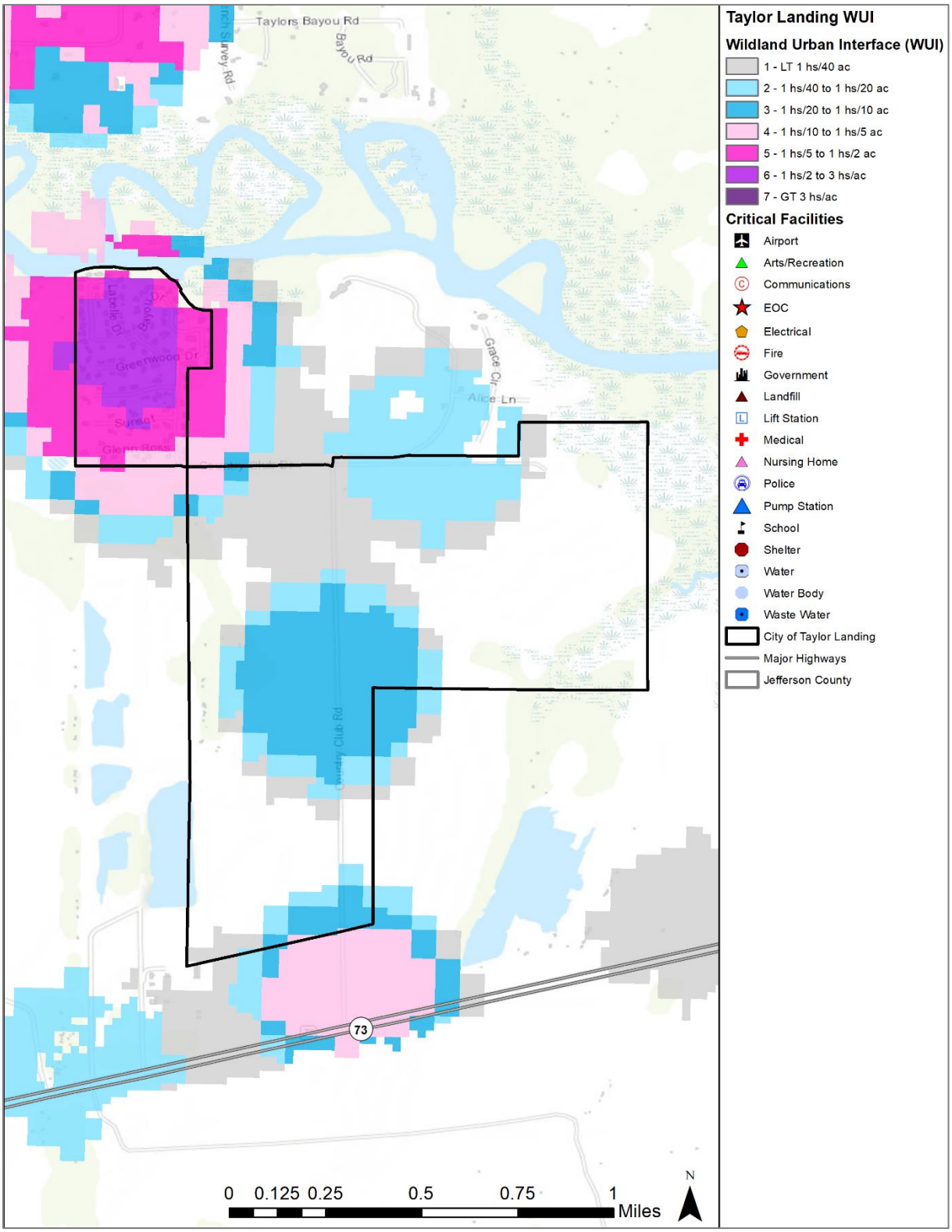
It is estimated that 16.5 percent of the total population in the City of Port Arthur live within the WUI. However, the entire City of Port Arthur is at some risk for wildfires. It is noted that the Port of Port Arthur Navigation District facilities are located outside of the WUI.

Figure 12-9. Wildland Urban Interface Map – City of Port Neches



It is estimated that 20.0 percent of the total population in the City of Port Neches live within the WUI. However, the entire City of Port Neches is at some risk for wildfires.

Figure 12-10. Wildland Urban Interface Map – City of Taylor Landing

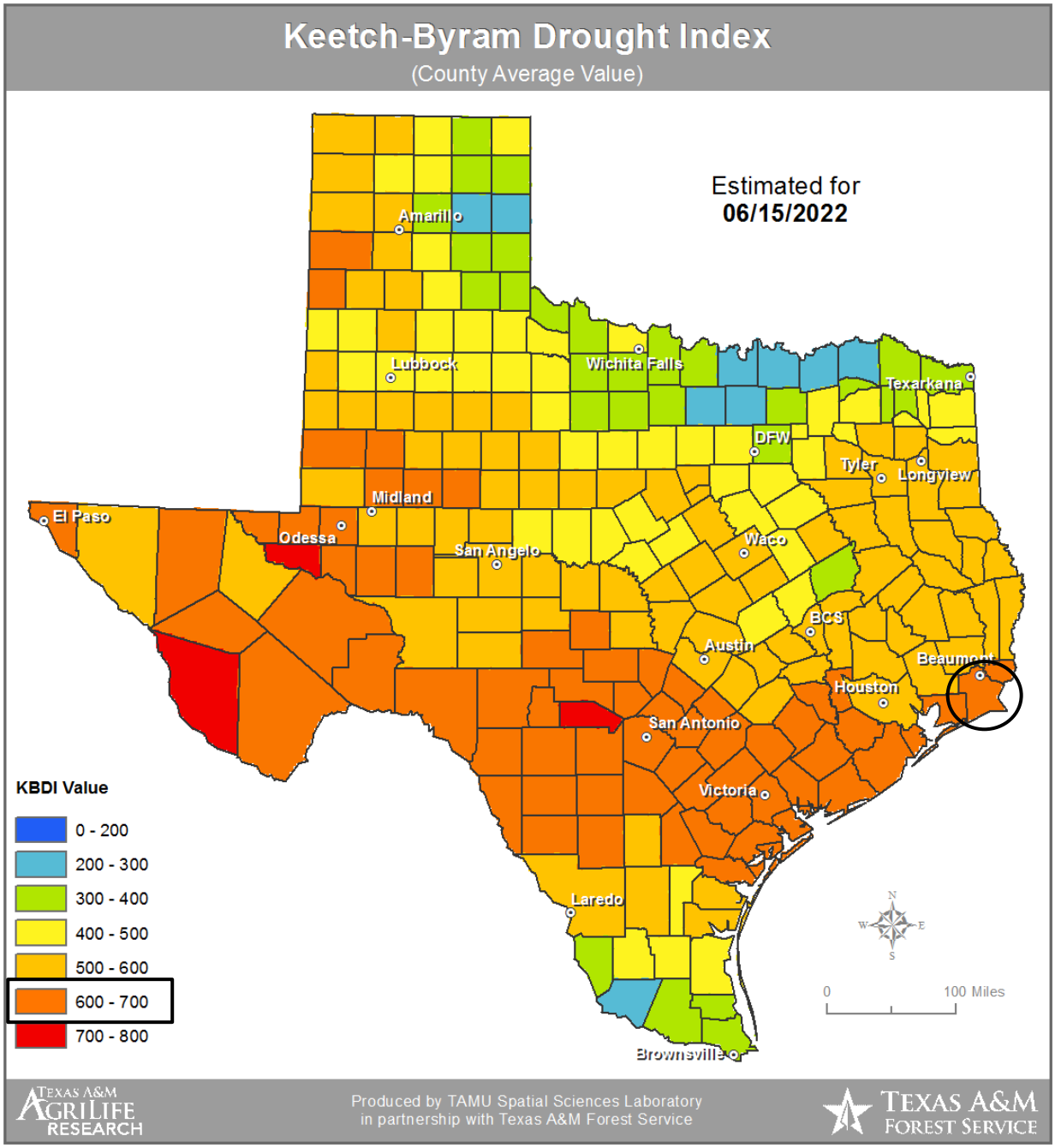


It is estimated that 100 percent of the total population in the City of Taylor Landing live within the WUI and is at risk for wildfires.

EXTENT

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

Figure 12-11. Keetch-Byram Drought Index (KBDI) for the State of Texas, 2022[1]



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

- **0 -200:** Soil and fuel moisture are high. Most fuels will not readily ignite or burn. However, with sufficient sunlight and wind, cured grasses and some light surface fuels will burn in spots and patches.

[1] Jefferson County is located within the black circle.

- **200 -400:** Fires more readily burn and will carry across an area with no gaps. Heavier fuels will not readily ignite and burn. Expect smoldering and the resulting smoke to carry into and possibly through the night.
- **400 -600:** Fires intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.
- **600 -800:** Fires will burn to mineral soil. Stumps will burn to the end of underground roots and spotting will be a major problem. Fires will burn through the night and heavier fuels will actively burn and contribute to fire intensity.

The KBDI is a good measure of the readiness of fuels for a wildfire event. It should be referenced as the area experiences changes in precipitation and soil moisture, while caution should be exercised in dryer, hotter conditions.

The range of intensity for the Jefferson County planning area in a wildfire event is within 471 to 755. The average extent to be mitigated for the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, is a KBDI of 493. At this level fires intensity begins to significantly increase. Fire will readily burn in all directions exposing mineral soils in some locations. The worst the planning area can anticipate based on historical occurrences and readily available fuel is 600 to 800 as 755 falls within this range. At this level fires will burn to mineral soil. Stumps will burn to the end of underground roots and spotting will be a major problem. Fires will burn through the night and heavier fuels will actively burn and contribute to fire intensity.

The Texas Forest Service's Fire Intensity Scale identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist based on weighted average of four percentile weather categories. Jefferson County is between a potential limited to moderate wildfire intensities. Figures 12-12 through 12-21 identify the wildfire intensity for the Jefferson County planning area.

Figure 12-12. Fire Intensity Scale Map – Jefferson County

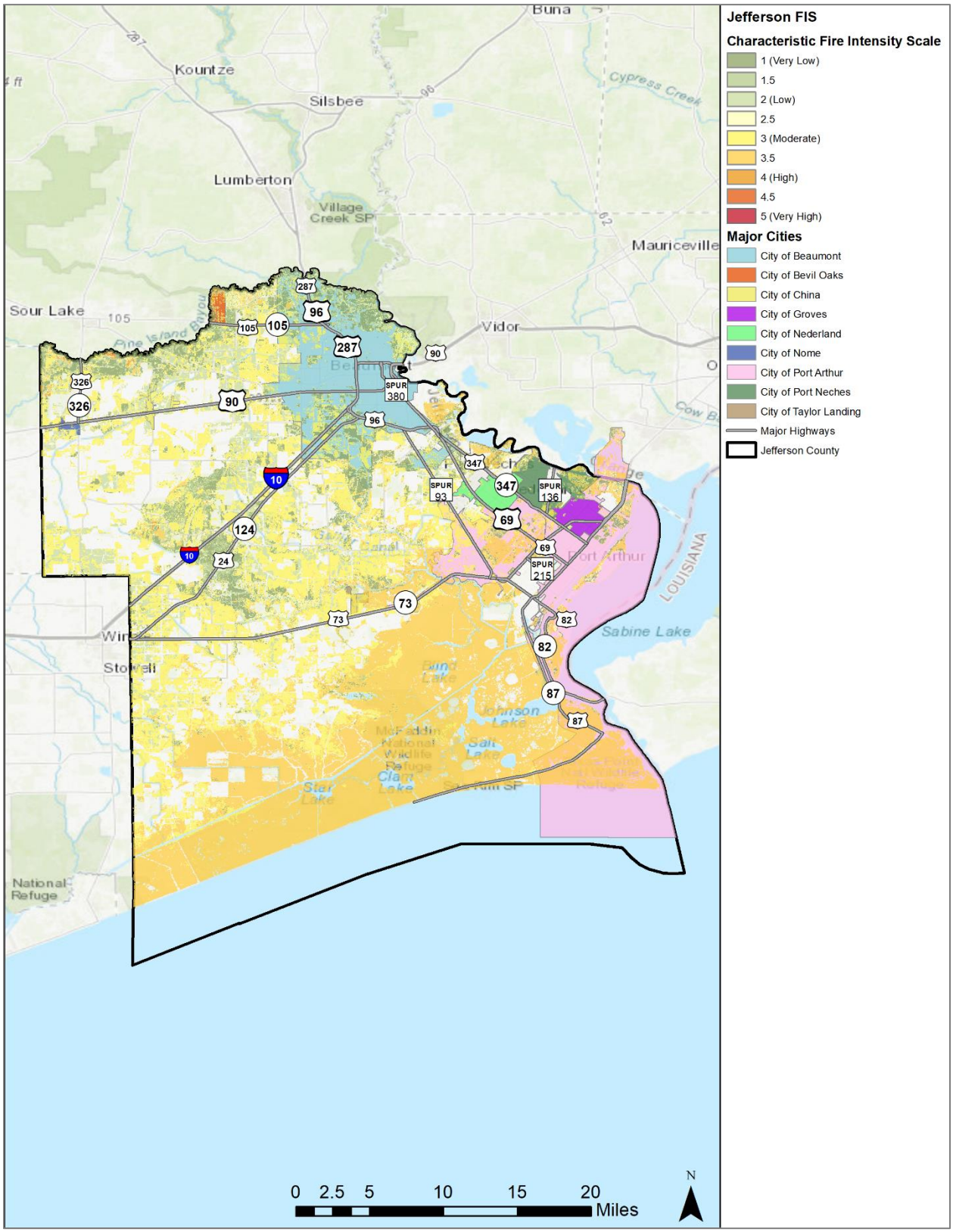


Figure 12-13. Fire Intensity Scale Map – City of Beaumont, Lower Neches Valley Authority, Port of Beaumont Navigation District, and the SETRPC

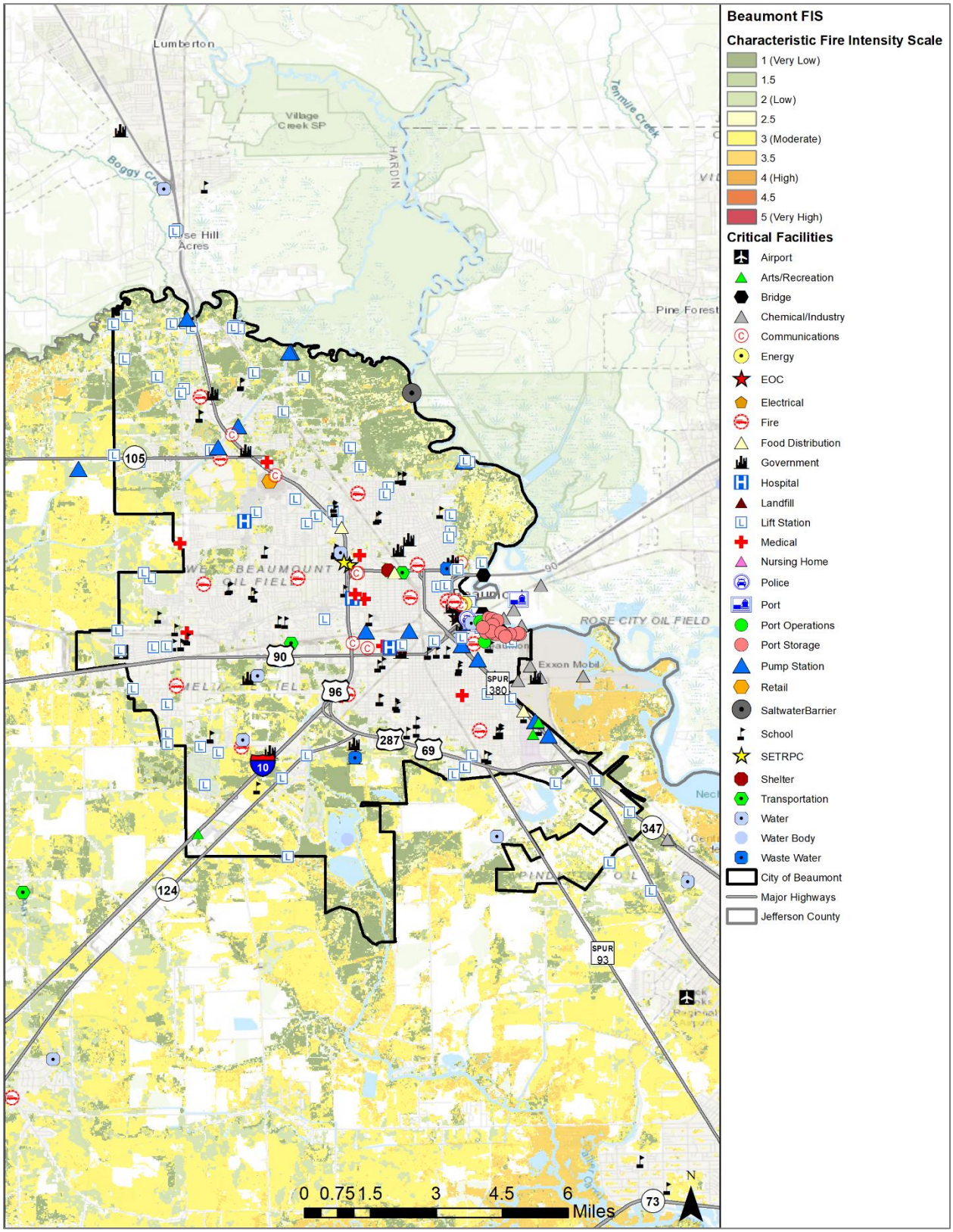


Figure 12-14. Fire Intensity Scale Map – City of Bevil Oaks

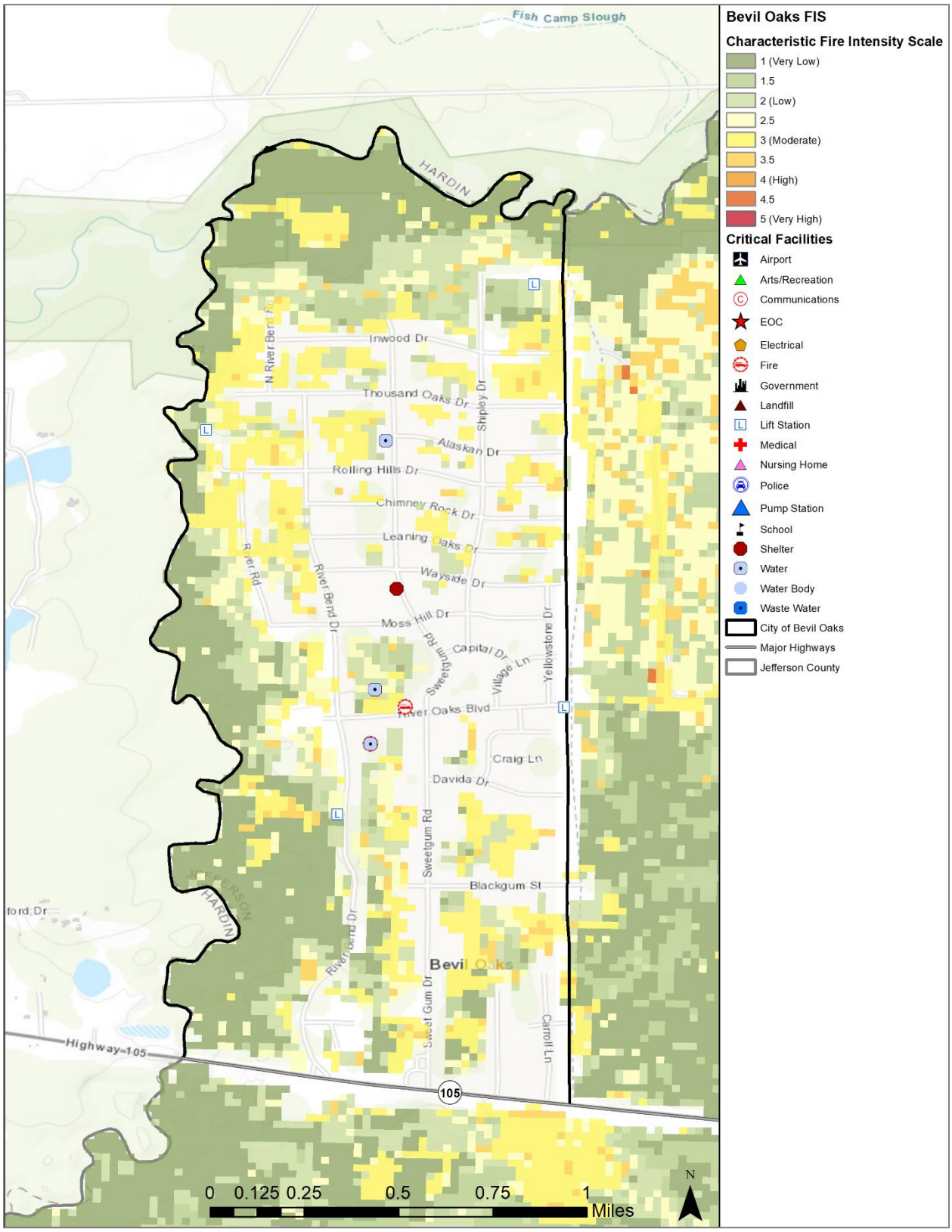


Figure 12-15. Fire Intensity Scale Map – City of China

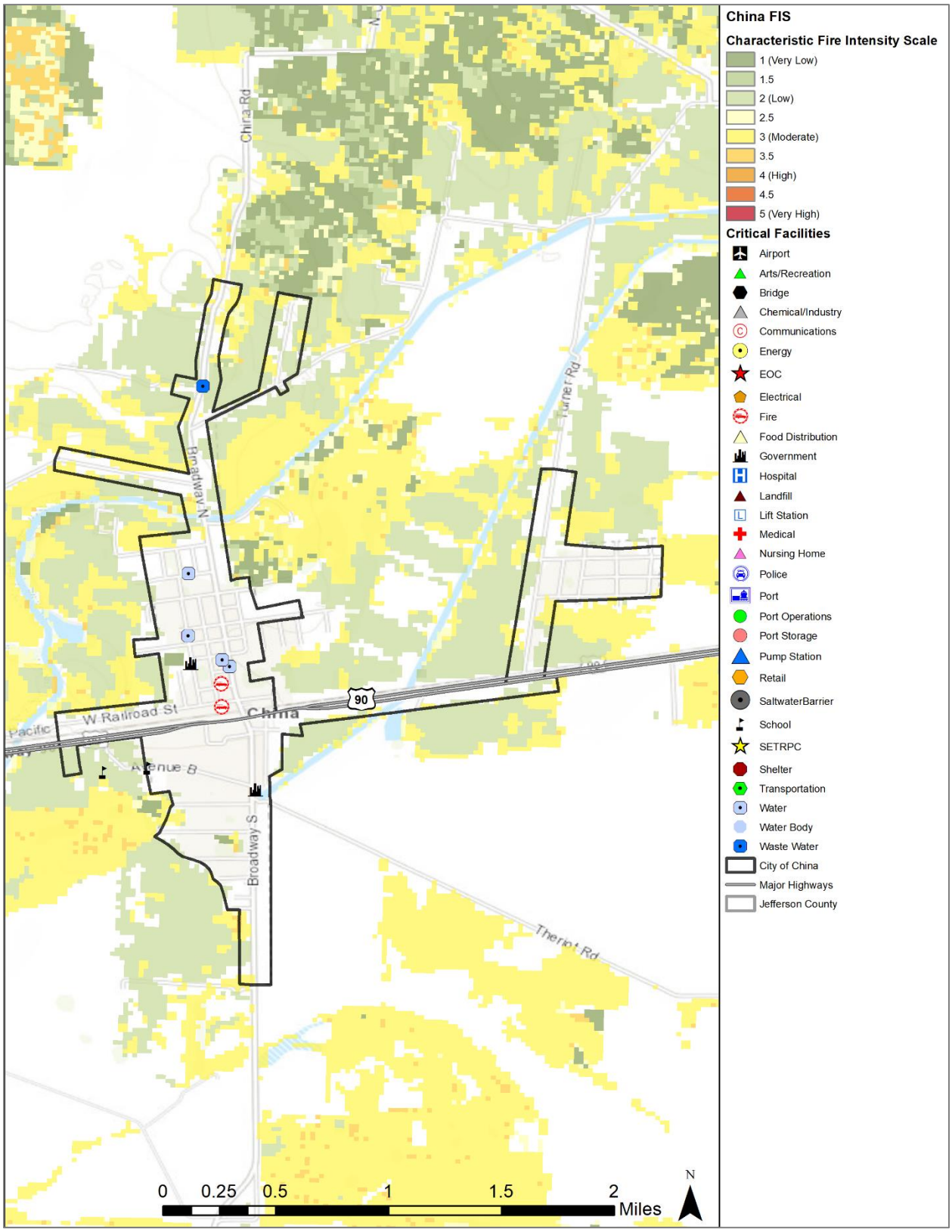


Figure 12-16. Fire Intensity Scale Map – City of Groves

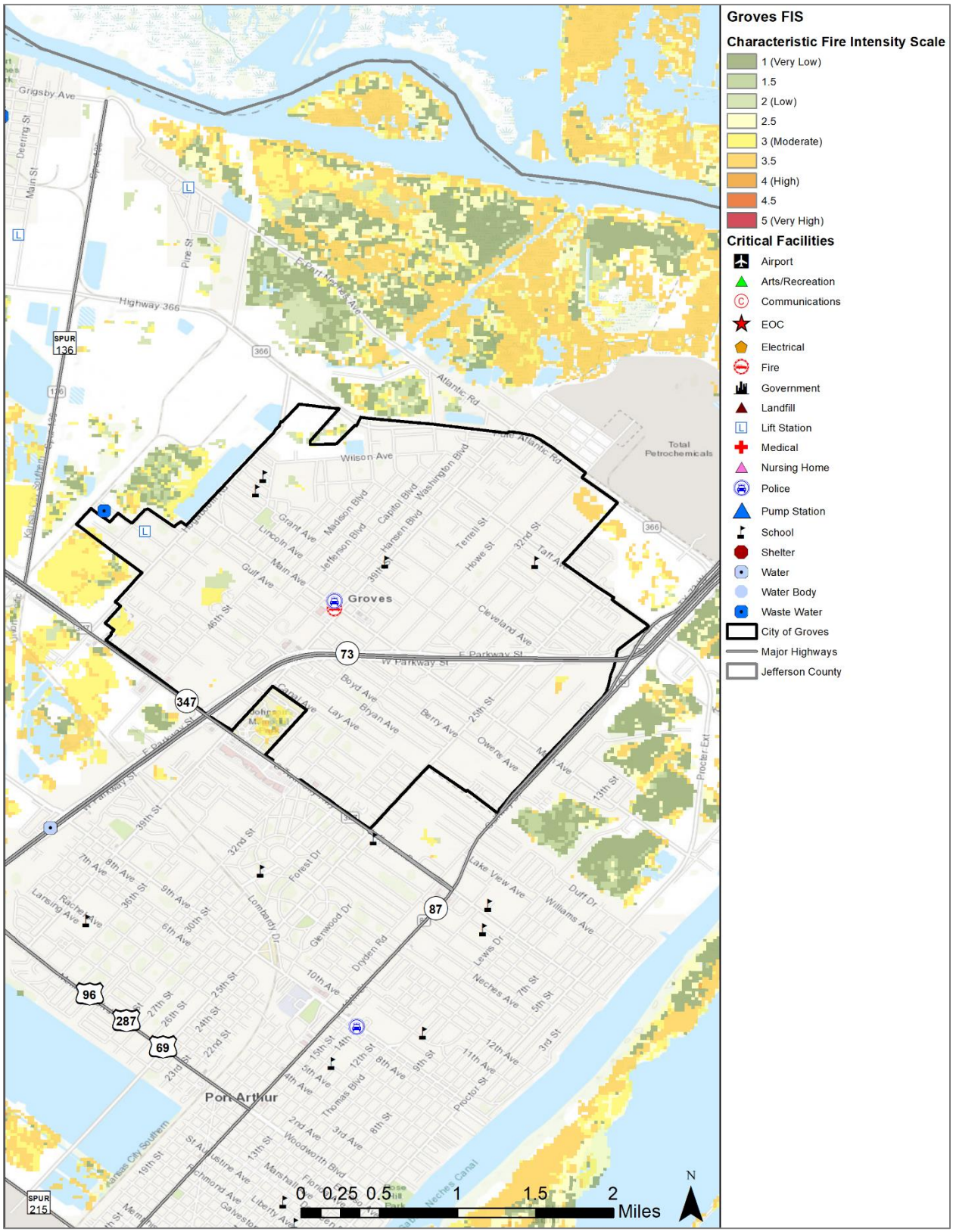


Figure 12-17. Fire Intensity Scale Map – City of Nederland

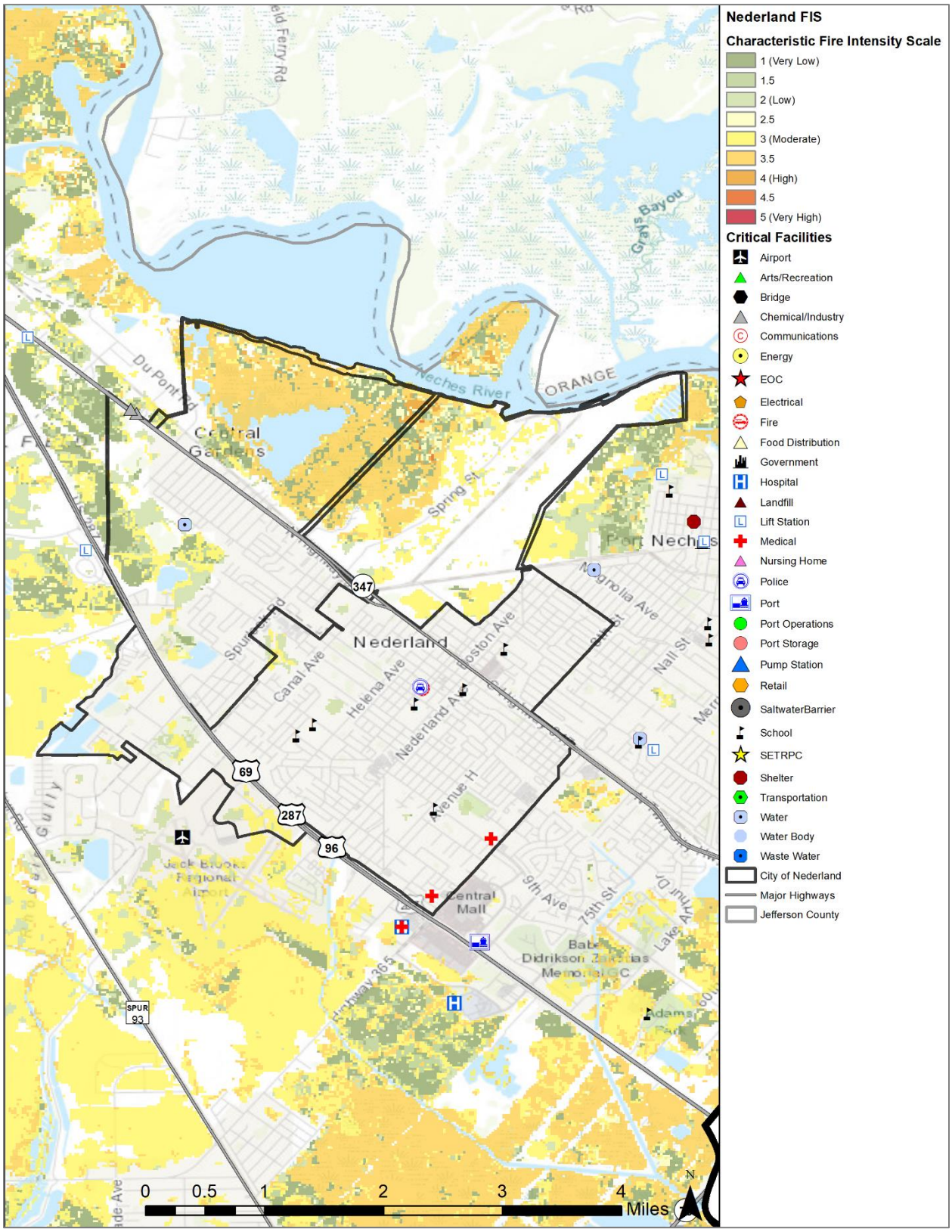


Figure 12-18. Fire Intensity Scale Map – City of Nome

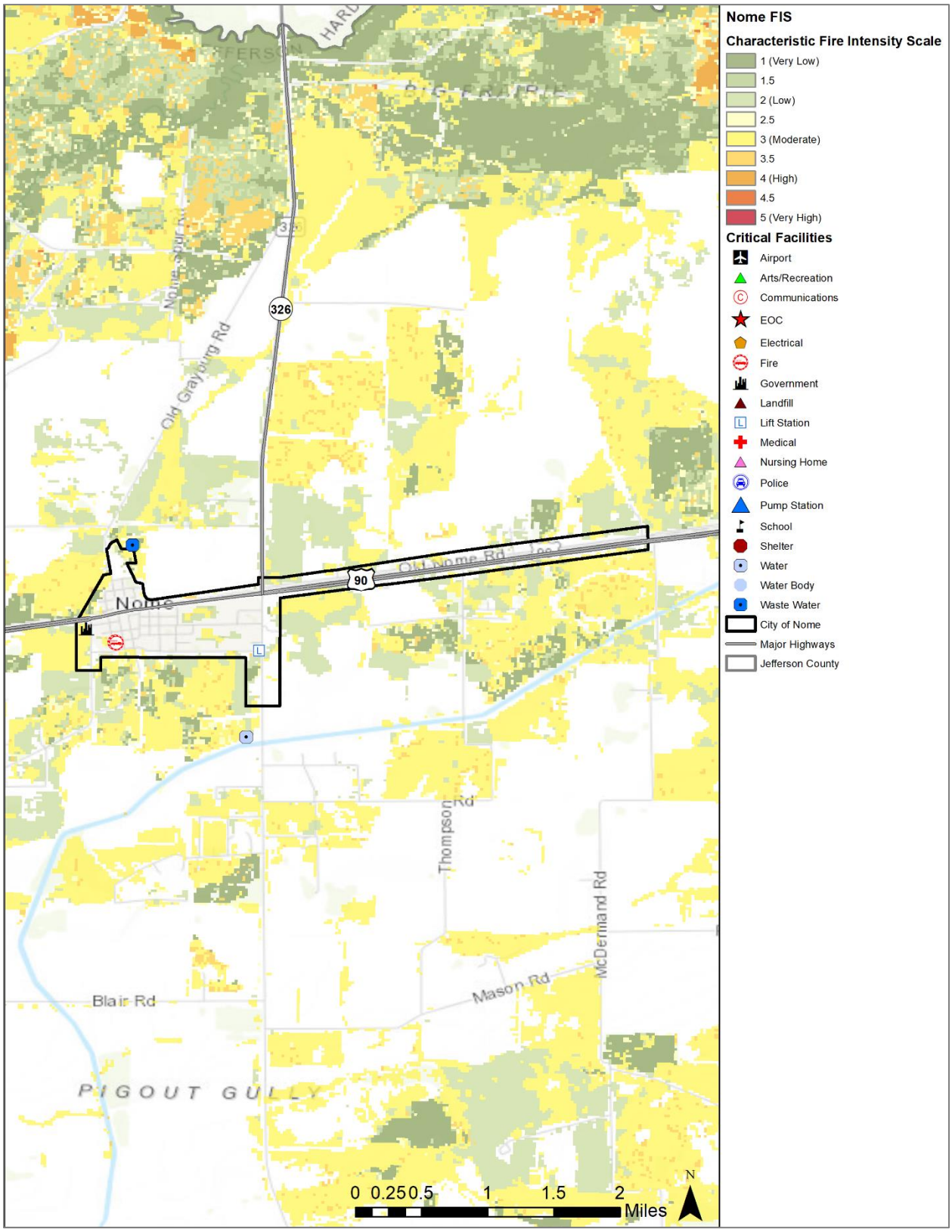


Figure 12-19. Fire Intensity Scale Map – City of Port Arthur and Port of Port Arthur Navigation District

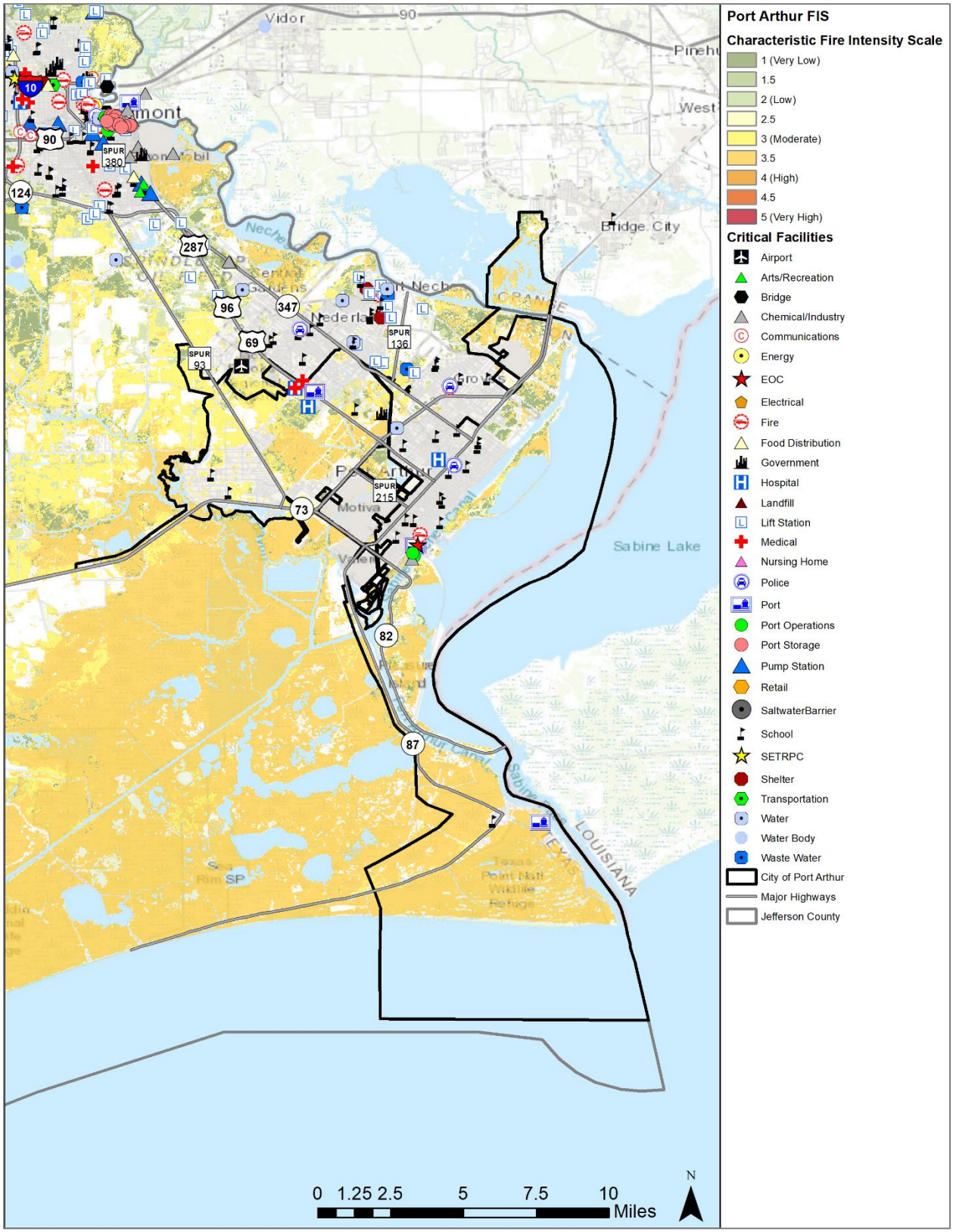


Figure 12-20. Fire Intensity Scale Map – City of Port Neches

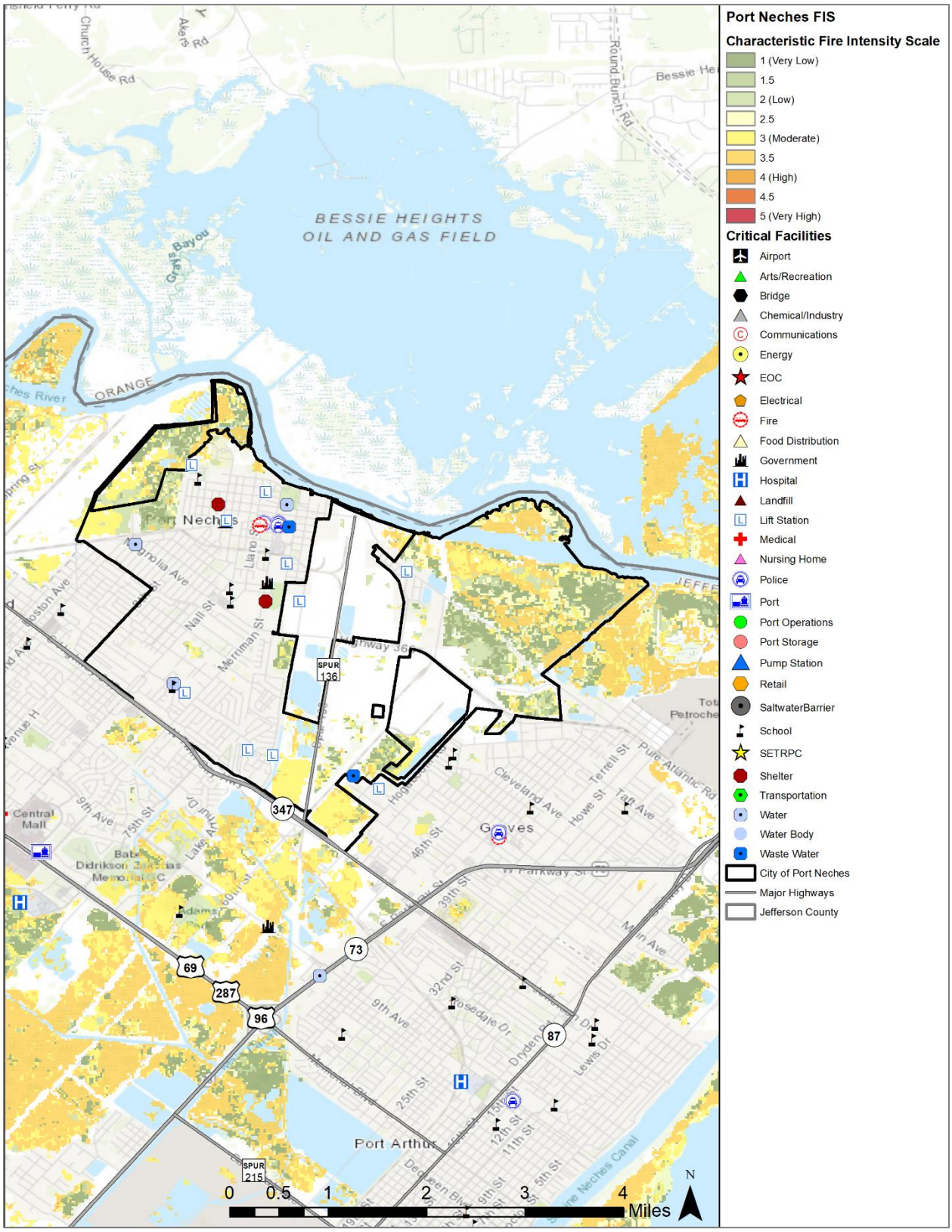
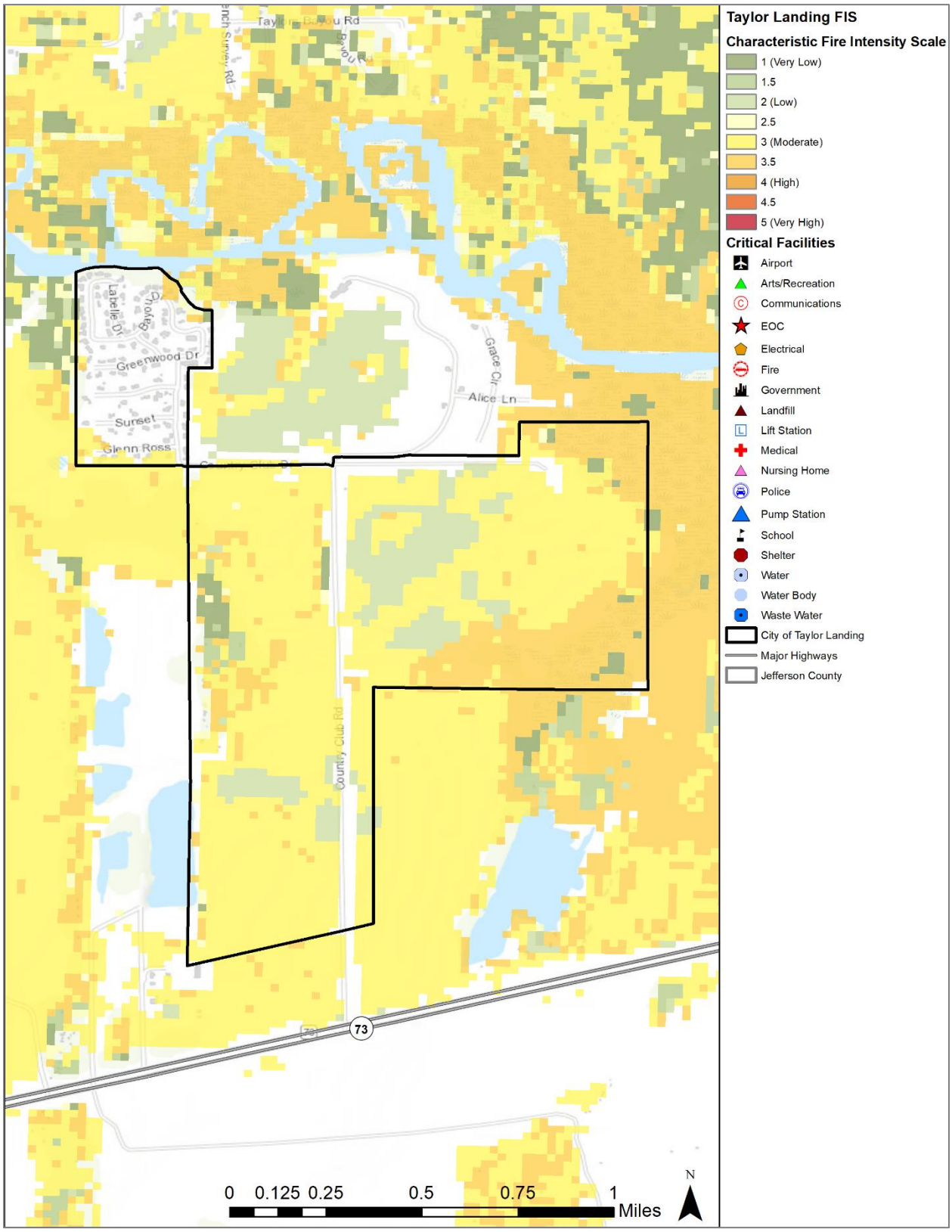


Figure 12-21. Fire Intensity Scale Map – City of Taylor Landing



HISTORICAL OCCURRENCES

The Texas Forest Service reported -wildfire events between 2005 and 2020. The National Center for Environmental Information (NCEI) reported events from 1996 through 2021, which have been accounted for in the event data below. Due to a lack of recorded data for wildfire events prior to 2005 and after 2020[2], frequency calculations are based on a sixteen-year period using only data from recorded years. The SETRPC, Lower Neches Valley Authority, Port of Beaumont Navigation District, and the Port of Port Arthur Navigation District did not report any historical damages as a result of a wildfire. The map below shows approximate locations of wildfires, which can be grass or brushfires of any size (Figure 12-22). Table 12-1 identifies the number of wildfires by jurisdiction and total acreage burned.

[2] The Texas Forest Service data is currently only available through 2020.

Figure 12-22. Location and Historic Wildfire Events for Jefferson County Planning Area

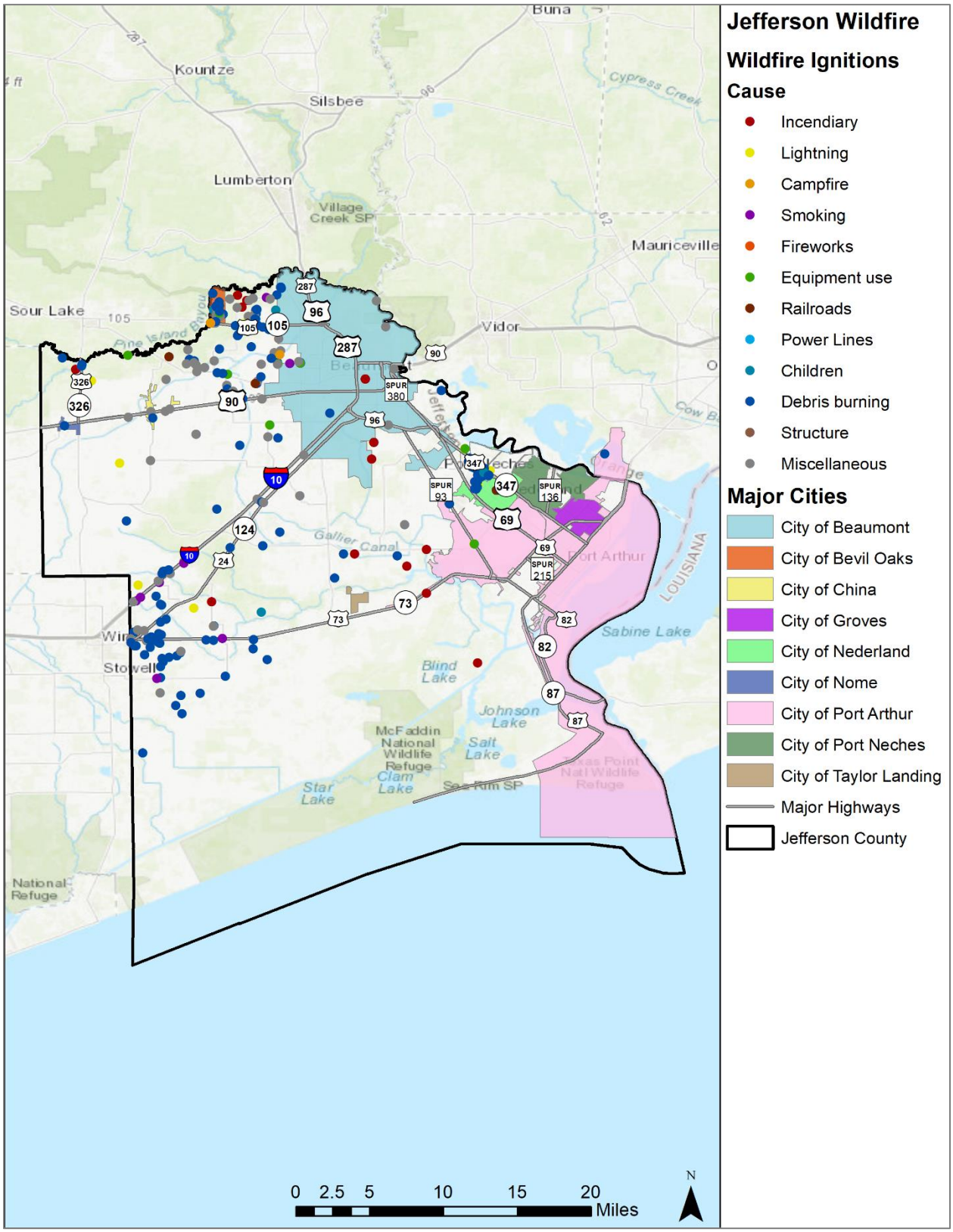


Table 12-1. Historical Wildfire Events Summary, 2005-2020

JURISDICTION	NUMBER OF EVENTS	ACRES BURNED
Jefferson County	227	4,207
City of Beaumont	13	345
City of Bevil Oaks	22	24
City of China	4	6
City of Groves	0	0
City of Nederland	4	4
City of Nome	0	0
City of Port Arthur	3	5
City of Port Neches	0	0
City of Taylor Landing	0	0
Totals	**273**	**4,591**

Table 12-2. Acreage of Suppressed Wildfire by Year

YEAR	Jefferson County	City of Beaumont	City of Bevil Oaks	City of China	City of Groves	City of Nederland	City of Nome	City of Port Arthur	City of Port Neches	City of Taylor Landing
2005	157	0	0	0	0	0	0	0	0	0
2006	235	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0
2008	929	4	0	0	0	0	0	0	0	0
2009	766	6	11	0	0	0	0	3	0	0
2010	349	18	2	4	0	0	0	0	0	0
2011	1,298	317	11	2	0	2	0	2	0	0
2012	331	0	0	0	0	1	0	0	0	0
2013	139	0	0	0	0	1	0	0	0	0
2014	2	0	0	0	0	0	0	0	0	0

YEAR	Jefferson County	City of Beaumont	City of Bevil Oaks	City of China	City of Groves	City of Nederland	City of Nome	City of Port Arthur	City of Port Neches	City of Taylor Landing
2015	1	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0	0	0	0
Total	**4,207**	**345**	**24**	**6**	**0**	**4**	**0**	**5**	**0**	**0**

Based on the list of historical wildfire events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions and special districts, no events have occurred since the 2017 Plan. It is noted that during the last planning cycle, only 5 (2005-2009) years of reported wildfire events were available. Currently there are eleven additional years of reported wildfire data available. Therefore, the updated plan includes all sixteen years of available wildfire data. The additional eleven years of data included 2,480 wildfire events in the planning area that was not included in the last plan.

PROBABILITY OF FUTURE EVENTS

Wildfires can occur at any time of the year. As the jurisdictions within the county move into wildland, the potential area of occurrence of wildfire increases. With 273 events in a 16-year period, an event within Jefferson County, including all participating jurisdictions and special districts, is highly likely, meaning an event is probable within the next year.

VULNERABILITY AND IMPACT

Periods of drought, dry conditions, high temperatures, and low humidity are factors that contribute to the occurrence of a wildfire event. Areas along railroads and people whose homes are in woodland settings have an increased risk of being affected by wildfire.

The heavily populated, urban areas of Jefferson County are not likely to experience large, sweeping fires. Areas in the unincorporated areas of Jefferson County are vulnerable, including rural areas. Unoccupied buildings and open spaces that have not been maintained have the greatest vulnerability to wildfire. The overall level of concern for wildfires is located mostly along the perimeter of the study area where wildland and urban areas interface.

The sparsely populated unincorporated areas of Jefferson County such as the small communities of Taylor Landing and Nome are capable of experiencing large sweeping fires, especially where areas of vegetation are not maintained. Areas along I-10 southwest of Beaumont, Highway 90

between Nome and China, and Highway 79 west of Taylor Landing have an increased vulnerability where empty lots and unoccupied areas are located. Figures 12-1 through 12-10 illustrate the areas that are the most vulnerable to wildfire throughout the planning area.

The following critical facilities are located in the WUI and are more susceptible to wildfire in each participating jurisdiction:

Table 12-3. Critical Facilities Located in WUI by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	5 Fire Stations, 11 Schools, 1 Medical Facility, 5 Water Districts, 1 Drainage District, 1 Port Authority
City of Beaumont	3 Fire Stations, 7 Schools, 1 Medical Facility, 1 Emergency Medical Services (EMS), 1 Water Treatment Facility/Infrastructure, 1 Wastewater Treatment Facility, 3 Pump Stations, 41 Lift Stations, 1 Landfill, 2 Chemical Facilities, 1 Communication Facility, 5 Government Facilities, 1 Airport, 1 Railroad and Infrastructure
City of Bevil Oaks	1 Water Treatment Plant, 1 Wastewater Treatment Plant, 4 Lift Stations, 1 Government Facility, 2 Fire Stations
City of China	1 Water Plant, 1 Wastewater Plant, 2 Fire Stations, 3 wells
City of Groves	None
City of Nederland	1 Water Control District
City of Nome	1 Fire Station, 1 Water Treatment Plant, 5 Lift Stations, 1 Government Building
City of Port Arthur	2 Schools
City of Port Neches	1 School, 1 Water Tower, 1 Wastewater Treatment Plant, 4 Lift Stations,
City of Taylor Landing	1 Electric Facility, 1 Fiber Optic Facility, 2 Sewer Plants/Infrastructure
Lower Neches Valley Authority	1 Communication Center, 3 Pumping Plants
Port of Beaumont Navigation District	None
Port of Port Arthur Navigation District	None
SETRPC	None

Within Jefferson County, a total of 273 fire events were reported from 2005 to 2020. All of these events were suspected wildfires. Historic loss and annualized estimates due to wildfires are presented in Table 12-4 below. The frequency is approximately 17 event every year.

Table 12-4. Potential Annualized Acreage Losses by Jurisdiction[3]

JURISDICTION	ACRES BURNED	ANNUAL ACRE LOSSES
Jefferson County	4,207	262.9
City of Beaumont	345	21.6
City of Bevil Oaks	24	1.5
City of China	6	0.4
City of Groves	0	0.0
City of Nederland	4	0.3
City of Nome	0	0.0
City of Port Arthur	5	0.3
City of Port Neches	0	0.0
City of Taylor Landing	0	0.0
Planning Area	**4,591**	**286.9**

Figures 12-23 through 12-32 show Jefferson County and the threat of wildfire to the County and all participating jurisdictions.

[3] Events divided by 11 years of data.

Figure 12-23. Wildfire Ignition Density – Jefferson County

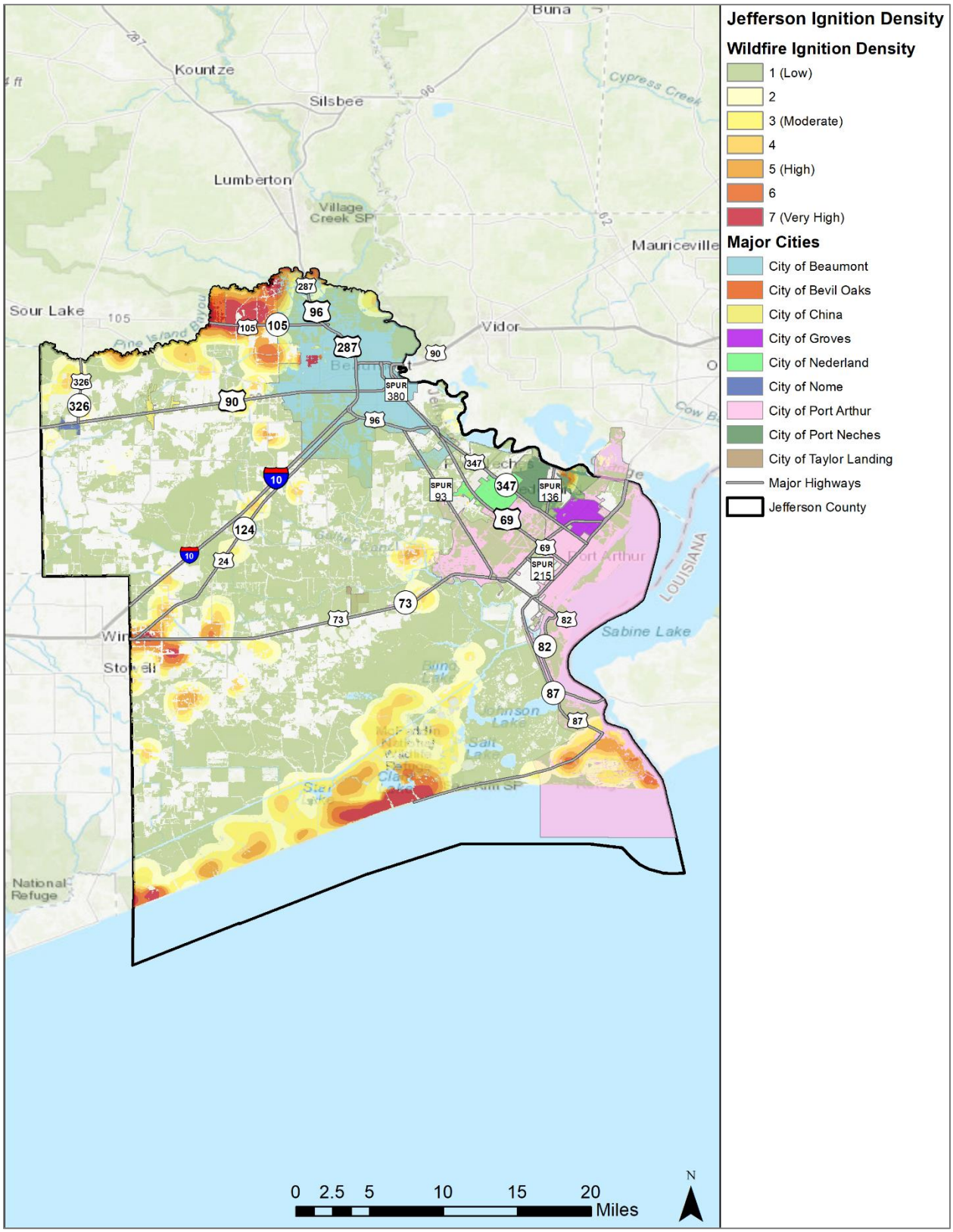


Figure 12-24. Wildfire Ignition Density – City of Beaumont, Lower Neches Valley Authority, Port of Beaumont Navigation District, and the SETRPC

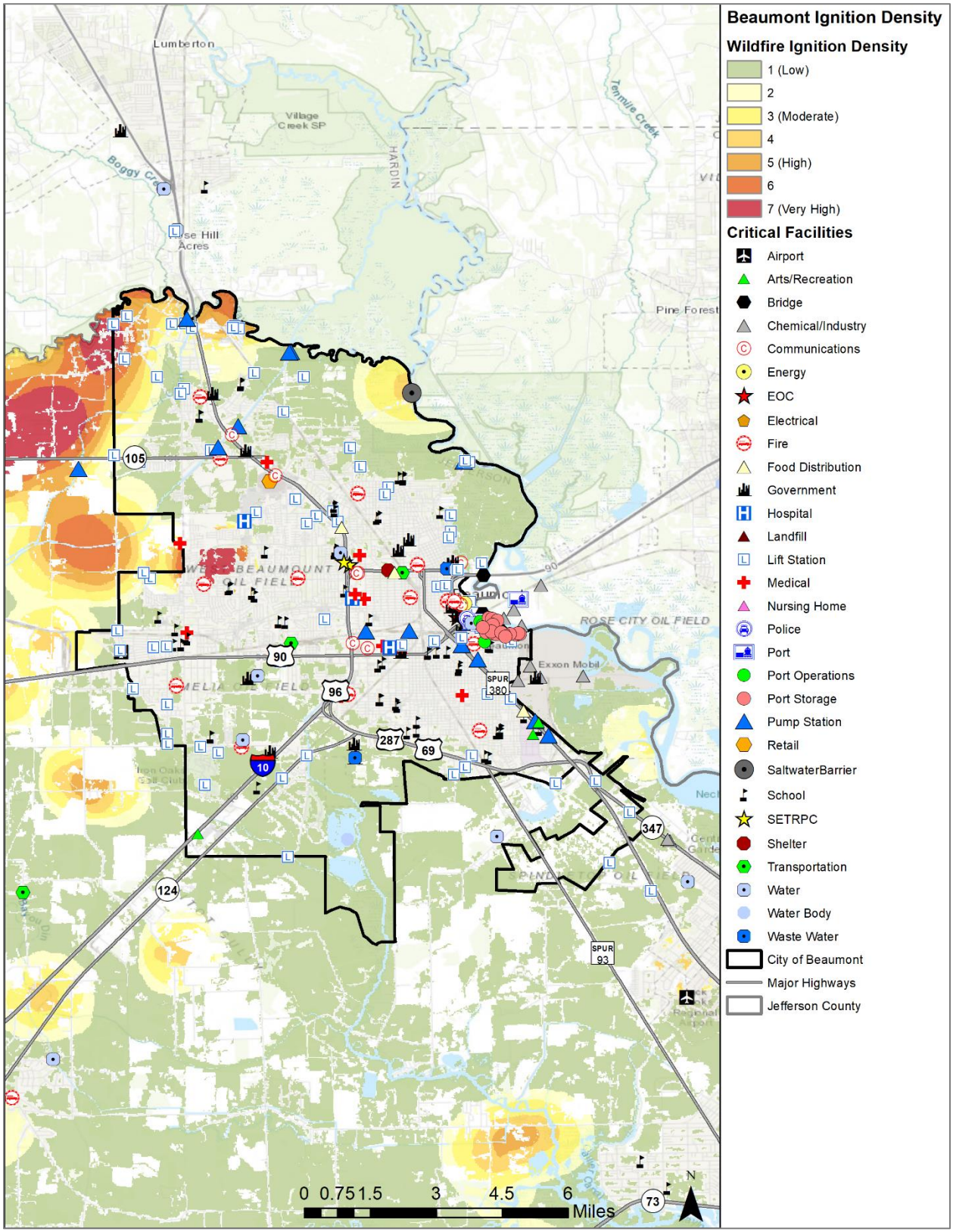


Figure 12-25. Wildfire Ignition Density – City of Bevil Oaks

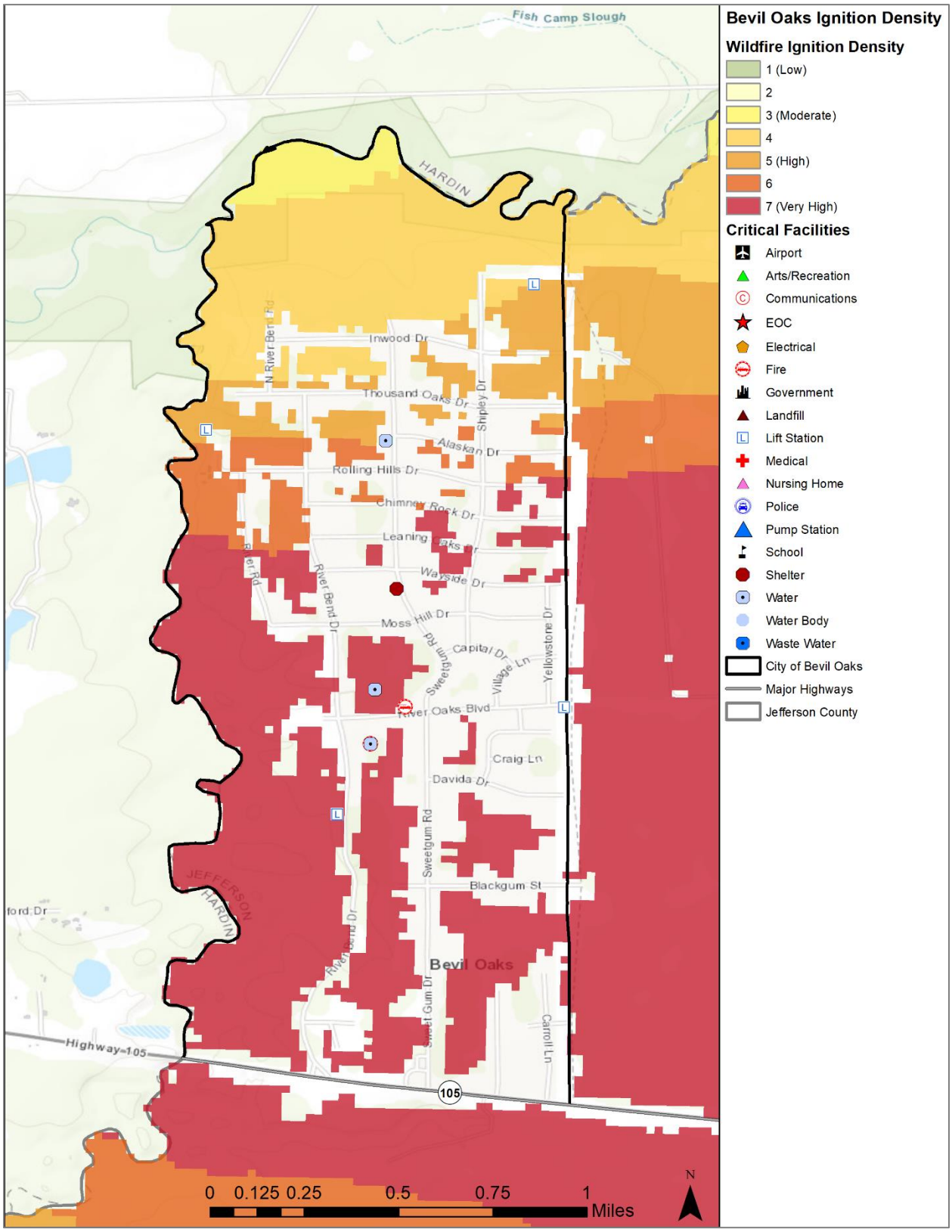


Figure 12-26. Wildfire Ignition Density – City of China

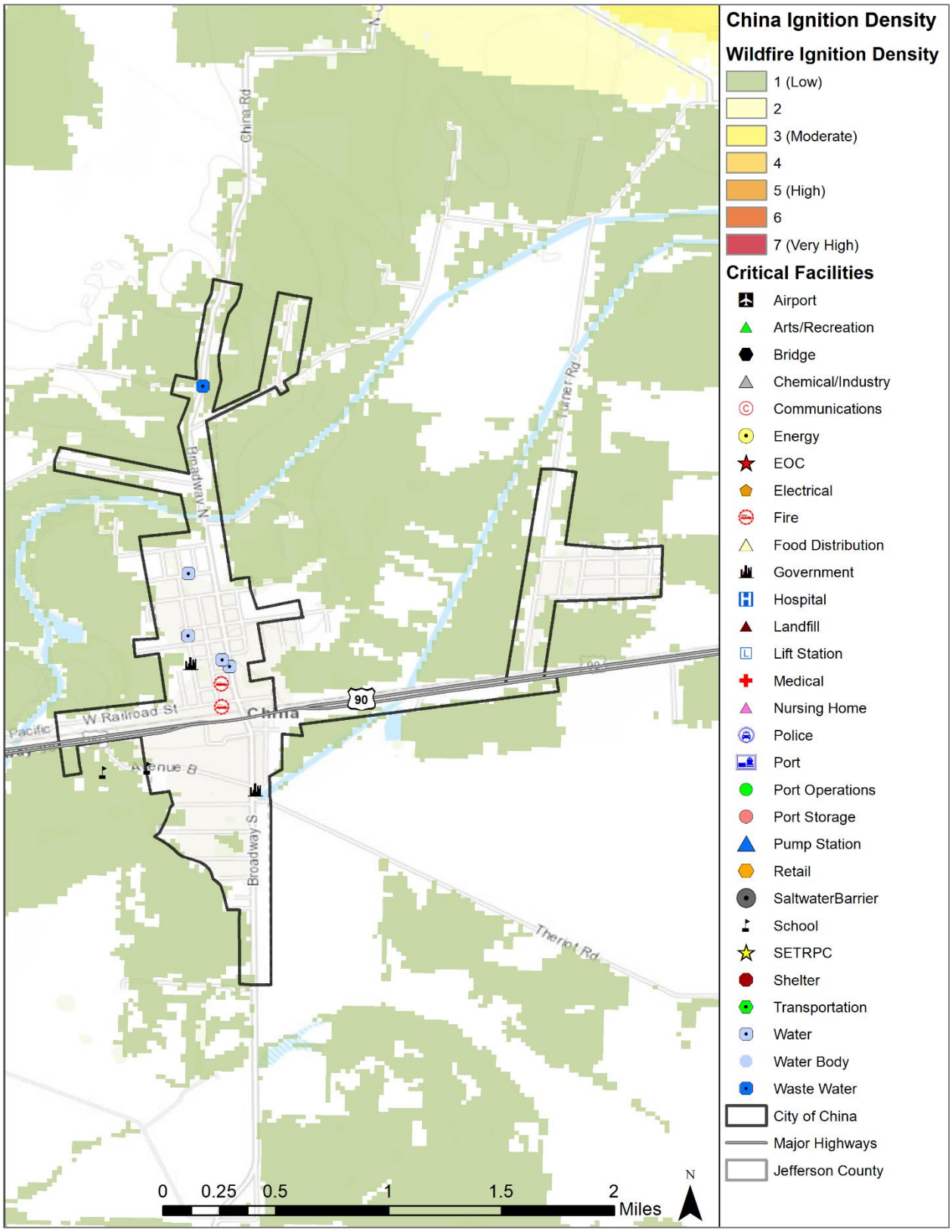


Figure 12-27. Wildfire Ignition Density – City of Groves

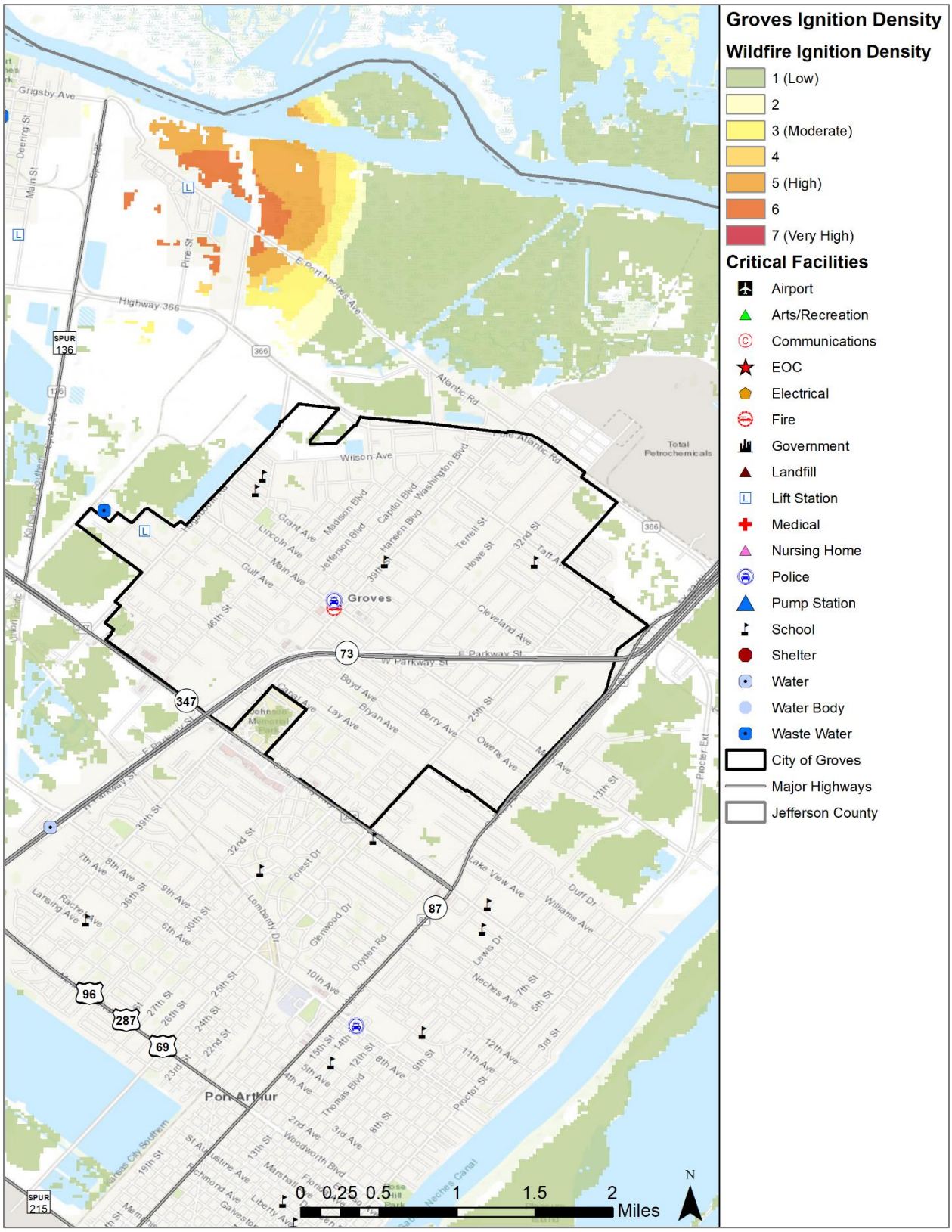


Figure 12-28. Wildfire Ignition Density – City of Nederland

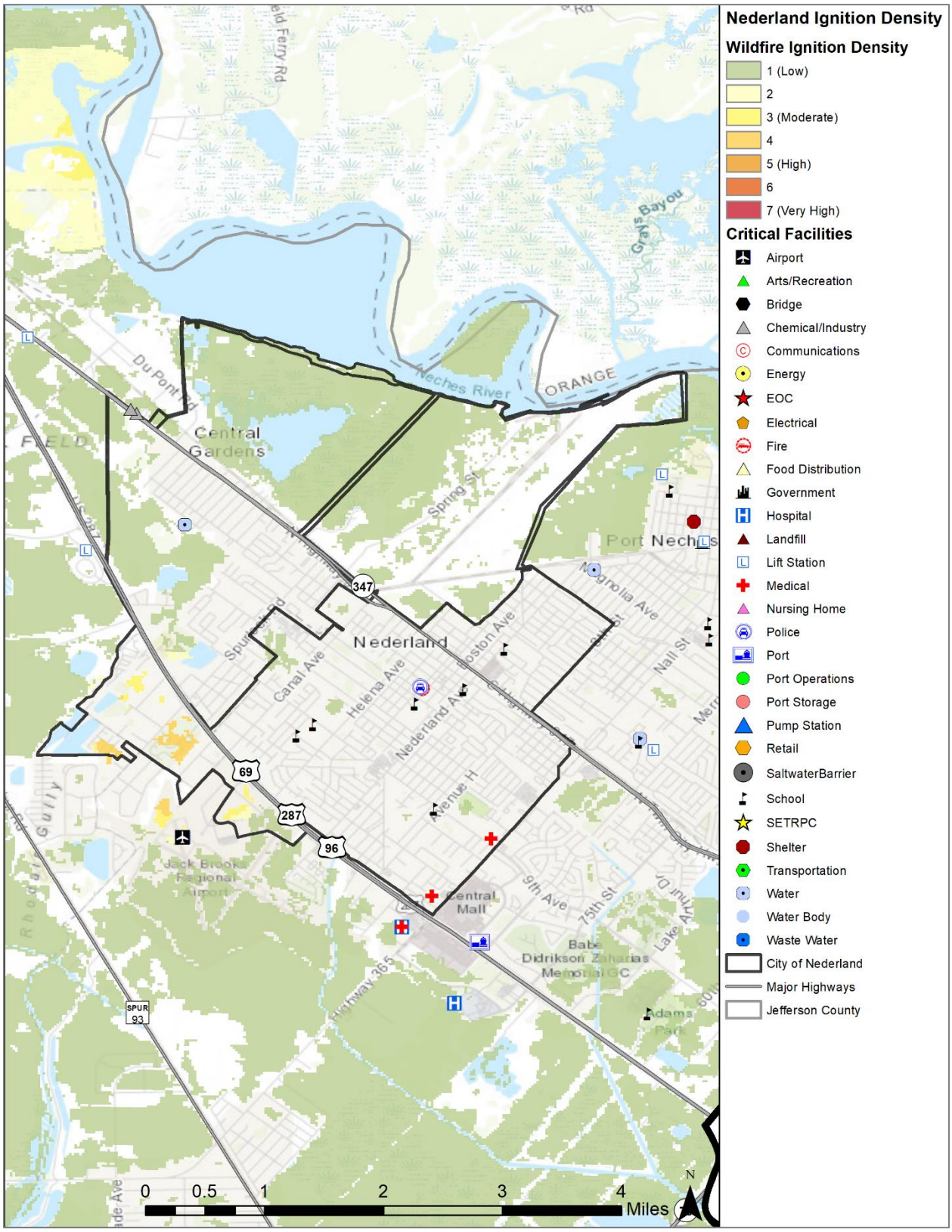


Figure 12-29. Wildfire Ignition Density – City of Nome

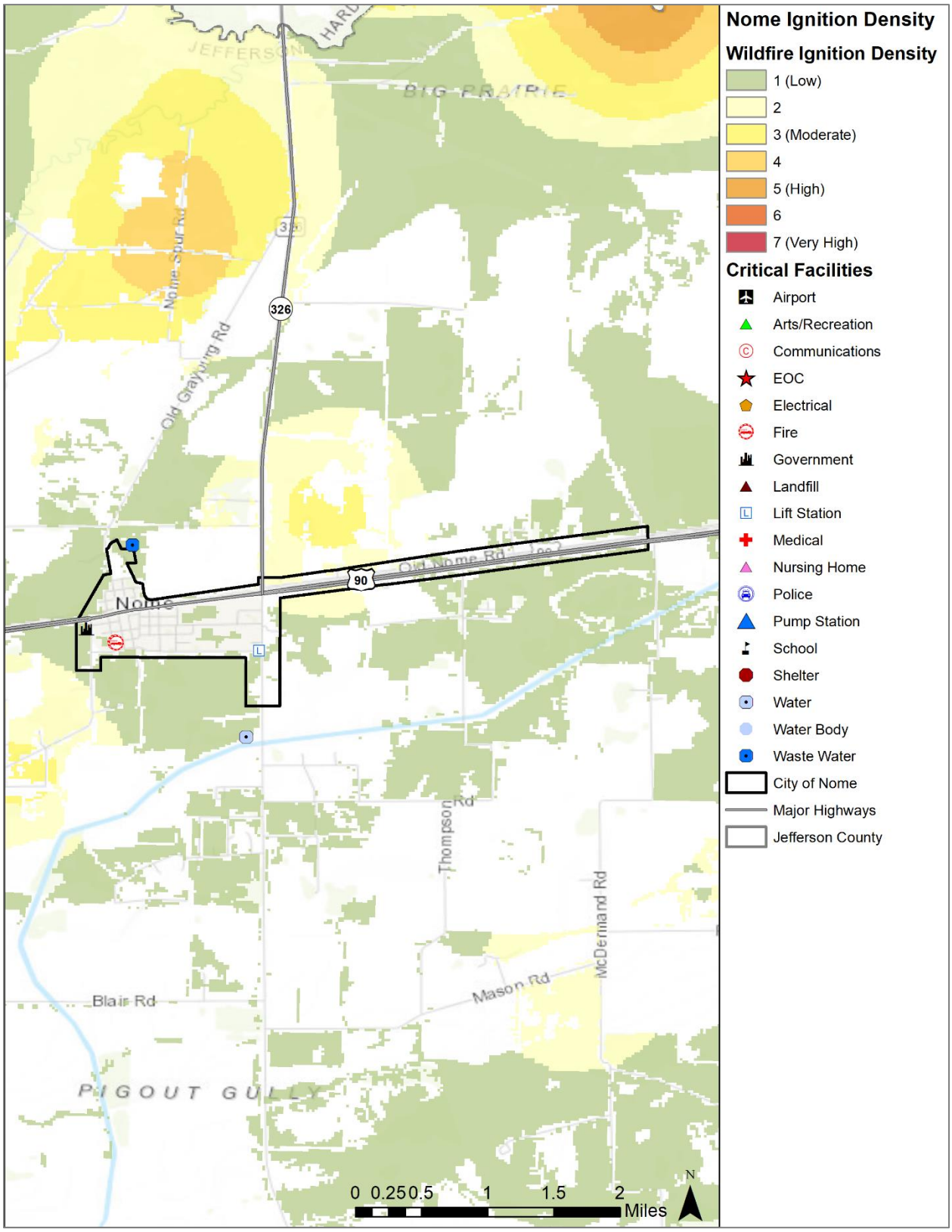


Figure 12-30. Wildfire Ignition Density – City of Port Arthur and Port of Port Arthur Navigation District

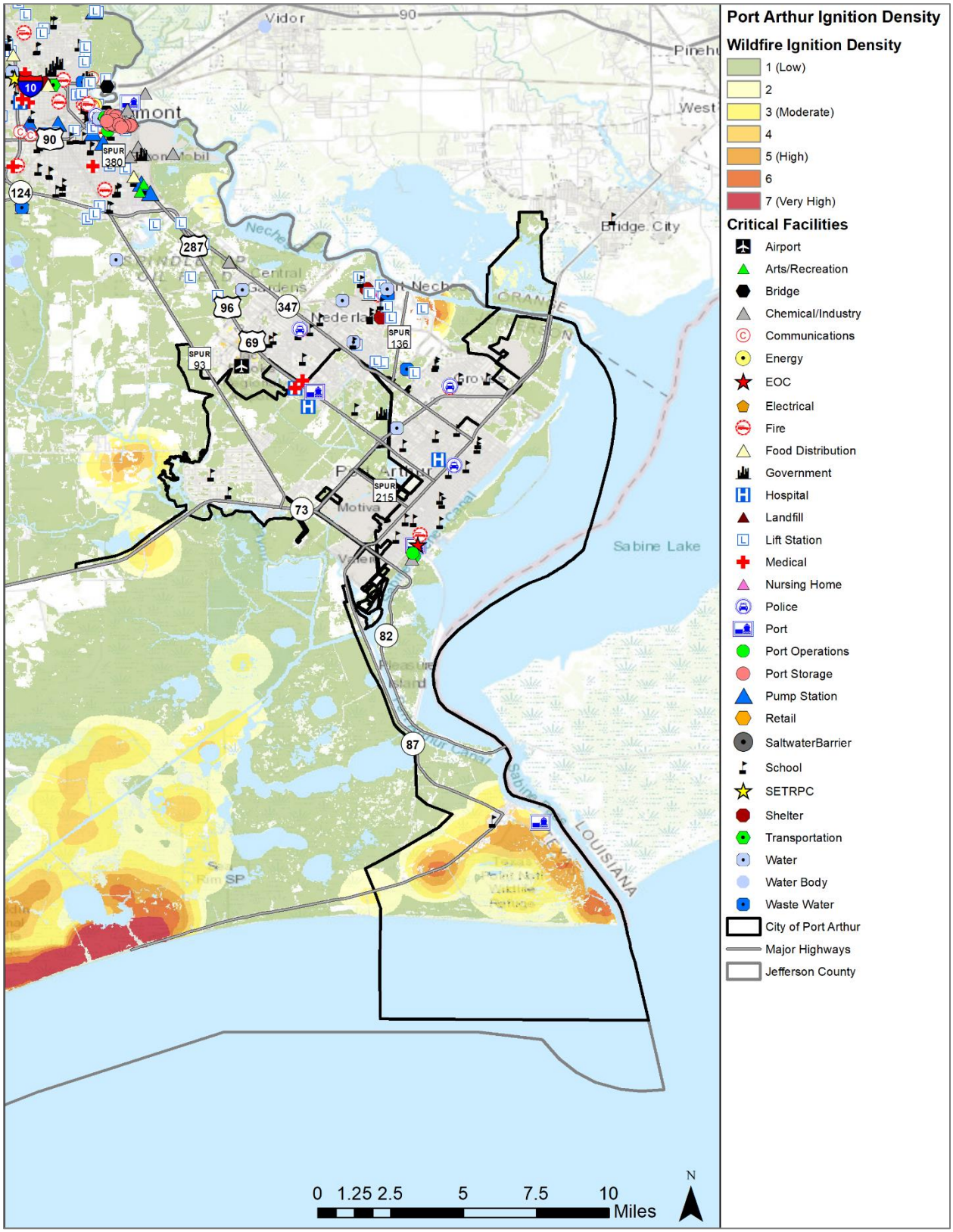


Figure 12-31. Wildfire Ignition Density – City of Port Neches

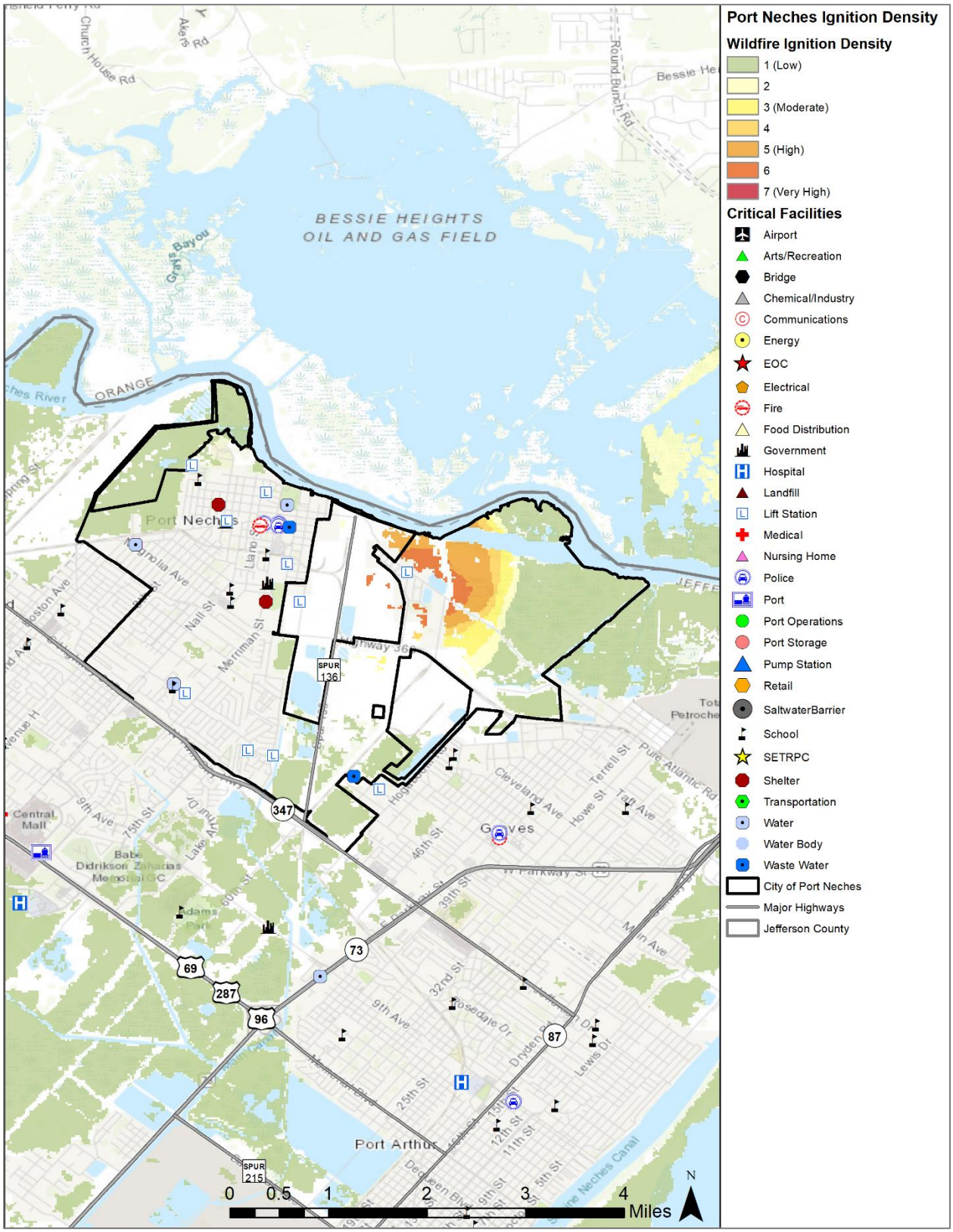
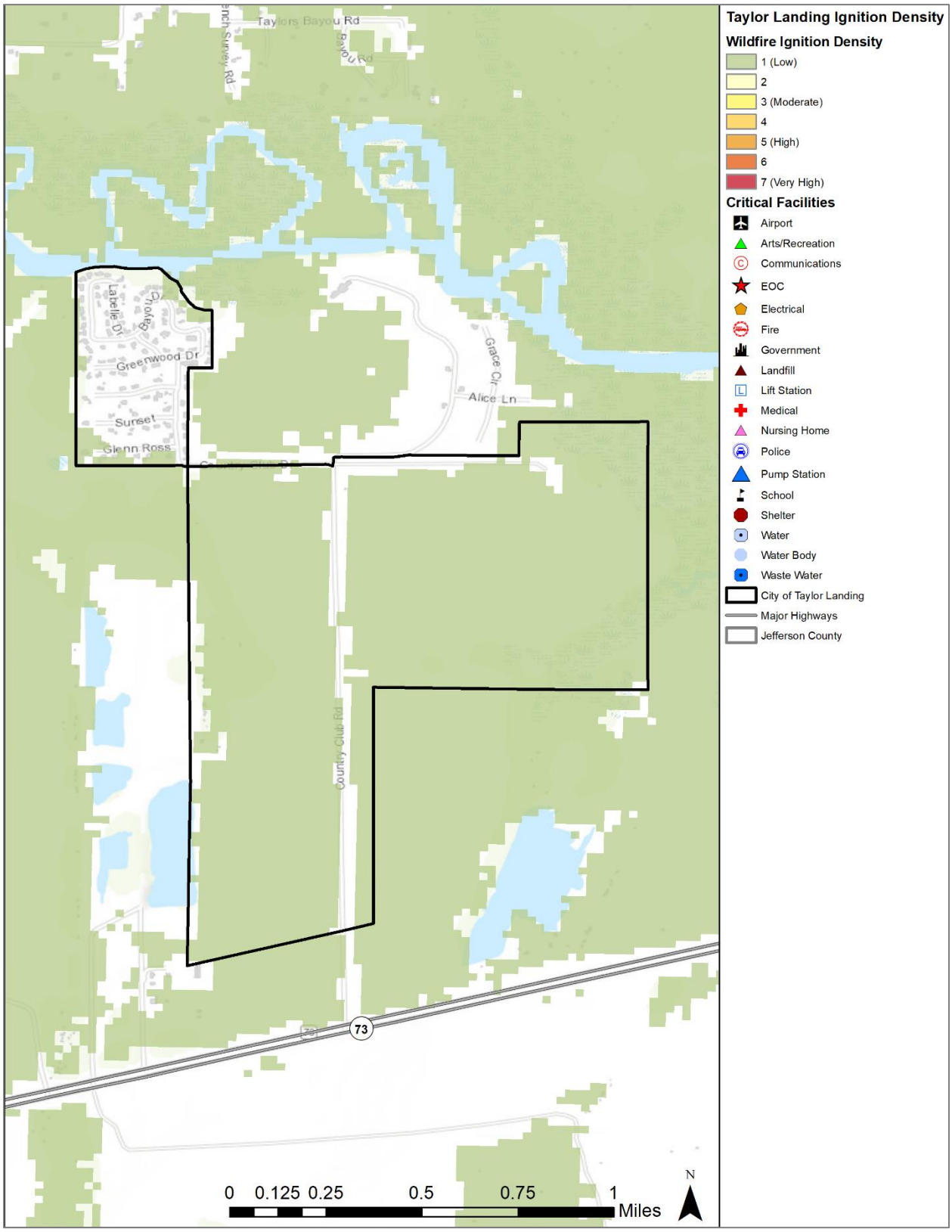


Figure 12-32. Wildfire Ignition Density – City of Taylor Landing



Diminished air quality is an environmental impact that can result from a wildfire event and pose a potential health risk. The smoke plumes from wildfires can contain potentially inhalable carcinogenic matter. Fine particles of invisible soot and ash that are too small for the respiratory system to filter can cause immediate and possibly long-term health effects. The elderly or those individuals with compromised respiratory systems may be more vulnerable to the effects of diminished air quality after a wildfire event.

Climatic conditions such as severe freezes and drought can significantly increase the intensity of wildfires since these conditions kill vegetation, creating a prime fuel source for wildfires. The intensity and rate at which wildfires spread are directly related to wind speed, temperature, and relative humidity.

The severity of impact from major wildfire events can be substantial. Such events can cause multiple deaths, shut down facilities for 30 days or more, and cause more than 50 percent of affected properties to be destroyed or suffer major damage. Severity of impact is gauged by acreage burned, homes and structures lost, and the number of resulting injuries and fatalities.

For the Jefferson County planning area, the impact from a wildfire event can be considered "Limited," with less than 10 percent of property expected to be destroyed and critical facilities shut down for 24-hours or less. Severity of impact is gauged by acreage burned, homes and structures lost, injuries and fatalities. Based on this, impact for each participating jurisdiction is listed below in Table 12-5.

Table 12-5. Impact by Jurisdiction

JURISDICTION	IMPACT	DESCRIPTION
Jefferson County	Limited	Jefferson County has an estimated 72,727 people or 29.9 percent of the total population that live within the Wildland Urban Interface (WUI). Jefferson County, including citizens in unincorporated areas, may suffer minor injuries that can be treated with first aid. Critical facilities could be shut down for 24 hours or less, and less than 10 percent of total property could be damaged.
City of Beaumont	Limited	The largest population in the City of Beaumont live in an area that is semi-dense (1-3 houses per 1 acre) in the WUI, and the city has a low wildfire threat. Citizens may suffer minor injuries treatable with first aid. Critical facilities could be shut down for 24 hours of less, and less than 10 percent of total property could be damaged.

JURISDICTION	IMPACT	DESCRIPTION
City of Bevil Oaks	Limited	The largest population in the City of Bevil Oaks live in an area that is semi-dense (1-3 houses per 1 acre) in the WUI, and the city has a low to moderate wildfire threat. Citizens may suffer minor injuries treatable with first aid. Critical facilities could be shut down for 24 hours of less, and less than 10 percent of total property could be damaged.
City of China	Limited	The largest population in the City of China live in an area that is semi-dense (1-3 houses per 1 acre) in the WUI, and the city has a low to moderate wildfire threat. Citizens may suffer minor injuries treatable with first aid. Critical facilities could be shut down for 24 hours of less, and less than 10 percent of total property could be damaged.
City of Groves	Limited	The largest population in the City of Groves live in an area that is semi-dense (1-3 houses per 1 acre) in the WUI, and the city has a low wildfire threat. Citizens may suffer minor injuries treatable with first aid. Critical facilities could be shut down for 24 hours of less, and less than 10 percent of total property could be damaged.
City of Nederland	Limited	The largest population in the City of Nederland live in an area that is semi-dense (1-3 houses per 1 acre) in the WUI, and the city has a low wildfire threat. Citizens may suffer minor injuries treatable with first aid. Critical facilities could be shut down for 24 hours of less, and less than 10 percent of total property could be damaged
City of Nome	Limited	The largest population in the City of Nome live in an area that is semi-dense (1-3 houses per 1 acre) in the WUI, and the city has a low to moderate wildfire threat. Citizens may suffer minor injuries treatable with first aid. Critical facilities could be shut down for 24 hours of less, and less than 10 percent of total property could be damaged

JURISDICTION	IMPACT	DESCRIPTION
City of Port Arthur	Limited	The largest population in the City of Port Arthur live in an area that is semi-dense (1-3 houses per 1 acre) in the WUI, and the city has a low wildfire threat. Citizens may suffer minor injuries treatable with first aid. Critical facilities could be shut down for 24 hours of less, and less than 10 percent of total property could be damaged
City of Port Neches	Limited	The largest population in the City of Port Neches live in an area that is semi-dense (1-3 houses per 1 acre) in the WUI, and the city has a low wildfire threat. Citizens may suffer minor injuries treatable with first aid. Critical facilities could be shut down for 24 hours of less, and less than 10 percent of total property could be damaged
City of Taylor Landing	Limited	The largest population in the City of Taylor Landing live in an area that is semi-dense (1-3 houses per 1 acre) in the WUI, and the city has a low to moderate wildfire threat. Citizens may suffer minor injuries treatable with first aid. Critical facilities could be shut down for 24 hours of less, and less than 10 percent of total property could be damaged
Lower Neches Valley Authority	Limited	The Lower Neches Valley Authority 4 facilities located in the WUI and has a low threat to wildfire based on their location. Therefore, staff could be injured or suffer illnesses treatable with first aid. Critical facilities could be shut down for 24 hours or less and less than 10 percent of total property could be damaged.
Port of Beaumont Navigation District	Limited	The Port of Beaumont Navigation District has no facilities located in the WUI and has a low threat to wildfire based on their location. Therefore, staff could be injured or suffer illnesses treatable with first aid. Critical facilities could be shut down for 24 hours or less and less than 10 percent of total property could be damaged.

JURISDICTION	IMPACT	DESCRIPTION
Port of Port Arthur Navigation District	Limited	The Port of Port Arthur Navigation District has no facilities located in the WUI and has a low threat to wildfire based on their location. Therefore, staff could be injured or suffer illnesses treatable with first aid. Critical facilities could be shut down for 24 hours or less and less than 10 percent of total property could be damaged.
SETRPC	Limited	The SETRPC has no facilities located in the WUI and has a low threat to wildfire based on their location. Therefore, staff could be injured or suffer illnesses treatable with first aid. Critical facilities could be shut down for 24 hours or less and less than 10 percent of total property could be damaged.

ASSESSMENT OF IMPACTS

A wildfire event poses a potentially significant risk to public health and safety, particularly if the wildfire is initially unnoticed and spreads quickly. The impacts associated with a wildfire are not limited to the direct damages. The impact of climate change could produce larger, more wide-spread wildfire events, exacerbating the current wildfire impacts. More extreme wildfire conditions can be frequently associated with a variety of impacts, including:

- Persons in the area at the time of the fire are at risk for injury or death from burns and/or smoke inhalation.
- First responders are at greater risk of physical injury since they are in close proximity to the hazard while extinguishing flames, protecting property, or evacuating residents in the area.
- First responders can experience heart disease, respiratory problems, and other long-term related illnesses from prolonged exposure to smoke, chemicals, and heat.
- Emergency services may be disrupted during a wildfire if facilities are impacted, roadways are inaccessible, or personnel are unable to report for duty.
- Critical city and/or county departments may not be able to function and provide necessary services depending on the location of the fire and the structures or personnel impacted.
- Non-critical businesses may be directly damaged, suffer loss of utility services, or be otherwise inaccessible, delaying normal operations and slowing the recovery process.
- Displaced residents may not be able to immediately return to work, further slowing economic recovery.
- Roadways in or near the WUI could be damaged or closed due to smoke and limited visibility.
- Older homes are generally exempt from modern building code requirements, which may require fire suppression equipment in the structure.
- Some high-density neighborhoods feature small lots with structures close together, increasing the potential for fire to spread rapidly.

- Air pollution from smoke may exacerbate respiratory problems of vulnerable residents.
- Charred ground after a wildfire cannot easily absorb rainwater, increasing the risk of flooding and potential mudflows.
- Wildlife may be displaced or destroyed.
- Historical or cultural resources may be damaged or destroyed.
- Tourism can be significantly disrupted, further delaying economic recovery for the area.
- Vegetated dunes can be stripped, significantly damaging the function of the dunes to protect inland areas from the destructive forces of wind and waves.
- Economic disruption negatively impacts the programs and services provided by the community due to short- and long-term loss in revenue.
- Fire suppression costs can be substantial, exhausting the financial resources of the community.
- Residential structures lost in a wildfire may not be rebuilt for years, reducing the tax base for the community.
- McFadden National Wildlife Refuge, along the Neches River and Sabine Lake recreation and tourism can be unappealing for years following a large wildfire, devastating directly related businesses.
- Direct impacts to municipal water supply may occur through contamination of ash and debris during the fire, destruction of aboveground delivery lines, and soil erosion or debris deposits into waterways after the fire.

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

SECTION 13: WINTER STORM

Hazard Description 1
Location 3
Extent 3
Historical Occurrences 4
Significant Events 6
Probability of Future Events 6
Vulnerability and Impact 7
Assessment of Impacts 9

HAZARD DESCRIPTION

A severe winter storm event is identified as a storm with snow, ice, or freezing rain. This type of storm can cause significant problems for area residents. Winter storms are associated with freezing or frozen precipitation such as freezing rain, sleet, snow, and the combined effects of winter precipitation and strong winds. Wind chill is a function of temperature and wind. Low wind chill is a product of high winds and freezing temperatures.

Winter storms that threaten Jefferson County planning area usually begin as powerful cold fronts that push south from central Canada. Although the county is at risk to ice hazards, extremely cold temperatures, and snow, the effects and frequencies of winter storm events are generally mild and short-lived.

As indicated in Figure 13-1, the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, is located primarily in USDA Hardiness Zone 9a, with annual minimum temperatures between 20°F and 25°F. A small portion of the north end of the county is located in Zone 8b, with minimum temperatures between 15°F and 20°F. During times of ice and snow accumulation, response times will increase until public works road crews are able to make major roads passable. Table 13-1 describes the types of winter storms possible to occur in the Jefferson County planning area including the SETRPC and all participating jurisdictions and special districts.

Figure 13-1. Annual Minimum Temperature

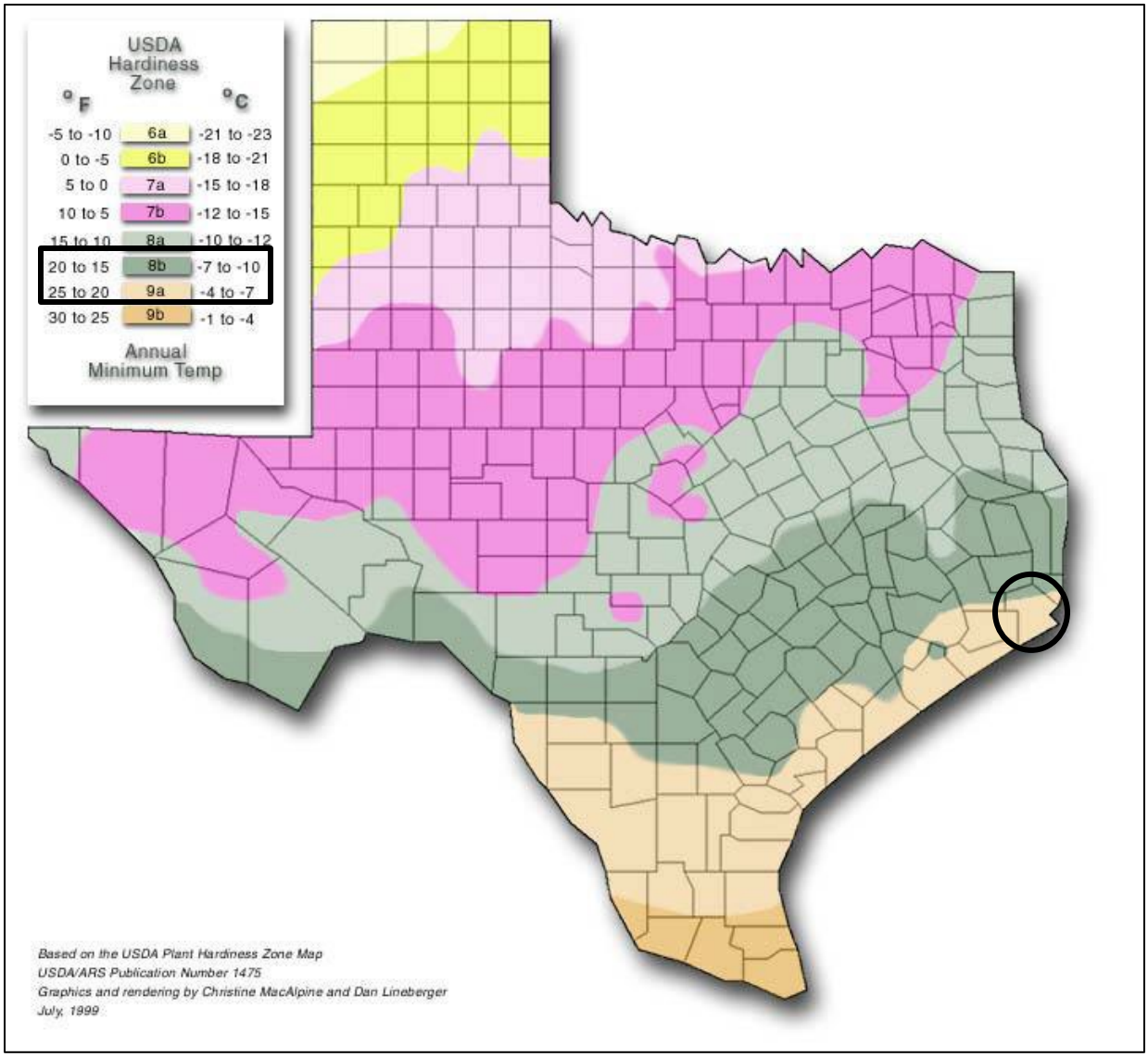


Table 13-1. Types of Winter Storms

TYPE OF WINTER STORM	DESCRIPTION
Winter Weather Advisory	This alert may be issued for a variety of severe conditions. Weather advisories may be announced for snow, blowing or drifting snow, freezing drizzle, freezing rain, or a combination of weather events.
Winter Storm Watch	Severe winter weather conditions may affect your area (freezing rain, sleet, or heavy snow may occur separately or in combination).
Winter Storm Warning	Severe winter weather conditions are imminent.

TYPE OF WINTER STORM	DESCRIPTION
Freezing Rain or Freezing Drizzle	Rain or drizzle is likely to freeze upon impact, resulting in a coating of ice glaze on roads and all other exposed objects.
Sleet	Small particles of ice usually mixed with rain. If enough sleet accumulates on the ground, it makes travel hazardous.
Blizzard Warning	Sustained wind speeds of at least 35 mph are accompanied by considerable falling or blowing snow. This alert is the most perilous winter storm with visibility dangerously restricted.
Frost/Freeze Warning	Below freezing temperatures are expected and may cause significant damage to plants, crops, and fruit trees.
Wind Chill	A strong wind combined with a temperature slightly below freezing can have the same chilling effect as a temperature nearly 50 degrees lower in a calm atmosphere. The combined cooling power of the wind and temperature on exposed flesh is called the wind-chill factor.

LOCATION

Winter storm events are not confined to specific geographic boundaries. Therefore, all existing and future buildings, facilities, and populations in the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, are considered to be exposed to a winter storm hazard and could potentially be impacted.

EXTENT

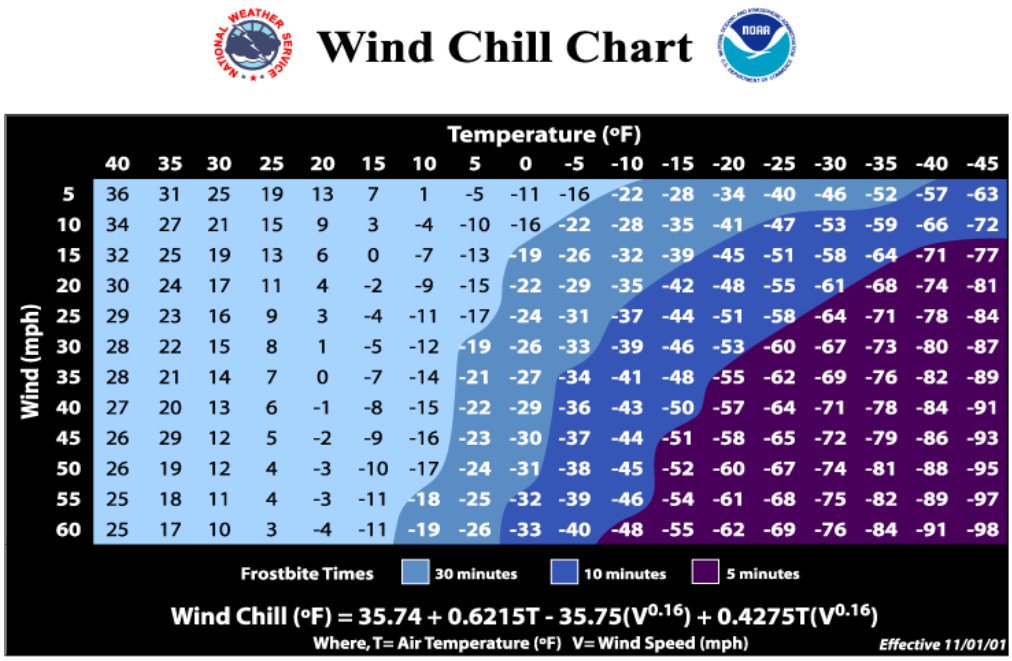
The extent or magnitude of a severe winter storm is measured in intensity based on the temperature and level of accumulations as shown in Table 13-2. Table 13-2 should be read in conjunction with the wind-chill factor described in Figure 13-2 to determine the intensity of a winter storm. The chart is not applicable when temperatures are over 50°F or winds are calm. This is an index developed by the National Weather Service.

Table 13-2. Magnitude of Severe Winter Storms

INTENSITY	TEMPERATURE RANGE (Fahrenheit)	EXTENT DESCRIPTION
Mild	40° – 50°	Winds less than 10 mph and freezing rain or light snow falling for short durations with little or no accumulations
Moderate	30° – 40°	Winds 10 – 15 mph and sleet and/or snow up to 4 inches
Significant	25° – 30°	Intense snow showers accompanied with strong gusty winds between 15 and 20 mph with significant accumulation
Extreme	20° – 25°	Wind driven snow that reduces visibility, heavy winds (between 20 to 30 mph), and sleet or ice up to 5 millimeters in diameter

INTENSITY	TEMPERATURE RANGE (Fahrenheit)	EXTENT DESCRIPTION
Severe	Below 20°	Winds of 35 mph or more and snow and sleet greater than 4 inches

Figure 13-2. Wind Chill Chart



Wind (mph)	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	29	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Wind chill temperature is a measure of how cold the wind makes real air temperature feel to the human body. Since wind can dramatically accelerate heat loss from the body, a blustery 30°F day would feel just as cold as a calm day with 0°F temperatures. The Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, has never experienced a blizzard, but based on 13 previous occurrences recorded from 1996 through 2021, it has been subject to winter storm watches, warnings, freezing rain, sleet, and snow.

The average number of cold days is similar for the entire planning area, including the SETRPC and all participating jurisdictions and special districts. Therefore, the intensity or extent of a winter storm event to be mitigated for the area ranges from mild to significant according to the definitions at Table 13-2. The Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, can expect anywhere between 0.1 to 4.0 inches of ice and snow during a winter storm event and temperatures between 15 and 25 degrees with winds ranging from 0 to 35 mph. This is the worst that can be anticipated to mitigate against in the future for all participating jurisdictions.

HISTORICAL OCCURRENCES

Table 13-3 shows historical occurrences for Jefferson County from 1996 through 2021 provided by the NCEI database. There have been 13 recorded winter storm events in Jefferson County, including the SETRPC and all participating jurisdictions and special districts. Historical winter storm information, as provided by the NCEI, identifies winter storm activity across a multi-county

forecast area for each event. The appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by the event. The SETRPC, the Lower Neches Valley Authority, the Port of Beaumont Navigation District, and the Port of Port Arthur Navigation District did not report any historical damages as a result of a winter storms. Historical winter storm data for the county and all participating jurisdictions are provided on a County-wide basis per the NCEI database. Table 13-3 shows historical incident information for the planning area.

Table 13-3. Historical Winter Storm Events, 1996-2021[1]

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	2/4/1996	0	0	$86,351	$0
Jefferson County	1/12/1997	0	10	$17,159,208	$0
Jefferson County	12/11/2008	0	0	$0	$0
Jefferson County	12/4/2009	0	0	$0	$0
Jefferson County	1/8/2010	0	0	$638,222	$0
Jefferson County	2/23/2010	0	0	$0	$0
Jefferson County	2/3/2011	0	0	$12,336	$0
Jefferson County	1/28/2011	0	0	$0	$0
Jefferson County	1/23/2014	0	0	$0	$0
Jefferson County	3/4/2014	0	0	$0	$0
Jefferson County	12/8/2017	0	0	$0	$0
Jefferson County	1/16/2018	0	0	$0	$0
Jefferson County	2/14/2021	1	0	$30,500,000[2]	$0
Jefferson County	2/17/2021	0	0	$0	$0
TOTALS		**1**	**10**	**$48,396,117**	

Based on the list of historical winter storm events for the Jefferson County planning area (listed above), including the SETRPC and all participating jurisdictions and special districts, four of the events have occurred since the 2017 Plan.

[1] Values are in 2022 dollars.
[2] NCEI reported no damages for 2/14/2021 winter storm event. Jefferson County provided Texas Depart of Insurance: *Insured Losses Resulting from the February 2021 Texas Winter Weather Event (July,2021)*

SECTION 13: WINTER STORM

SIGNIFICANT EVENTS

February 14-15, 2021 – Jefferson County

The first in a series of Arctic Cold Fronts arrived during the 12th pushing tide levels down along the coast, however the subfreezing temperatures and winter weather did not arrive until the 14th. The event on the 14th began at many places as a light glaze of freezing rain, but quickly changed over to sleet or snow. The event set many records in the area and rivaled the historic freezes in the region. The event was likely the longest and coldest since December 1989. Interior sections of Southeast Texas saw lows in the single digits and mid-teens were recorded at the coast during the coldest night. Temperatures fell through the afternoon and evening of the 14th across Jefferson County as showers developed. Rain turned to freezing rain during the evening and then quickly over to sleet. Light snow mixed in by the end of the event. Accumulations ranged from around half an inch on the coast to near 2 inches north of Beaumont. Bridges and overpasses became iced and closed. Most roads were hazardous. A 65 year old man in Labelle died from hypothermia due to exposure.

January 8-11, 2010 – Jefferson County

A deep upper-level trough moving eastward across the United States forced a bitterly cold Arctic air mass southward from Canada into the Gulf Coast states on January 7, 2010. This air mass remained in place for several days across southeast Texas, leading to the coldest temperatures seen across this region since February 1996. A few record low temperatures and record low maximum temperatures were set. Many locations in the Lakes Region of southeast Texas remained below freezing for over 36 hours from around midnight early on January 8th through the afternoon on Saturday January 9th.

The cold temperatures led to several school closures, numerous weather-related fires, and widespread plumbing ruptures throughout southeast Texas. One indirect fatality occurred near Jamestown in neighboring Newton County due to a house fire. The Insurance Council of Texas estimated losses across southeast Texas from the cold weather at around $1 million.

The Beaumont Enterprise reported widespread damaged plumbing across Jefferson County due to the record cold temperatures. 10 petrochemical plants and refineries across the county experienced excessive emissions due to cracked pipes, instrument failures, and equipment malfunctions. Entergy reported sporadic power outages through the county. Centerpoint Entergy used trucks to pump natural gas directly into a northwest Beaumont neighborhood of 100 homes after natural gas lines failed due to the cold weather.

January 12-14, 1997 – Jefferson County

A record ice storm paralyzed southeast Texas and southwest Louisiana. Around 90,000 electric customers across southeast Texas were without power for up to six days. Emergency shelters were opened for several nights due to the cold weather following the ice storm. Hundreds of homes received minor damage due to trees or tree limbs falling on roofs. Several house fires were directly or indirectly related to the ice storm. Numerous traffic accidents attributed to icy roads led to several minor injuries. One death was indirectly attributed to the ice storm in neighboring Orange County.

PROBABILITY OF FUTURE EVENTS

According to historical records, the planning area experiences approximately one winter storm event each year. Hence, the probability of a future winter storm event affecting the Jefferson

County planning area, including the SETRPC and all participating jurisdictions and special districts, is highly likely, with a winter storm likely to occur within the next year.

VULNERABILITY AND IMPACT

During periods of extreme cold and freezing temperatures, water pipes can freeze and crack, and ice can build up on power lines, causing them to break under the weight or causing tree limbs to fall on the lines. These events can disrupt electric service for long periods.

An economic impact may occur due to increased consumption of heating fuel, which can lead to energy shortages and higher prices. House fires and resulting deaths tend to occur more frequently from increased and improper use of alternate heating sources. Fires during winter storms also present a greater danger because water supplies may freeze and impede firefighting efforts. All populations, buildings, critical facilities, and infrastructure in the entire Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, are vulnerable to severe winter events.

The following critical facilities would be vulnerable to Winter Storm events in each participating jurisdiction:

Table 13-4. Critical Facilities by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Jefferson County	10 Fire Stations, 1 Sheriff's Department, 5 Police Stations, 67 Schools, 9 Medical Facilities, 1 Emergency Service District, 4 Water Districts, 3 Drainage District, 3, Utility Districts, 4 Port Authorities, 1 Government Facility, 1 Airport
City of Beaumont	13 Fire Stations, 1 Police Station, 32 Schools, 5 Medical Facilities, 6 Emergency Medical Services (EMS), 1 EOC, 1 Event Center, 1 Stadium, 1 Mall, 2 Water Treatment Facilities, 3 Water Wells, 1 Wastewater Treatment Facility, 2 Pump Stations, 75 Lift Stations, 1 Waste Operation Facility, 1 Landfill, 8 Chemical Facilities, 8 Communication Facilities, 1 Electrical Facility, 16 Government Facilities, 4 Federal Facilities, 1, Animal Shelter, 1 County Dispatch Facility, 1 Airport, 1 Canal, 1 Maritime Transport Facility, 2 Traffic and Transit Operation Facilities, 5 Railroad and Infrastructure, 2 Highway Transport and Infrastructure, 4 Lower Neches Valley Facilities and Infrastructure
City of Bevil Oaks	1 Emergency Service District, 1 Fire Station
City of China	1 Emergency Service District, 1 Fire Station, 1 Water Plant, 1 Wastewater Plant, 8 Lift Stations, 3 Wells
City of Groves	1 Fire Station, 1 Police Station, 3 Schools
City of Nederland	1 Fire Station, 1 Police Station, 8 Schools, 3 Medical Facilities
City of Nome	1 Fire Station, 1 Water Treatment Plant, 1 Wastewater and Sewage Plant, 5 Lift Stations, 1 Government Building

JURISDICTION	CRITICAL FACILITIES
City of Port Arthur	1 Fire Station, 1 Police Station, 14 Schools, 1 Medical Facility, 1 Drainage District, 2 Port Authority and Navigation Districts
City of Port Neches	1 Fire Station, 2 Police Stations, 5 Schools, 1 EOC, 1 Water Treatment Plant, 3 Water Towers, 1 Wastewater Treatment Plant, 10 Lift Stations, 3 Government Facilities, 2 Federal Facilities, 2 Commercial Facilities, 3 Industrial Facilities, 2 Public Works Facilities and Infrastructure
City of Taylor Landing	1 Electric Facility, 1 Fiber Optic Facility, 2 Sewer Plant and Infrastructures
Lower Neches Valley Authority	1 Communication Center, 1 Water Plant, 1 Water Treatment Plant, 5 Pumping Plants
Port of Beaumont Navigation District	2 Administrative Facilities, 2 Facility Operations Facilities, 1 Maintenance Building, 2 Security Offices, 1 Army Building, 6 Transit Sheds, 7 Terminals, 2 Barge Docs, 2 Bulkhead-Aprons, 1 Dock / Ramp
Port of Port Arthur Navigation District	1 Administrative Facility, 1 Command Center, 1 Terminal, 1 Tenant/ Pipeline
SETRPC	SETRPC Facility

People and animals are subject to health risks from extended exposure to cold air. Elderly people are at greater risk of death from hypothermia during these events, especially in the rural areas of the county where populations are sparse, icy roads may impede travel, and there are fewer neighbors to check in on the elderly. According to the U.S. Center for Disease Control, every year hypothermia kills about 600 Americans, half of whom are 65 years of age or older. In addition, populations living below the poverty level may not be able to afford to run heat on a regular basis.

Population over 65 in the entire Jefferson County planning area is estimated at 14.4% of the total population or an estimated total of 36,446[3] potentially vulnerable residents in the planning area based on age. An estimated 18.0% of the planning area population live below the poverty level (Table 13-5).

Table 13-5. Population at Greater Risk by Jurisdiction

JURISDICTION	POPULATION 65 AND OLDER	POPULATION BELOW POVERTY LEVEL
Jefferson County	36,446	45,564
City of Beaumont	17,689	22,174
City of Bevil Oaks	241	44
City of China	285	144
City of Groves	2,790	2,159

[3] US Census Bureau 2020 data for Jefferson County.

JURISDICTION	POPULATION 65 AND OLDER	POPULATION BELOW POVERTY LEVEL
City of Nederland	2,702	1,491
City of Groves	166	23
City of Port Arthur	7,002	14,606
City of Port Neches	1,984	1,247
City of Taylor Landing	96	0

Historic loss, in 2022 dollars, is estimated at $48,396,117 in damages over the 26-year recording period giving an approximate loss of $1,861,389 in damages annually (Table 13-6). The potential severity of impact for the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, is considered "Limited" for property damages with shutdown of critical facilities for 24-hours or less, and less than ten percent of property destroyed or with major damage. However, the historical injuries and fatality indicate a "Substantial" impact where multiple deaths are possible depending on the severity and duration of the event.

Table 13-6. Potential Annualized Losses for Jefferson County

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Jefferson County	$48,396,117	$1,861,389

ASSESSMENT OF IMPACTS

The greatest risk from a winter storm hazard is to public health and safety. The impact of climate change could produce longer, more intense winter storm events, exacerbating the current winter storm impacts. Worsening winter storm conditions can be frequently associated with a variety of impacts, including:

- Vulnerable populations, particularly the elderly and children under 5, can face serious or life-threatening health problems from exposure to extreme cold including hypothermia and frostbite.
- Loss of electric power or other heat source can result in increased potential for fire injuries or hazardous gas inhalation because residents burn candles for light or use fires or generators to stay warm.
- Response personnel, including utility workers, public works personnel, debris removal staff, tow truck operators, and other first responders, are subject to injury or illness resulting from exposure to extreme cold temperatures.
- Response personnel would be required to travel in potentially hazardous conditions, elevating the life safety risk due to accidents and potential contact with downed power lines.
- Operations or service delivery may experience impacts from electricity blackouts due to winter storms.
- Power outages are possible throughout the planning area due to downed trees and power lines and/or rolling blackouts.

- Critical facilities without emergency backup power may not be operational during power outages.
- Emergency response and service operations may be impacted by limitations on access and mobility if roadways are closed, unsafe, or obstructed.
- Hazardous road conditions will likely lead to increases in automobile accidents, further straining emergency response capabilities.
- Depending on the severity and scale of damage caused by ice and snow events, damage to power transmission and distribution infrastructure can require days or weeks to repair.
- A winter storm event could lead to tree, shrub, and plant damage or death.
- Severe cold and ice could significantly damage agricultural crops.
- Schools may be forced to shut early due to treacherous driving conditions.
- Exposed water pipes may be damaged by severe or late season winter storms at both residential and commercial structures, causing significant damages.

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

SECTION 14: DROUGHT

Hazard Description 1
Location 2
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Historical Occurrences 5
Significant Events 6
Probability of Future Events 6
Vulnerability and Impact 6
Assessment of Impacts 8

HAZARD DESCRIPTION

Drought is a period of time without substantial rainfall that persists from one year to the next. Drought is a normal part of virtually all climatic regions, including areas with high and low average rainfall. Drought is the consequence of anticipated natural precipitation reduction over an extended period of time, usually a season or more in length. Droughts can be classified as meteorological, hydrologic, agricultural, and socioeconomic. Table 14-1 presents definitions for these different types of droughts.

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

Table 14-1. Drought Classification Definitions[1]

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

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

LOCATION

Droughts occur regularly throughout Texas and the Jefferson County planning area and are a normal condition. However, they can vary greatly in their intensity and duration. The Drought Monitor shows the planning area is currently experiencing moderate to extreme drought conditions throughout the county. (Figure 14-1). However, the planning area has experienced a range of conditions from normal to exceptional drought conditions over the twelve years (Figure 14-2). There is no distinct geographic boundary to drought; therefore, it can occur throughout the Jefferson County planning area equally, including the SETRPC and all participating jurisdictions and special districts.

Figure 14-1. U.S. Drought Monitor, June 2022

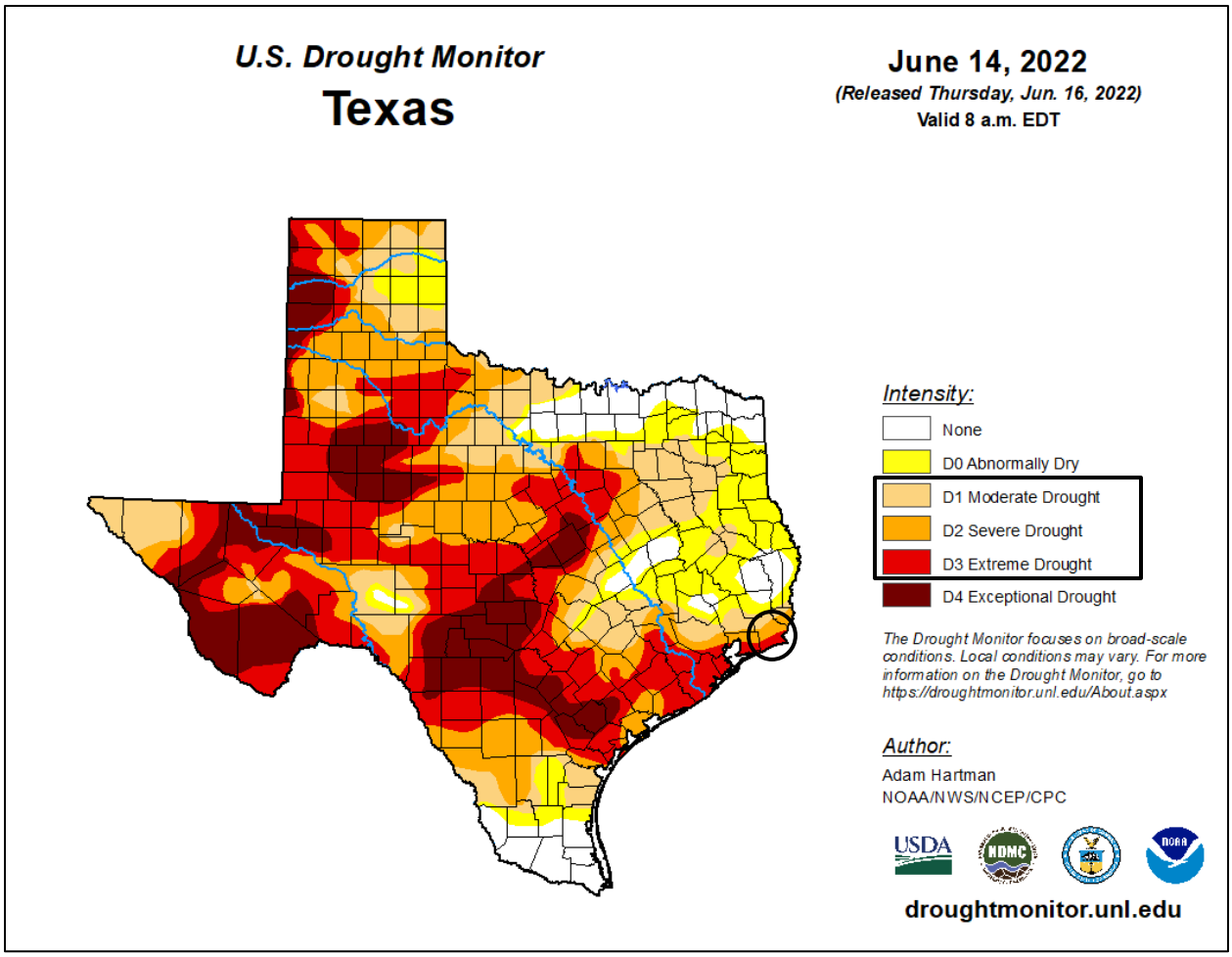
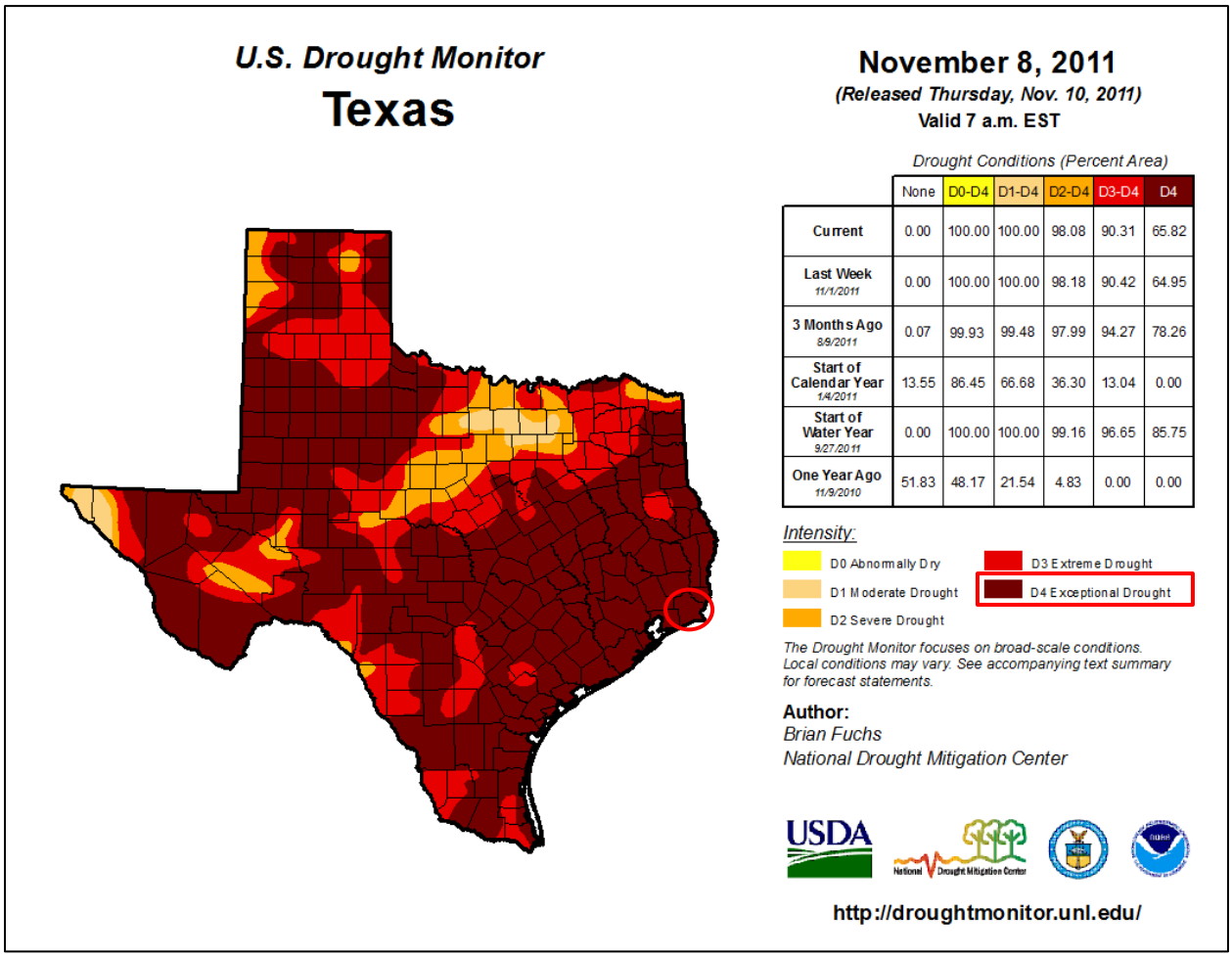


Figure 14-2. U.S. Drought Monitor, November 2011



	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	98.08	90.31	65.82
Last Week 11/1/2011	0.00	100.00	100.00	98.18	90.42	64.95
3 Months Ago 8/9/2011	0.07	99.93	99.48	97.99	94.27	78.26
Start of Calendar Year 1/4/2011	13.55	86.45	66.68	36.30	13.04	0.00
Start of Water Year 9/27/2011	0.00	100.00	100.00	99.16	96.65	85.75
One Year Ago 11/9/2010	51.83	48.17	21.54	4.83	0.00	0.00

EXTENT

The Palmer Drought Index is used to measure the extent of drought by measuring the duration and intensity of long-term drought-inducing circulation patterns. Long-term drought is cumulative, with the intensity of drought during the current month dependent upon the current weather patterns plus the cumulative patterns of previous months. The hydrological impacts of drought (e.g., reservoir levels, groundwater levels, etc.) take longer to develop. Table 14-2 depicts magnitude of drought, while Table 14-3 describes the classification descriptions.

Table 14-2. Palmer Drought Index

DROUGHT INDEX	DROUGHT CONDITION CLASSIFICATIONS						
	Extreme	Severe	Moderate	Normal	Moderately Moist	Very Moist	Extremely Moist
Z Index	-2.75 and below	-2.00 to -2.74	-1.25 to -1.99	-1.24 to +.99	+1.00 to +2.49	+2.50 to +3.49	n/a
Meteorological	-4.00 and below	-3.00 to -3.99	-2.00 to -2.99	-1.99 to +1.99	+2.00 to +2.99	+3.00 to +3.99	+4.00 and above
Hydrological	-4.00 and below	-3.00 to -3.99	-2.00 to -2.99	-1.99 to +1.99	+2.00 to +2.99	+3.00 to +3.99	+4.00 and above

Table 14-3. Palmer Drought Category Descriptions[2]

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

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

[2] Source: National Drought Mitigation Center

SECTION 14: DROUGHT

Based on the historical occurrences for drought and the location of the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, the area can anticipate a range of drought from abnormally dry to exceptional, or D0 to D4, based on the Palmer Drought Category. The entire planning area has experienced exceptional drought conditions. This is the most extreme drought conditions the planning area can anticipate in the future.

HISTORICAL OCCURRENCES

The Jefferson County planning area may typically experience a severe drought. Table 14-4 lists historical events that have occurred in the Jefferson County planning area as reported in the National Centers for Environmental Information (NCEI). Historical events are shown in Table 14-5. A total of 5 reported historical drought events, with 3 unique drought periods that have impacted the Jefferson County planning area between 1996 through 2021 (Summary Table 14-6).

Historical drought information shows drought activity across a multi-county forecast area for each event, the appropriate percentage of the total property and crop damage reported for the entire forecast area has been allocated to each county impacted by the event. Historical drought data for all participating jurisdictions in the Jefferson County planning area are provided on a county-wide basis per the NCEI database. The SETRPC, Lower Neches Valley Authority, Port of Beaumont Navigation District, and the Port of Port Arthur Navigation District did not report any historical damages as a result of drought.

Table 14-4. Historical Drought Years, 1996-2021[3]

DROUGHT YEAR
1996
1998
2000
3 unique events

Table 14-5. Historical Drought Events, 1996-2021

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	5/1/1996	0	0	$0	$0
Jefferson County	5/20/1998	0	0	$0	$0
Jefferson County	6/1/1998	0	0	$0	$0
Jefferson County	7/1/1998	0	0	$0	$0
Jefferson County	2/1/2000	0	0	$0	$0

[3] Historical data is reported from January 1996 through December 2021.

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
TOTALS		0	0	$0	$0

Table 14-6. Historical Drought Events Summary, 1996-2021

JURISDICTION	NUMBER of EVENTS	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Jefferson County	3	0	0	$0	$0

Based on the historical drought events for the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, none of the reported drought events have occurred since the 2017 Plan.

SIGNIFICANT EVENTS

May 1996 – Jefferson County

Rainfall totals from January through May averaged 10 to 15 inches below normal. The main areas affected include farming and fire protection. Crop damage in neighboring counties exceeded 1 million dollars. Drought conditions continue across southeast Texas through May.

May - July 1998 – Jefferson County

Drought conditions began by mid-May, as southeast Texans had gone over 6 weeks without any significant rainfall. By the end of May, many locations had seen less than 0.10 inches of rain for the month. This was the start of a significant impact on agriculture and forestry resources. A mild to moderate drought continued across southeast Texas in the month of June. Only 2 days provided any relief from the dry weather, June 5 and June 26, 1998. Many places recorded less than 2 inches of rain for the entire month of June. Crop losses continued to mount, primarily in the rice business, as well as forestry resources.

February 2000 – Jefferson County

The month of February was one of the 5 driest Februarys on record across southeast Texas. Less than 1 inch of rain fell across the entire region. The 2-month total for January and February 2000 was the second driest on record for the neighboring Beaumont/Port Arthur area, with less than 2.5 inches of rainfall.

PROBABILITY OF FUTURE EVENTS

Based on available records of historic events, there have been 3 extended time periods of drought (ranging in length from approximately 30 days to over 90 days) within a 26-year reporting period, which provides a probability of one event every five years. This frequency supports an “Occasional” probability of future events.

VULNERABILITY AND IMPACT

Loss estimates were based on 26 years of statistical data from the NCEI. Reported events in the planning area, including the SETRPC and all participating jurisdictions and special districts, have resulted in negligible damages. Table 14-7 shows annualized exposure.

Table 14-7. Potential Annualized Losses for Jefferson County

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Jefferson County	$0	$0

Drought impacts large areas and crosses jurisdictional boundaries. All existing and future buildings, facilities, and populations are exposed to this hazard and could potentially be impacted. However, drought impacts are mostly experienced in water shortages and crop/livestock losses on agricultural lands and typically have no impact on buildings.

In terms of vulnerability, population, agriculture, property, socioeconomics, and environment are all vulnerable to drought in the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts. Typical demand can deplete water resources during extreme drought conditions. As resources are depleted, potable water is in short supply and overall water quality can suffer, elevating health concerns for all residents but especially vulnerable populations – typically children, the elderly, the ill, and those living below the poverty level. In addition, potable water is used for drinking, sanitation, patient care, sterilization, equipment, heating and cooling systems, and many other essential functions in medical facilities.

The average person will survive only a few days without potable water, and this timeframe can be drastically shortened for those people with more fragile health – typically children, the elderly, and the ill. Population over 65 in the Jefferson County planning area is estimated at 14.4% of the total population, and children under the age of 5 are estimated at 7.0% or an estimated total of 54,055 potentially vulnerable residents in the planning area based on age. In addition, an estimated 18.0% of the planning area population live below the poverty level (Table 14-8) which may contribute to overall health impacts of a drought.

Table 14-8. Populations at Greater Risk by Jurisdiction

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5	POPULATION BELOW POVERTY LEVEL
Jefferson County	36,446	17,609	45,564
City of Beaumont	17,689	8,790	22,174
City of Bevil Oaks	241	68	44
City of China	285	22	114
City of Groves	2,790	1,014	2,159
City of Nederland	2,702	1,100	1,491
City of Nome	166	20	23
City of Port Arthur	7,002	4,412	14,606
City of Port Neches	1,984	789	1,247
City of Taylor Landing	96	7	0

The population is also vulnerable to food shortages when drought conditions exist, and potable water is in short supply. Potable water is used for drinking, sanitation, patient care, sterilization, equipment, heating and cooling systems, and many other essential functions in medical facilities. All residents in the Jefferson County planning area could be adversely affected by drought conditions, which could limit water supplies and present health threats. During summer drought, or hot and dry conditions, elderly persons, small children, infants and the chronically ill who do not have adequate cooling units in their homes may become more vulnerable to injury and/or death. It is noted that participating special districts do not have specific populations vulnerable to drought.

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

Habitat damage is a vulnerability of the environment during periods of drought for both aquatic and terrestrial species. The environment also becomes vulnerable during periods of extreme or prolonged drought due to severe erosion and land degradation.

Impact of droughts experienced in the Jefferson County planning area, including the SETRPC and all participating jurisdictions and special districts, has resulted in no injuries or fatalities supporting a “Limited” severity of impact meaning injuries and/or illnesses are treatable with first aid, shutdown of facilities and services for 24 hours or less, and less than 10% of property is destroyed or with major damage. Annualized loss over the 26-year reporting period in Jefferson County is considered negligible.

ASSESSMENT OF IMPACTS

The Drought Impact Reporter was developed in 2005 by the University of Nebraska-Lincoln to provide a national database of drought impacts. Droughts can have an impact on: the agriculture; business and industry; energy; fire; plants and wildlife; relief, response, and restrictions; society and public health; tourism and recreation; and water supply and quality. The reports are submitted from individuals from Federal, State, and local agencies, as well as the general public. Table 14-9 lists the drought impacts to Jefferson County from 2005 to 2021 based on reports received by the Drought Impact Reporter.

Table 14-9. Drought Impacts, 2005-2021

DROUGHT IMPACTS 2005-2021	
Agriculture	46
Business & Industry	3
Energy	1
Fire	10
Plants & Wildlife	34
Relief, Response & Restrictions	14

SECTION 14: DROUGHT

DROUGHT IMPACTS 2005-2021	
Society & Public Health	5
Tourism & Recreation	1
Water Supply & Quality	11

Drought has the potential to impact people in the Jefferson County planning area. While it is rare that drought, in and of itself, leads to a direct risk to the health and safety of people in the U.S., severe water shortages could result in inadequate supply for human needs. The impact of climate change could produce longer, more severe droughts, exacerbating the current drought impacts. Worsening drought conditions can be frequently associated with a variety of impacts, including:

- The number of health-related low-flow issues (e.g., diminished sewage flows, increased pollution concentrations, reduced firefighting capacity, and cross-connection contamination) will increase as the drought intensifies.
- Public safety from forest/range/wildfires will increase as water availability and/or pressure decreases.
- Respiratory ailments may increase as the air quality decreases.
- There may be an increase in disease due to wildlife concentrations (e.g., rabies, Rocky Mountain spotted fever, Lyme disease).
- Jurisdictions and residents may disagree over water use/water rights, creating conflict.
- Political conflicts may increase between municipalities, counties, states, and regions.
- Water management conflicts may arise between competing interests.
- Increased law enforcement activities may be required to enforce water restrictions.
- Severe water shortages could result in inadequate supply for human needs as well as lower quality of water for consumption.
- Firefighters may have limited water resources to aid in firefighting and suppression activities, increasing risk to lives and property.
- During drought there is an increased risk for wildfires and dust storms.
- The community may need increased operational costs to enforce water restriction or rationing.
- Prolonged drought can lead to increases in illness and disease related to drought.
- Utility providers can see decreases in revenue as water supplies diminish.
- Utilities providers may cut back energy generation and service to their customers to prioritize critical service needs.
- Hydroelectric power generation facilities and infrastructure would have significantly diminished generation capability. Dams simply cannot produce as much electricity from low water levels as they can from high water levels.
- Fish and wildlife food and habitat will be reduced or degraded over time during a drought and disease will increase, especially for aquatic life.
- Wildlife will move to more sustainable locations creating higher concentrations of wildlife in smaller areas, increasing vulnerability, and further depleting limited natural resources.
- Severe and prolonged drought can result in the reduction of a species or cause the extinction of a species altogether.

- Plant life will suffer from long-term drought. Wind and erosion will also pose a threat to plant life as soil quality will decline.
- Dry and dead vegetation will increase the risk of wildfire.
- Drought poses a significant risk to annual and perennial crop production and overall crop quality leading to higher food costs.
- Drought related declines in production may lead to an increase in unemployment.
- Drought may limit livestock grazing resulting in decreased livestock weight, potential increased livestock mortality, and increased cost for feed.
- Negatively impacted water suppliers may face increased costs resulting from the transport water or develop supplemental water resources.
- Long term drought may negatively impact future economic development.

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

SECTION 15: COASTAL EROSION

Hazard Description 1
Location 1
Extent 2
Historical Occurrences 4
Probability of Future Events 4
Vulnerability and Impact 4
Assessment of Impacts 5

HAZARD DESCRIPTION

Coastal erosion is the wearing away of land and loss of beach, shoreline, or dune material because of natural coastal processes or manmade influences. Erosion is the process by which large storms, flooding, strong wave action, sea level rise, and human activities wear away beaches and bluffs along coastlines. All beaches are affected by storms and other natural events that cause erosion; however, the extent and severity of the problem differs in different parts of the country. The two major erosion mechanisms are wind and water. Wind that blows across sparsely vegetated or disturbed lands can cause erosion by picking up soil, carrying it through the air, and displacing it in another place. Water erosion occurs over land, and in streams and channels. Major storms can cause coastal erosion from the combination of high winds and heavy surf and storm surge. Human interactions, such as construction and development in coastal and riparian regions, can also exacerbate erosion.

While coastal erosion affects all regions of the United States, erosion rates and potential impacts are highly localized. Average coastline recession rates of 25 feet per year are not uncommon on some barrier islands in the Southeast. Texas has one of the longest coastlines in America coupled with some of the highest rates of coastal erosion in the nation. Sixty-four percent of the Texas coast is eroding at an average of 6 feet per year, with an overall average rate of 4.1 feet per year for the 367 miles of Texas coast, according to the Texas General Land Office. However, some locations are losing more than 55 feet per year.[1] Coastal erosion can have long-term economic and social consequences.

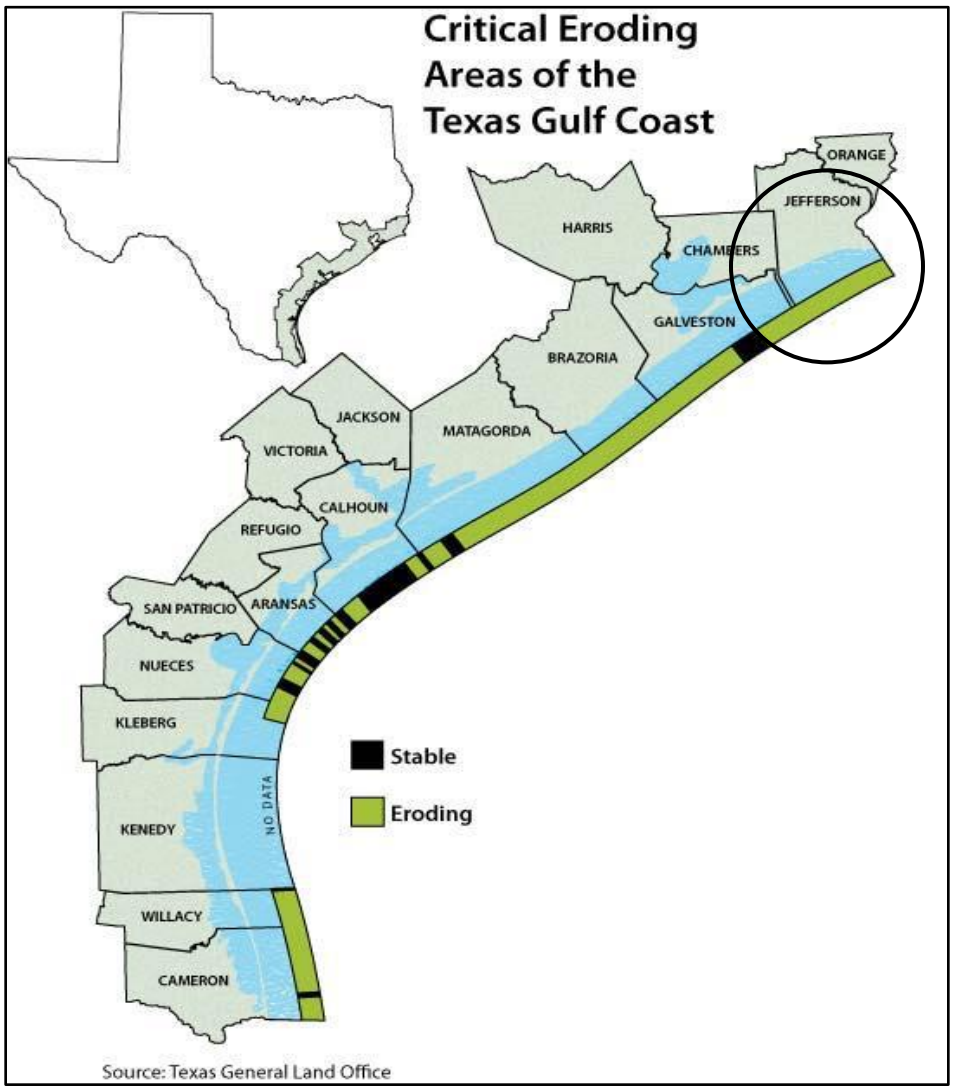
LOCATION

While the Jefferson County planning area is considered a coastal community, only one of the participating jurisdictions is located directly on the coast and is subject to coastal erosion. The McFaddin National Wildlife Refuge is located in unincorporated Jefferson County and expands the entire coastline of the county. No other participating jurisdictions or special districts, including the SETRPC, are subject to coastal erosion. The wildlife refuge is vulnerable to threats directly related to coastal erosion resulting from extreme hazards such as hurricane and tropical storm

[1] Coastal Erosion Planning & Response Act (CEPRA), A Report to the 86th Legislature, Texas General Land Office, 2019

events. The most common time for such extreme storm events to impact the planning area is from June to November, the official Atlantic U.S. hurricane season. The waterfront community of Port Arthur is located on the mainland and protected by the barrier island system along the gulf. As such, this community is not subject to coastal erosion.

Figure 15-1. Critical Eroding Areas of the Texas Gulf Shoreline



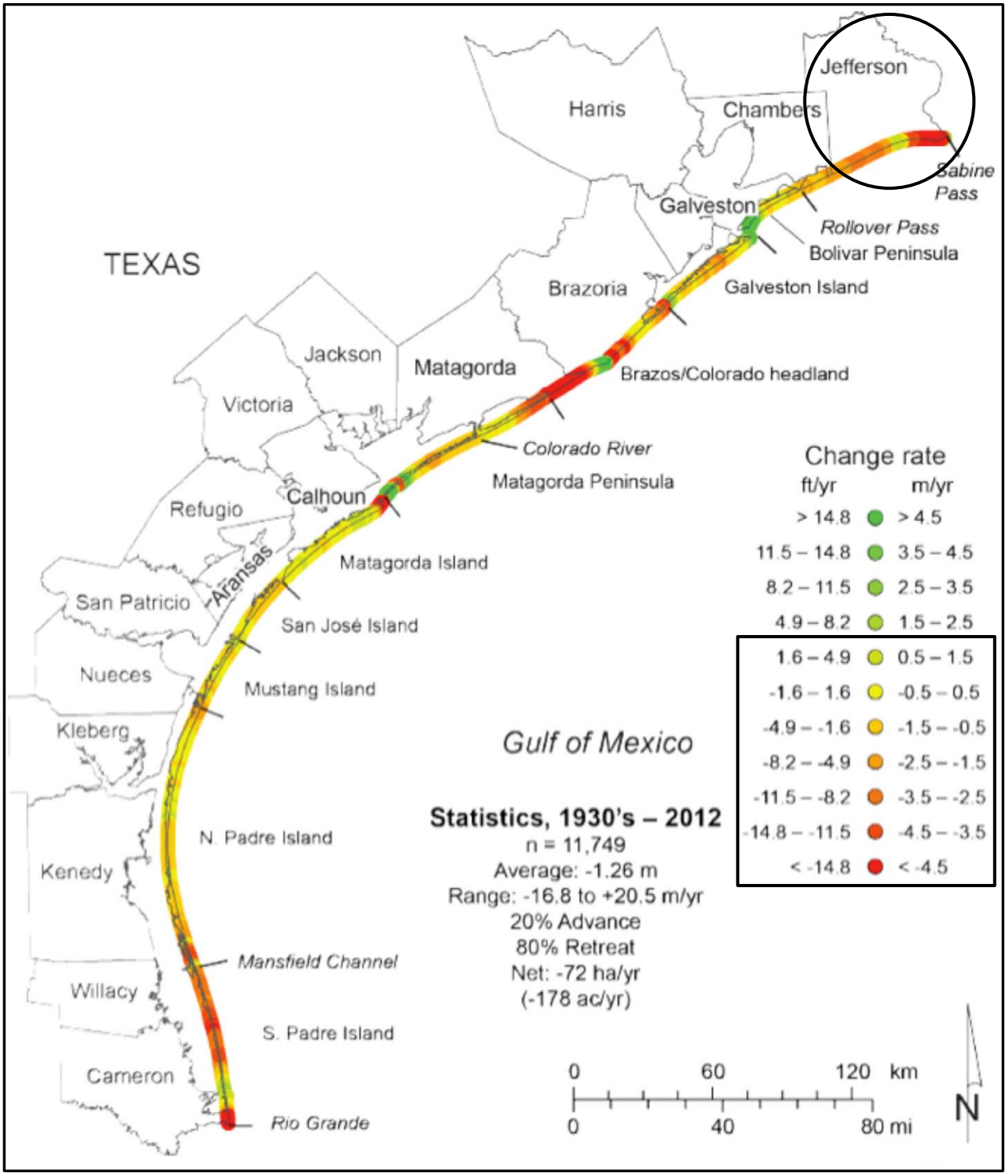
EXTENT

Some of the highest rates of Gulf shoreline erosion in Texas occur in Jefferson County.[2] The McFaddin National Wildlife Refuge is vulnerable to the effects of coastal erosion from the Gulf of Mexico. The island has no stable (vegetated) dunes in the area located as close to the mean low water (MLW) line. Through experience it has proven that barrier island development imposes risks on private property owners, investors, and to taxpayers statewide. The average rate of retreat or extent of coastal erosion is estimated between 4.9 and more than 14.8 feet per year for Jefferson County. The highest erosion rate occurs at the eastern most portion of the wildlife refuge near the

[2] *Texas Coastal Resiliency Master Plan*, March 2017, Texas General Land Office

Sabine Pass. According to the latest CEPRA report, 80.6% of the Jefferson County shoreline is eroding, the highest percent along the Texas coast.

Figure 15-2. Critical Eroding Areas, Unincorporated Jefferson County[3]



[3] *Coastal Erosion Planning and Response Act, A Report to the 84th Texas Legislature*, Texas General Land Office, 2015

HISTORICAL OCCURRENCES

Previous occurrences for coastal erosion are not reported by the NCEI. In addition, local governments do not typically have the capabilities to monitor or report statistical data for coastal erosion for a specific event. Coastal erosion is typically measured as an average annual shoreline change rate in linear feet. While the Jefferson County Planning area does not record historical coastal erosion rates per event, the 2013 Texas Hazard Mitigation Plan depicts coastal erosion occurrences for the Jefferson County Planning Area, including unincorporated areas along the coast (Table 15-1).

Table 15-1. Historical Coastal Erosion Rates, Jefferson County[4]

JURISDICTION	GULF SHORELINE	BAY SHORELINE	CRITICAL EROSION	EROSION RATES
Jefferson County	168,960 ft.	327,360 ft.	142,560 ft.	-2 to -50 ft./yr.

PROBABILITY OF FUTURE EVENTS

Due to data limitations, the planning team relied on available studies and research as well as the Texas State Hazard Mitigation Plan to determine coastal erosion probability. According to Texas General Land Office (GLO) the average coastal erosion rate for unincorporated Jefferson County is from 2 to more than 50 feet per year with an average of approximately 13 feet per year. This rate supports a highly likely probability of future events, with an event probable in the next year.

VULNERABILITY AND IMPACT

The unincorporated area of Jefferson County along the coast is continuously subject to coastal erosion, as all barrier islands are. While usually a slow-evolving hazard, coastal erosion presents a serious threat to the McFaddin National Wildlife Refuge. Any loss of land equates to an increase in the planning areas vulnerability to hurricanes, coastal storms and above-average tidal events. When the land lost is beach that provides valuable protections from these coastal storm events, that loss results in greater vulnerability.

The wildlife refuge has a total area of 58,861 acres and is primarily tidally influenced, creating estuarine environments important to a variety of fish, shrimp and crabs, as well as other life forms higher on the food chain that feed on such organisms. These estuaries are productive communities and are vital to the life cycle of many marine species. Land in the refuge is vulnerable to coastal erosion, particularly on the eastern portions near Sabine Pass) which in turn threatens fish and wildlife in the area due to loss of habitat. There are no critical structures or infrastructure vulnerable to coastal erosion in the planning area.

The potential severity of impact from coastal erosion for the Jefferson County planning area is classified as limited, meaning minor quality of life is lost and shutdown of critical facilities; services are loss less than 24 hours; and less than 10 percent of property would be destroyed or have major damage.

[4] State of Texas Mitigation Plan Update 2013 Page 126 as reported by the Texas General Land Office

SECTION 15: COASTAL EROSION

ASSESSMENT OF IMPACTS

Coastal erosion events have the potential to pose a significant risk to structures, infrastructure and the local economy. Impacts to the planning area can include:

- Fish and wildlife habitat can be damaged or destroyed. Extreme erosion, typically resulting from a significant storm event, may result in significant marine and wildlife losses.
- Damaged bridges in and out of the wildlife refuge areas could prevent or delay emergency response, strand or prevent entry of tourists, commuters, supply delivery, or goods and services for extended periods.
- Coastal erosion may dramatically reduce tourism negatively impacting the economy.
- Economic disruption negatively impacts the programs and services provided by the community due to short and long term loss in revenue.
- Some businesses not directly damaged by the coastal erosion may be negatively impacted while access roads or camping areas are repaired.

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

SECTION 16: MITIGATION STRATEGY

Mitigation Goals 1
Goal 1 1
Goal 2 1
Goal 3 2
Goal 4 2
Goal 5 2
Goal 6 2

MITIGATION GOALS

Based on the results of the risk and capability assessments, the Planning Team developed and prioritized the mitigation strategy. This involved utilizing the results of both assessments and reviewing the goals and objectives that were included in the previous 2017 Plan Update. At the Mitigation Workshop in January 2022, Planning Team members reviewed the mitigation strategy from the previous 2017 Plan Update. The consensus among all members present was that the strategy developed for the 2017 Plan did not require changes, as it identified overall improvements to be sought in the Plan Update. However, the order and priority of the goals and objectives were reorganized.

GOAL 1

Protect public health and safety.

OBJECTIVE 1.1

Advise the public about health and safety precautions to guard against injury and loss of life from hazards.

OBJECTIVE 1.2

Maximize utilization of the latest technology to provide adequate warning, communication, and mitigation of hazard events.

OBJECTIVE 1.3

Reduce the danger to, and enhance protection of, high risk areas during hazard events.

OBJECTIVE 1.4

Protect critical facilities and services.

GOAL 2

Build and support local capacity and commitment to continuously become less vulnerable to hazards.

OBJECTIVE 2.1

Build and support local partnerships to continuously become less vulnerable to hazards.

OBJECTIVE 2.2

Build a cadre of committed volunteers to safeguard the community before, during, and after a disaster.

OBJECTIVE 2.3
Build hazard mitigation concerns into county, city, and special district planning and budgeting processes.

GOAL 3
Increase public understanding, support, and demand for hazard mitigation.

OBJECTIVE 3.1
Heighten public awareness regarding the full range of natural and man-made hazards the public may face.

OBJECTIVE 3.2
Educate the public on actions they can take to prevent or reduce the loss of life or property from all hazards and increase individual efforts to respond to potential hazards.

OBJECTIVE 3.3
Publicize and encourage the adoption of appropriate hazard mitigation measures.

GOAL 4
Protect new and existing properties.

OBJECTIVE 4.1
Reduce repetitive losses to the National Flood Insurance Program (NFIP).

OBJECTIVE 4.2
Use the most cost-effective approach to protect existing buildings and public infrastructure from hazards.

OBJECTIVE 4.3
Enact and enforce regulatory measures to ensure that future development will not put people in harm's way or increase threats to existing properties.

GOAL 5
Maximize the resources for investment in hazard mitigation.

OBJECTIVE 5.1
Maximize the use of outside sources of funding.

OBJECTIVE 5.2
Maximize participation of property owners in protecting their properties.

OBJECTIVE 5.3
Maximize insurance coverage to provide financial protection against hazard events.

OBJECTIVE 5.4
Prioritize mitigation projects, based on cost-effectiveness and sites facing the greatest threat to life, health, and property.

GOAL 6
Promote growth in a sustainable manner.

OBJECTIVE 6.1
Incorporate hazard mitigation activities into long-range planning and development activities.

OBJECTIVE 6.2

Promote beneficial uses of hazardous areas while expanding open space and recreational opportunities.

OBJECTIVE 6.3

Utilize regulatory approaches to prevent creation of future hazards to life and property.

SECTION 17: PREVIOUS ACTIONS

Summary 1
Jefferson County County-Wide 2
Jefferson County 22
City of Beaumont 36
City of Bevil Oaks 84
City of China 99
City of Groves 121
City of Nederland 144
City of Nome 171
City of Port Arthur 192
City of Port Neches 229
South East Texas Regional Planning Commission (SETRPC) 251

SUMMARY

Planning Team members were given copies of the previous mitigation actions submitted in the 2017 Plan at the mitigation workshop. Participating jurisdictions within Jefferson County reviewed the previous actions and provided an analysis as to whether the action had been completed, should be deferred as an ongoing activity, or be deleted from the Plan Update. The actions from the 2017 Plan are included in this section as they were written in 2017, with the exception of the "2022 Analysis" section. The following jurisdictions were not participants within the last plan, therefore there are no past actions for their review: City of Taylor Landing, Lower Neches Valley Authority, Port of Beaumont Navigation District, and Port of Port Arthur Navigation District.

JEFFERSON COUNTY COUNTY-WIDE

		Jefferson County-Wide– Action #1
	Proposed Action:	Storm harden/retrofit critical facilities throughout Jefferson County. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.
	BACKGROUND INFORMATION	
	Site and Location:	Critical facilities in Jefferson County and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facilities from damages and ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and Local Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. City of Port Arthur suggested update estimated cost to $5,000,000.

SECTION 17: PREVIOUS ACTIONS

		Jefferson County-Wide– Action #2
	Proposed Action:	Acquire/demolish flood-prone properties with an emphasis on Repetitive and Severe Repetitive Loss properties.
	BACKGROUND INFORMATION	
	Site and Location:	Flood-prone structures in Jefferson County and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate flood damages to flood-prone structures. Reduce burden on emergency services during flood events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	County and City Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Jefferson County-Wide– Action #3
	Proposed Action:	Storm harden/retrofit regional communication sites and infrastructure throughout Jefferson County.
	BACKGROUND INFORMATION	
	Site and Location:	Regional communication sites and infrastructure in Jefferson County and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical communication infrastructure from damages and ensure continuity of emergency services and communications.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	County and City Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Jefferson County-Wide– Action #4
	Proposed Action:	Elevate new and existing flood-prone structures and infrastructure throughout Jefferson County.
	BACKGROUND INFORMATION	
	Site and Location:	Flood-prone structures in Jefferson County and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to flood-prone structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	County and City Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinance, Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Jefferson County-Wide– Action #5
	Proposed Action:	Elevate or upgrade bridges, culverts and other crossings throughout Jefferson County to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.
	BACKGROUND INFORMATION	
	Site and Location:	Undersized bridges and culverts in Jefferson County and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to infrastructure and surrounding structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Public Works, TXDOT
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Jefferson County-Wide– Action #6
	Proposed Action:	Pursue funding and implement drainage improvements throughout Jefferson County. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout Jefferson County and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to infrastructure and surrounding structures as a result of undersized drainage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Public Works and Engineering, Drainage District
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Jefferson County-Wide– Action #7
	Proposed Action:	Coordinate with federal, state, and local partners to provide training opportunities for first responders, including but not limited to HAXMAT, terrorism, Flood, Hurricane, Tornado, and other natural hazards as appropriate.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of life through preparedness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Tornado, Hail, Lightning, Wildfire, Extreme Heat, Winter Storm, Thunderstorm Wind, Hazardous Material, Terrorism
Effect on new/existing buildings:	Reduce risk to existing structures through improved response
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM, TDEM
Lead Agency/Department Responsible:	County and City Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update. City of Nome indicated that ESD was informed about training at A&M.

SECTION 17: PREVIOUS ACTIONS

		Jefferson County-Wide– Action #8
	Proposed Action:	Secure, bury, or otherwise harden exposed or vulnerable pipelines including water and sewer.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout Jefferson County, including all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of pipeline failure through mitigation of exposed or vulnerable lines.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Hazardous Material, Terrorism
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Jefferson County-Wide– Action #9
	Proposed Action:	Purchase and install backup generator power systems with permanent hook-ups for critical facilities including lift stations, water plants, police stations, EMS, fire stations, and other first responder facilities throughout Jefferson County.
	BACKGROUND INFORMATION	
	Site and Location:	Critical facilities as indicated above in Jefferson County and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facilities from loss of power and ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1-$2 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	County and City Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County-Wide– Action #10
	Proposed Action:	Construct or upgrade existing detention/ retention ponds where appropriate to collect storm water to reduce flooding.
	BACKGROUND INFORMATION	
	Site and Location:	Various Locations TBD throughout Jefferson County and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Hurricane
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Public Works, Drainage District
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. City of Port Arthur suggested update estimated cost to $100,000,000.

SECTION 17: PREVIOUS ACTIONS

		Jefferson County-Wide– Action #11
	Proposed Action:	Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout Jefferson County and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents in Jefferson County.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2-$3 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	County and City Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Jefferson County-Wide– Action #12
	Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source throughout Jefferson County.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Lifesaving water alternate source and localized flood reduction.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Thunderstorm Wind, Hurricane
Effect on new/existing buildings:	Reduce damages to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$750,000 - $2,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	County and City Public Works, Drainage District
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan, Water Plan

2022 ANALYSIS:
Defer to Plan Update. City of Port Arthur suggested update estimated cost to $20,000,000.

SECTION 17: PREVIOUS ACTIONS

		Jefferson County-Wide– Action #13
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Bury utility lines underground • Provide frangible links/break away connection on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increase the easement area/clearance of utility lines/poles from tree lines
	BACKGROUND INFORMATION	
	Site and Location:	Utility lines throughout Jefferson County and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	Utility Fees, Federal Grants
Lead Agency/Department Responsible:	County and City Public Works, Entergy
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County-Wide– Action #14
	Proposed Action:	Develop and construct multi-jurisdictional EOC.
	BACKGROUND INFORMATION	
	Site and Location:	Site TBD
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Improve coordinated emergency response and ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail, Hazardous Materials, Terrorism
Effect on new/existing buildings:	Reduce risk to new structure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2 Million
Potential Funding Sources:	HMGP, PDM, EMPG, Homeland Security Grants
Lead Agency/Department Responsible:	County and City Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Jefferson County-Wide– Action #15
	Proposed Action:	Provide the public with educational brochures for mitigating damages, planning ahead for disasters and reduce the risk of injury during events including: mitigation measures such as window film, elevated appliances, surge protectors, insulating pipes, drought tolerant landscaping. Education on when to take cover, when to evacuate, locations of local safe rooms, signs of dehydration, and proper storage of flammable materials, or other appropriate materials to mitigate damages and health hazards.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County – County-wide and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and structures through education and awareness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Drought
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMGP
Lead Agency/Department Responsible:	County and City Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County-Wide– Action #16
	Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations (TBD) in Jefferson County and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to vulnerable populations during extreme heat events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Administration
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Jefferson County-Wide– Action #17
	Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.
	BACKGROUND INFORMATION	
	Site and Location:	Wildland Urban Interface of Jefferson County and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to structures in or near the WUI.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Fire Department
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County-Wide– Action #18
	Proposed Action:	Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County – County-wide and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risks associated with drought through reduction in water usage during times of drought.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Administration
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinances

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County-Wide– Action #19
	Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners from voluntary removal of hazardous trees and limbs on private property • Coordinate contracts to remove and/or trim trees that endanger structures, infrastructures, and vital roadways
	BACKGROUND INFORMATION	
	Site and Location:	Trees near power lines throughout Jefferson County and all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and potential damages to structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	County and City Administration
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County-Wide– Action #20
	Proposed Action:	Develop and implement a public education program to educate residents of the risk of dam failure, actions to reduce risk, and evacuation routes and procedures for residents downstream of the Sam Rayburn Dam and the Toleda Bend Dam in the event of a dam failure.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide, including all jurisdictions
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of life
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Prevent or minimize flood damage to structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000 - $5,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Jefferson County OEM
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

JEFFERSON COUNTY

		Jefferson County– Action #1
	Proposed Action:	To build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters of last resort. This is in conjunction with the Texas Safe Shelter Initiative.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in Jefferson County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in Port Arthur.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.6 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	Jefferson County Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County– Action #2
	Proposed Action:	Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in Jefferson County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents in Jefferson County.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	Jefferson County Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		Jefferson County– Action #3
	Proposed Action:	Public structure strengthening for Jefferson County Courthouse/S.O./Jail. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County Courthouse/S.O./Jail
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect structure from damages, protect lives of staff, inmates and occupants, and ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Jefferson County Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County– Action #4
	Proposed Action:	Implement flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout Jefferson County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of storm surge damages to structures and infrastructure.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Coastal Erosion
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50-$60 Million
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	Jefferson County Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County– Action #5
	Proposed Action:	Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise, and other sources of salt water intrusion.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout Jefferson County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Coastal Erosion
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1-$2 Million
Potential Funding Sources:	HMGP, PDM, USACE, SETRPC
Lead Agency/Department Responsible:	Jefferson County, SETRPC
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County– Action #6
	Proposed Action:	Restore sand dunes to protect inland resources during storm surge events.
	BACKGROUND INFORMATION	
	Site and Location:	Coastal locations throughout Jefferson County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through fortified/restored dune system.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural System Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Coastal Erosion
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$60-$100 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Jefferson County
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Dune Restoration and Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County– Action #7
	Proposed Action:	Identify and pursue any mitigation activities that would aid/enhance evacuations throughout the region.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Life safety benefits through preparedness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Tornado, Thunderstorm Wind, Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $500,000
Potential Funding Sources:	HMGP, PDM, local operating budget
Lead Agency/Department Responsible:	Jefferson County Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County– Action #8
	Proposed Action:	Coordinate and work with the Lower Neches Valley Authority in order to use an LNVA sand pit as a potential freshwater reservoir for all areas south of I- 10.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County south of I-10
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Lifesaving water alternate source and localized flood reduction.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Thunderstorm Wind, Hurricane
Effect on new/existing buildings:	Reduce damages to existing and future structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$75,000 - $200,000
Potential Funding Sources:	HMGP, PDM, local operating budget, LNVA
Lead Agency/Department Responsible:	Jefferson County
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan, Water Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County– Action #9
	Proposed Action:	Flood proof the Jefferson County courthouse elevators by installing a pump system.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County Courthouse
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect elevator from flood damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Jefferson County Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County– Action #10
	Proposed Action:	Retrofit the LNVA pumping system, which includes a number of pump stations, in order to increase capacity and allow stand-alone service when the Neches River is contaminated or a failure of the primary system occurs.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County LNVA pumping system
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Increase capacity and reduce risk of inundation and/ or contamination. Ensure continuity of services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,680,000
Potential Funding Sources:	HMGP, PDM, LNVA operating budgets
Lead Agency/Department Responsible:	Jefferson County Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County– Action #11
	Proposed Action:	Retrofit the primary diversion point and pumping system in order for the LNVA to fully control isolation and selection of the source of the water which flows into the pumping station and isolate either the Neches River or Pine Island Bayou should contamination occur.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County LNVA pumping system
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of inundation and/or contamination. Ensure continuity of services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$562,000
Potential Funding Sources:	HMGP, PDM, LNVA operating budgets
Lead Agency/Department Responsible:	Jefferson County Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County– Action #12
	Proposed Action:	Convert an existing 56-acre excavated dirt pit into a localized freshwater storage impoundment which would be used to support water to municipal water plants and industrial users in the Nederland, Port Neches, and Groves area of Jefferson County in the event of an interruption of canal service to the region.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Redundant water source and improved storm water management.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,468,000
Potential Funding Sources:	HMGP, PDM, LNVA operating budgets
Lead Agency/Department Responsible:	Jefferson County Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County– Action #13
	Proposed Action:	Enhance existing structures and construct additional water control features to allow the LNVA to isolate segments of canals in the event of contamination or localized bank failures in order to conserve and protect unaffected waters and continue deliveries to as many customers as possible while a clean-up or repair is addressed, rather than having a single event affect all customers of the entire system.
	BACKGROUND INFORMATION	
	Site and Location:	LNVA System
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought, Hazardous Materials, Hurricane
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$375,000
Potential Funding Sources:	HMGP, PDM, LNVA operating budgets
Lead Agency/Department Responsible:	Jefferson County Public Works, LNVA
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

		Jefferson County– Action #14
	Proposed Action:	Adopt and implement land use restrictions in high risk coastal erosion areas.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County coastal areas
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce erosion and impacts through building restrictions
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Coastal Erosion
Effect on new/existing buildings:	Reduce risk to future structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$2,000
Potential Funding Sources:	Local Funds
Lead Agency/Department Responsible:	Jefferson County Administration
Implementation Schedule:	Within 36-48 months of plan adoption pending funding
Incorporation into Existing Plans:	Local Ordinance

2022 ANALYSIS:
Defer to Plan Update.

CITY OF BEAUMONT

		City of Beaumont– Action #1
	Proposed Action:	Enhance GIS capabilities to develop and maintain a database and identify concentrations of at-risk structures to track community vulnerability to flooding.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood risk to structures through understanding risk and vulnerability.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Floodplain Management
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. OEM pending feedback from GIS department on status and any amendments required for plan update.

		City of Beaumont– Action #2
	Proposed Action:	Acquire GIS hazard mapping online software of flood prone areas for residents and design professionals.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood risk to structures and residents and developers through understanding risk and vulnerability.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Floodplain Management
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update. OEM pending feedback from GIS department on status and any amendments required for plan update.

		City of Beaumont– Action #3
	Proposed Action:	Enhance Damage Assessment capabilities to develop and maintain a database and identify concentrations of at-risk structures.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage to structures through understanding risk and vulnerability.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Tornado, Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Beaumont– Action #4
	Proposed Action:	Enhance Damage Assessment trainings to improve public outreach, speed recovery, enhance damage assessments, and reduce risk to first responders and building inspectors.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury and speed recovery after an event.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Outreach - Response

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Lightning, Hurricane, Hail, Thunderstorm Wind, Wildfire, Winter Storm
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Building Inspectors
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update. Proposed action will need to be updated to reflect training needs with newly acquired software.

	City of Beaumont– Action #5
Proposed Action:	Retrofit existing city structures or build new structure(s) (including a dome or domes) in this jurisdiction that can withstand 200 mile per hour winds and act as shelters of last resort. This may be in conjunction with the Texas Safe Shelter Initiative.
BACKGROUND INFORMATION	
Site and Location:	Various locations in Beaumont
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in Beaumont.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Lacking available funds.

		City of Beaumont– Action #6
	Proposed Action:	Storm harden/retrofit critical facilities throughout Beaumont. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations, police headquarters, EMS stations 1 and 2, and other critical infrastructure facilities), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.
	BACKGROUND INFORMATION	
	Site and Location:	Critical facilities in Beaumont
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facilities from damages and ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$7.4 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Action will need to be amended as action should be broken into 6 sub actions. The flood-proofing of electrical control building is in progress, and expected to be completed prior to 2021 HMAP updated being finalized. Funded through grant funds.

	City of Beaumont– Action #7
Proposed Action:	Harden the City of Beaumont Police headquarters at 255 College. Actions include but are not limited to storm shutters, window film, surge protectors, roof straps, hail and fire resistant roofing material, etc. Install generator with permanent hook-ups at the Emergency Operations Center at 700 Orleans.
BACKGROUND INFORMATION	
Site and Location:	EOC and Police Headquarters
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facilities from damages and ensure continuity of emergency services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Action has been into 3 phases. Phase 1 has been completed. Phase 2 will be completed with grants funds and a city match prior to the completion of the 2021 HMAP plan. Phase 3 will be added to the 2021 HMAP as an independent action item.

		City of Beaumont– Action #8
	Proposed Action:	Wind harden the South Radio Tower at 1550 Pine and Fire Headquarters at 400 Walnut. Actions include but are not limited to roof retrofits, installing storm shutters/screens, installing generators with permanent hook-ups, and hardening of bay doors (specifically fire stations).
	BACKGROUND INFORMATION	
	Site and Location:	Various locations as noted above
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facilities from damages and ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3.75 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Action description will need to be revised to include 1st floor of the Fire headquarters.

		City of Beaumont– Action #9
	Proposed Action:	Wind harden Baptist Hospital, at 3080 College, and Christus St. Elizabeth Hospital at 2830 Calder. Actions include but are not limited to roof retrofits, installing storm shutters/screens, installing generators with permanent hook-ups, and hardening of bay doors (specifically maintenance and facility areas).
	BACKGROUND INFORMATION	
	Site and Location:	Various locations as noted above
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facilities from damages and ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$8 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Partial completion with use of Baptist Hospital budget and grants funding. Action will need to be revised and separate the two hospital requests into separate action items.

City of Beaumont– Action #10	
Proposed Action:	At Christus St. Elizabeth Hospital install backup generators with permanent hook-ups and elevate key electrical equipment (such as Switchgear and ATS).
BACKGROUND INFORMATION	
Site and Location:	St. Elizabeth Hospital
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facility from damages and ensure continuity of emergency services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$3.1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Beaumont Administration, St. Elizabeth Hospital
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Beaumont– Action #11
	Proposed Action:	Upgrade Christus St. Elizabeth Hospitals and Port of Beaumont emergency communication systems to ensure continued communication with outside sources and first responders.
	BACKGROUND INFORMATION	
	Site and Location:	St. Elizabeth Hospital and Port of Beaumont
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure communications and continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$62,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Beaumont Administration, St. Elizabeth Hospital, Port of Beaumont
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

City of Beaumont– Action #12	
Proposed Action:	Install generators and permanent hook-ups for the Beaumont Independent School District at sites including but not limited to Westbrook, Police Building, Administrative Building and the Thomas Educational Support Center which are used for sheltering and emergency operation coordination centers.
BACKGROUND INFORMATION	
Site and Location:	Beaumont ISD locations
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure continuity of emergency services and sheltering.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Flood, Winter Storm
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$650,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Administration, ISD
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Beaumont– Action #13
	Proposed Action:	Procure mobile backup generators for the Port of Beaumont. Install permanent quick connections at critical locations.
	BACKGROUND INFORMATION	
	Site and Location:	Port of Beaumont
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure continuity of services during and after events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Flood, Winter Storm
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$60,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Administration, Port of Beaumont
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Port of Beaumont SOP

2022 ANALYSIS:
Defer to Plan Update. Action description will be revised.

City of Beaumont– Action #14	
Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Bury utility lines underground • Provide frangible links/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increase the easement area/clearance of utility lines/poles from tree lines • Relocate and/or update the data communications provided to the wastewater treatment power supply station to prevent the interruption of operations and water treatment plan to prevent the interruptions of operations
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of power loss, associated damages, and line repairs, and reduce risk of loss of services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Hail Lightning, Thunderstorm Wind, Tornado
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5.5 Million
Potential Funding Sources:	HMGP, PDM, Utility Fees, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Public Works, Entergy
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Action description will be revised.

		City of Beaumont– Action #15
	Proposed Action:	Hardening Electric Grid and Communications to prevent damage to electric, phone and cable infrastructure for major roadways/ thoroughfares or access routes to critical infrastructure.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of power loss, associated damages, reduce risk of loss of services, and ensure continuity of services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Hail, Lightning, Thunderstorm Wind, Tornado
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	HMGP, PDM, Utility Fees, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Public Works, Entergy
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Beaumont– Action #16
	Proposed Action:	Pursue drainage improvements in the City of Beaumont. Projects include but are not limited to the Tyrell Park Project, Caldwood Outfall, Phelan Boulevard Drainage Project, the Cartwright/Corley Project, and the Brockman Drainage Project.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations as indicated above
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to structures and infrastructure due to inadequate drainage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Beaumont– Action #17
	Proposed Action:	Implement drainage improvements in the City of Beaumont. Projects include, but are not limited to joint Drainage District 6 and Beaumont projects and Beaumont individual projects, such as Steve's Drive project, and High School Ditch Project (which includes Seventh Street, North Street, Broadway Box projects).
	BACKGROUND INFORMATION	
	Site and Location:	Various locations as indicated above
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to structures and infrastructure due to inadequate drainage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Updates are still forthcoming.

		City of Beaumont– Action #18
	Proposed Action:	Purse drainage improvements throughout the City of Beaumont. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout the city.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to structures and infrastructure due to inadequate drainage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Phase 1 is currently in progress. Action will be revised to reflect project phases.

		City of Beaumont– Action #19
	Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source for storm control throughout the City of Beaumont.
	BACKGROUND INFORMATION	
	Site and Location:	TBD sites in Beaumont
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Localized flood reduction.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Thunderstorm Wind, Hurricane
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Action will be revised due to current grant proposal and ensuring action description reflects proposal.

		City of Beaumont– Action #20
	Proposed Action:	Complete bank stabilization project at Riverfront Park, Phase II.
	BACKGROUND INFORMATION	
	Site and Location:	Riverfront Park
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Localized flood reduction.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. In progress.

		City of Beaumont– Action #21
	Proposed Action:	Pursue building a 50 million gallon holding lagoon to store wastewater in case of power outages and plant failure, and removal of sludge build-up in the two lagoons to increase the storage capacity at the Wastewater Treatment Plant in case of power outages and plant failure.
	BACKGROUND INFORMATION	
	Site and Location:	Wastewater Treatment Plant
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Increase the storage capacity at the Wastewater Treatment Plant in case of power outages and plant failure; reduce risk of contamination.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Hail, Lightning, Winter Storm, Thunderstorm Wind, Tornado, Extreme Heat
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Wastewater management plan

2022 ANALYSIS:
Defer to Plan Update. Action will be revised due to current grant proposal and ensuring action description reflects proposal.

	City of Beaumont– Action #22
Proposed Action:	Pursue and construct alternate fresh water sources throughout the City of Beaumont. This include, but is not limited to increased capacity to maintain water pressure in case of system failures at the water treatment plant; installation of a 36" water transmission line to provide an alternate water transport method; installation of a raw water pipeline to replace the existing canal to prevent intention or natural pollution of the City's water supply; installation of new chemical feed facilities and building to safely store and use chlorine, etc.
BACKGROUND INFORMATION	
Site and Location:	Various locations throughout the City
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of potable water or inadequate water supply.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Long Term Water Plan

2022 ANALYSIS:
Defer to Plan Update. Action will be revised to reflect 2 separate actions and to be more specific in identifying critical facilities.

		City of Beaumont– Action #23
	Proposed Action:	At Baptist Hospital, install 1) an on-site filtering system for water well and new pressurized water supply system, and 2) install a Built-in Decontamination System (includes shower, curtain system, hazardous water tank, and drain) in the main facility.
	BACKGROUND INFORMATION	
	Site and Location:	Baptist Hospital
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury to residents and first responders.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hazardous Materials
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$150,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Administration, Herman Memorial Hospital
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Hospital Operations Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Beaumont– Action #24	
Proposed Action:	Retrofit the LNVA pumping system at Highway 105 to upgrade pumping capacity. This will allow the system to operate at full stand-alone service in times of contamination of water in the Neches River due to a hazard event.
BACKGROUND INFORMATION	
Site and Location:	Highway 105
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of contamination or loss of service.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hazardous Materials, Terrorism
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,680,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Public Works, LNVA
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Beaumont– Action #25
	Proposed Action:	Retrofit the primary LNVA diversion point and pumping system at 10550 Helbig Rd. to allow the LNVA to fully control, isolate, and section off the source of the water that flows into the pumping station. This would allow the LNVA to isolate either the Neches River or Pine Island Bayou should one suffer any form of contamination.
	BACKGROUND INFORMATION	
	Site and Location:	LNVA diversion point
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of contamination or loss of service.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hazardous Materials, Terrorism
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$562,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Public Works, LNVA
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Beaumont– Action #26	
Proposed Action:	Develop a database of contact information for first responders, volunteers, and vulnerable populations. This also includes a database of assisted living/nursing homes throughout the City of Beaumont or populations critically dependent on electric service.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to vulnerable populations during extreme events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Extreme Heat, Winter Storm, Tornado, Hail, Lightning, Thunderstorm Wind, Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$15,000
Potential Funding Sources:	EMPG, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Completed. Grant funding.

City of Beaumont– Action #27	
Proposed Action:	Public Awareness and Education of Vulnerable Population through creation of a database and special group in STAN (Southeast Texas Alerting Network regional emergency alerting system) to notify and educate the public of impending hazardous events.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Expedient access to and ability to communicate with those individuals, nursing homes, assisted living centers, hospitals, and others who are most at risk during extreme hazard events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Wildfire, Lightning, Hail
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000
Potential Funding Sources:	EMPG, local operating budget
Lead Agency/Department Responsible:	City of Beaumont Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Operations Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing project.

		City of Beaumont– Action #28
	Proposed Action:	Plan for the Protection of Vulnerable Populations by identifying at-risk populations and coordinating with home health agencies, medical equipment companies, local churches and neighborhood associations to assist these populations during extreme weather events. Organize strategies for protecting vulnerable populations and develop a plan to expediently activate strategies when need be.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protection of at-risk populations during extreme weather events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Wildfire Lightning
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing project.

		City of Beaumont– Action #29
	Proposed Action:	Coordinate a natural hazards public awareness campaign among agencies and the community. Efforts may include tropical storm/hurricane awareness presentations, shelter-in-place presentations, evacuation maps, floodplain maps, flood control projects, storm tracking maps, safety tips flyers, mitigation articles in local newspapers, and other such information as it relates to natural hazards. Target audiences will include schools, neighborhood watch groups, various civic groups, neighborhood associations, community groups, and industry groups. FEMA publications will also be made available in city hall libraries, municipal courts, police and fire departments, public works departments, public access TV channels, city libraries, and on the SETRPC and jurisdictional websites.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk damages as well as life safety benefits to residents through education and awareness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hurricanes, Winter Storm, Thunderstorm Wind, Tornado, Wildfire, Lightning, Hail, Drought
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	EMPG, local operating budgets, HMGP, PDM
Lead Agency/Department Responsible:	City of Beaumont Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing project.

City of Beaumont– Action #30	
Proposed Action:	Coordinate Emergency Management Plans for coastal storms/hurricane events. Specific efforts will include encouraging agencies to install and maintain back-up power at identified facilities, construct and designate emergency operations centers for disaster/ emergency operations and solicit participation in Community Emergency Response Training.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure continuity of emergency services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing project.

		City of Beaumont– Action #31
	Proposed Action:	Conduct flood insurance educational seminars for area realtors to increase their knowledge of the National Flood Insurance Program (NFIP) and the benefits to homeowners of securing flood insurance.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce potential uninsured flood losses through education.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM
Lead Agency/Department Responsible:	City of Beaumont Floodplain Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing project.

		City of Beaumont– Action #32
	Proposed Action:	Coordinate with federal, state, and local partners to provide training opportunities for first responders.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of life through education and preparedness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Tornado, Hail, Lightning, Wildfire, Extreme Heat, Winter Storm, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$15,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM, EMPG
Lead Agency/Department Responsible:	City of Beaumont Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing project.

		City of Beaumont– Action #33
	Proposed Action:	Relocations of Fire Headquarters, Fire stations 1, 2, 7 and 11 to improve neighborhood coverage in accordance with the 2005 Pietsch (ISO) study.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of life due to improved neighborhood coverage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Tornado, Hail, Lightning, Wildfire, Extreme Heat, Winter Storm, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$21,000,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM
Lead Agency/Department Responsible:	City of Beaumont Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Fire Station 1 project completed with budget and grant funds.

City of Beaumont– Action #34	
Proposed Action:	Install on-site well and new pressurized water supply system to support Christus St. Elizabeth Hospital during loss of potable water.
BACKGROUND INFORMATION	
Site and Location:	Christus St. Elizabeth Hospital
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of water contamination and ensure continuity of services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hazardous Material
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$162,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM, EMPG
Lead Agency/Department Responsible:	City of Beaumont Administration, St. Elizabeth Hospital
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Hospital operations plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Beaumont– Action #35
	Proposed Action:	Acquire or elevate flood prone structures throughout the City of Beaumont with an emphasis on current Repetitive Loss and Severe Repetitive Loss properties.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout city
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce or eliminate flood damages to repetitive loss structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$55,000,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM, RFC
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing project.

		City of Beaumont– Action #36
	Proposed Action:	Coordinate a consolidated security checkpoint on entry to Plant Road to access industrial and chemical production and storage complexes.
	BACKGROUND INFORMATION	
	Site and Location:	Entry to Plant Road
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of terror attack on vulnerable targets.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$175,000
Potential Funding Sources:	Local operating budgets, EMPG, Homeland Security Grants
Lead Agency/Department Responsible:	City of Beaumont Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Anti-Terrorism Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Beaumont– Action #37
	Proposed Action:	Upgrade security system at the Port of Beaumont for access control on all exterior doors for all buildings as well as installing cameras and increased perimeter surveillance capabilities.
	BACKGROUND INFORMATION	
	Site and Location:	Port of Beaumont
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of terror attack on vulnerable targets.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$175,000
Potential Funding Sources:	Local operating budgets, EMPG, Homeland Security Grants
Lead Agency/Department Responsible:	City of Beaumont Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Anti-Terrorism Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing project.

City of Beaumont– Action #38	
Proposed Action:	Install security systems at the City of Beaumont water utility sites, to include but not limited to, security walls around chemical tanks, water treatment plant and a river pump station, monitoring stations for purity testing at various sites throughout the city; surveillance at six elevated storage tanks and wastewater plant, etc. for access control on all exterior doors for all buildings as well as installing cameras and increased perimeter surveillance capabilities.
BACKGROUND INFORMATION	
Site and Location:	Beaumont Water Utility Sites
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of terror attack on vulnerable targets.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$4,500,000
Potential Funding Sources:	Local operating budgets, EMPG, Homeland Security Grants
Lead Agency/Department Responsible:	City of Beaumont Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Anti-Terrorism Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing project.

		City of Beaumont– Action #39
	Proposed Action:	Install security systems at the City of Beaumont Upgrade surveillance capabilities at critical infrastructure sites around the City of Beaumont, to include, fire stations, police, fire and EMS headquarters, lift stations, communication towers and headquarters, etc.
	BACKGROUND INFORMATION	
	Site and Location:	Beaumont Critical Infrastructure Sites
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of terror attack on vulnerable targets.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$200,000
Potential Funding Sources:	Local operating budgets, EMPG, Homeland Security Grants
Lead Agency/Department Responsible:	City of Beaumont Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Anti-Terrorism Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Surveillance capabilities were upgraded with budgeted funds. Sites from this action item that still need surveillance capabilities will be divided into separate action items. Cost estimate needs to be updated to $260,000.

		City of Beaumont– Action #40
	Proposed Action:	Install generators with permanent hook-ups and harden roofs at sites at Lamar University. Sites include but are not limited to the University Police Station and Soccer Field House which serves as an emergency operations center.
	BACKGROUND INFORMATION	
	Site and Location:	Lamar University
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Thunderstorm Wind, Tornado
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM
Lead Agency/Department Responsible:	City of Beaumont Emergency Management, Lamar University
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Operations Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Beaumont– Action #41
	Proposed Action:	At Lamar University, replace/upgrade radio repeater/tower, replace/upgrade emergency notification siren tower equipment and tower, cleaning and restoration of tunnel network, and upgrade safety and security lightning throughout campus.
	BACKGROUND INFORMATION	
	Site and Location:	Lamar University
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure continuity of emergency services and reduce risk to students and faculty through early warning.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Thunderstorm Wind, Tornado, Hail, Lightning
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,357,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM, EMPG
Lead Agency/Department Responsible:	City of Beaumont Emergency Management, Lamar University
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Operations Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Beaumont– Action #42
	Proposed Action:	Elevate flood prone properties/structures and key infrastructure and electrical equipment throughout the City of Beaumont.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout the city.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to key structures and infrastructure.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing project.

City of Beaumont– Action #43	
Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property • Coordinate contract to remove and/or trip trees that endanger structures, infrastructure and vital roadways • Removal of dangerous tress and limbs (dead leaners and hangers). Prevent blockage or damage to infrastructure and/or major roadways/thoroughfares
BACKGROUND INFORMATION	
Site and Location:	Trees near power lines throughout Beaumont
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and potential damages to structures.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, Utility Fees
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update.

		City of Beaumont– Action #44
	Proposed Action:	Secure and maintain backup information systems to store critical information at off-site locations.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of critical government data and files through redundant systems.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Tornado, Wildfire, Thunderstorm Wind, Lightning, Hail
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Completed. Use of general funds.

		City of Beaumont– Action #45
	Proposed Action:	Improve quality of local information on vulnerable items (assets and populations) for the purpose of more accurate risk and damage assessments. Work with other agencies in city to get data as up-to-date and complete as possible.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Improve risk and vulnerability assessment.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Tornado, Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP, PDM, EMPG, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing project.

		City of Beaumont– Action #46
	Proposed Action:	Elevate and/or upgrade Marina Drive in the City of Beaumont.
	BACKGROUND INFORMATION	
	Site and Location:	Marina Drive
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to infrastructure and ensure emergency access.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$6,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Action description will be revised.

		City of Beaumont– Action #47
	Proposed Action:	Provide educational seminars and brochures regarding the voluntary Community Rating System (CRS).
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood losses through CRS education and buy-in.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$15,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Floodplain Management
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing project.

		City of Beaumont– Action #48
	Proposed Action:	Expand and upgrade security systems at St. Elizabeth Hospital for access control on all exterior doors for all buildings as well as installing cameras and increased perimeter surveillance and safety capabilities**.**
	BACKGROUND INFORMATION	
	Site and Location:	St. Elizabeth Hospital
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of terror attack on vulnerable targets.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$350,000
Potential Funding Sources:	Local operating budgets, EMGP, Homeland Security Grants
Lead Agency/Department Responsible:	City of Beaumont Emergency Management, St. Elizabeth Hospital
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Hospital Operations Plan

2022 ANALYSIS:
Defer to Plan Update.

CITY OF BEVIL OAKS

	City of Bevil Oaks– Action #1
Proposed Action:	Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.
BACKGROUND INFORMATION	
Site and Location:	Various locations in Bevil Oaks
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents in Bevil Oaks.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$2,000,000
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Bevil Oaks City Administration
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Location to be updated to reflect City Hall and Civic Center.

	City of Bevil Oaks– Action #2
Proposed Action:	Storm harden/retrofit critical facilities throughout Bevil Oaks. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcements (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.
BACKGROUND INFORMATION	
Site and Location:	Critical facilities in Bevil Oaks
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facilities from damages and ensure continuity of emergency services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks City Administration and Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Location to be updated to reflect City Hall and Civic Center.

		City of Bevil Oaks– Action #3
	Proposed Action:	Acquire/demolish flood-prone properties with an emphasis on Repetitive and Severe Repetitive Loss properties.
	BACKGROUND INFORMATION	
	Site and Location:	Flood-prone structures in Bevil Oaks
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate flood damages to flood-prone structures. Reduce burden on emergency services during flood events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Bevil Oaks City Administration
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Action description will need to be revised. Informed that this is only an option if flood mitigation has been implemented prior.

		City of Bevil Oaks– Action #4
	Proposed Action:	Elevate existing flood-prone structures and infrastructure throughout Bevil Oaks.
	BACKGROUND INFORMATION	
	Site and Location:	Flood-prone structures and infrastructure in Bevil Oaks.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to flood-prone structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Bevil Oaks City Administration
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinance, Emergency Management Plan

2022 ANALYSIS:
Remove action. Informed that City no longer has home that need to be elevated.

		City of Bevil Oaks– Action #5
	Proposed Action:	Elevate or upgrade bridges, culverts and other crossings throughout Bevil Oaks to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.
	BACKGROUND INFORMATION	
	Site and Location:	Undersized and/or inadequate bridges and culverts in Bevil Oaks
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure and surrounding structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Action description will need to be updated to reflect roadway elevation. Reports that no issues reported to date regarding culverts and crossings.

	City of Bevil Oaks– Action #6
Proposed Action:	Pursue funding and implement drainage improvements throughout Bevil Oaks. Actions can include but are not limited to installing/ upgrading culverts and headwalls as well as enlarging storm water ditches and canals.
BACKGROUND INFORMATION	
Site and Location:	Various locations throughout Bevil Oaks
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to infrastructure and surrounding structures as a result of undersized drainage.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks Public Works in coordination with Jefferson County and Drainage District 6
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Action description will need to be revised. According to DD6 they do not have the easements they need just to clean current drainage. Second the County limits the amount of time they spend in the area to clean ditches. Just this year they completed work orders that were submitted back in 2016. They need to utilize the time to move the equipment into the area and complete all the work orders while they are in the area. It is hard for us to know what work needs to be done, when all work orders have not yet been completed.

	City of Bevil Oaks– Action #7
Proposed Action:	Provide generators/back-up power systems with permanent hook-ups for lift stations and other critical facilities lacking back-up power throughout Bevil Oaks.
BACKGROUND INFORMATION	
Site and Location:	Lift Stations/Critical Facilities in Bevil Oaks
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facilities from damages and ensure continuity of services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks City Administration and Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Current projects to install backup generators at lift stations are a priority at this time.

		City of Bevil Oaks– Action #8
	Proposed Action:	Implement flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout Bevil Oaks
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of storm surge flooding to structures and infrastructure.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	City of Bevil Oaks in coordination with Jefferson County
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Action description will need to be revised, as focus for City if on waterway being cleared out.

	City of Bevil Oaks– Action #9
Proposed Action:	Identify and pursue any mitigation activities that would aid/enhance evacuations throughout the Bevil Oaks.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or fatality through improved evacuation routes and procedures.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Wildfire, Flood
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budget
Lead Agency/Department Responsible:	City of Bevil Oaks in coordination with Jefferson County
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Evacuation Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Bevil Oaks– Action #10	
Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to ordinance requirements to: • Bury utility lines underground • Provide frangible links/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increase the easement area/clearance utility lines/poles from tree lines
BACKGROUND INFORMATION	
Site and Location:	Utility lines throughout Bevil Oaks
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and ensure continuity of emergency services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks City Administration
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update. Action will need to be revised, or additional action implemented in Plan Update to focus on increasing the easement area.

City of Bevil Oaks– Action #11	
Proposed Action:	Provide the public with educational brochures for mitigating damages, planning ahead for disasters and reducing the risk of injury during events including: Mitigation measures such as window film, elevated appliances, surge protectors, insulating pipes, drought tolerant landscaping. Education on when to take cover, when to evacuate, locations of local safe rooms, signs of dehydration, and proper storage of flammable materials, or other appropriate materials to mitigate damages and health hazards.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and structures through education and awareness.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Drought
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Bevil Oaks City Administration
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Action will need to be revised to focus on ensuring information in available on City website.

City of Bevil Oaks– Action #12	
Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat. Educate public on the locations and availability of cooling centers during times of extreme heat.
BACKGROUND INFORMATION	
Site and Location:	Various locations TBD
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to vulnerable populations during extreme heat events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks City Administration
Implementation Schedule:	Within 36-48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Location to be updated to reflect Civic Center.

		City of Bevil Oaks– Action #13
	Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.
	BACKGROUND INFORMATION	
	Site and Location:	Wildland Urban Interface
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to structures in or near the WUI.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks City Administration
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2022 ANALYSIS:
Defer to Plan Update. Location will need to be updated to reflect area that are not protected. Action description to be updated to also include a need more fire breaks around the community.

City of Bevil Oaks– Action #14	
Proposed Action:	Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risks associated with drought through reduction in water usage during times of drought.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks City Administration
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinances

2022 ANALYSIS:
Defer to Plan Update. Action description to be updated to reflect a mitigation strategy that will keep vegetation alive which should help reduce fire risk.

City of Bevil Oaks– Action #15	
Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs from private property • Coordinate contracts to remove and/or trim trees that endanger structures, infrastructure, and vital roadways • Update ordinance to require dead tree removal and tree trimming as appropriate to protect structures and infrastructure
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and potential damages to structure and infrastructure.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Bevil Oaks City Administration
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update. Action description will need to be updated or additional action added to discuss removal of dead trees as well.

CITY OF CHINA

		City of China– Action #1
	Proposed Action:	Build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters of last resort. This is in conjunction with the Texas Safe Shelter Initiative.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.6 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of China, Jefferson County OEM
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Emergency Management Plan, Jefferson County Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #2
	Proposed Action:	Retrofit existing structures and/or construct new structures to act as shelters during and after Hurricanes/Tropical Storms and other severe weather events.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1 - $2 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of China, Jefferson County OEM, SETRPC
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #3
	Proposed Action:	Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	6-12 months
Incorporation into Existing Plans:	Local Ordinances

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #4
	Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Implement and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property. • Coordinate contracting to remove and/or structures, infrastructure and vital roadways.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	FEMA PA, HMGP, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	6-12 months
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #5
	Proposed Action:	Public structure strengthening for City Hall.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $500,000
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-2 years
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #6
	Proposed Action:	Purchase and install generators/back-up power systems for critical facilities (including but not limited to lift stations, water plants, police, EMS, Fire and other first responder facilities) throughout China.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $200,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #7
	Proposed Action:	Retrofit existing structures or construct new structures to act as safe rooms during tornados or other severe weather events.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 - $100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-5 years
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

City of China– Action #8	
Proposed Action:	Identify and implement any mitigation activities that would aid/ enhance evacuations throughout China.
BACKGROUND INFORMATION	
Site and Location:	Various locations in China
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Wildfire, Winter Storm
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-5 years
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #9
	Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source throughout China.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Flood, Drought
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$75,000 - $200,000
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of China– Action #10
Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Burying utility lines underground • Provide frangible links/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increasing the easement area/clearance of utility lines/ poles from trees lines
BACKGROUND INFORMATION	
Site and Location:	Various locations in China
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000 - $200,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-5 years
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #11
	Proposed Action:	Provide the public with educational brochures for the hazards identified as part of the 2017 Plan Update.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail, Drought
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	6-12 months
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #12
	Proposed Action:	Storm harden/retrofit critical facilities throughout China. Actions can include but are not limited to window shutters, roof straps, flood proofing, and roll-up door reinforcement (i.e. for fire stations).
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000 - $500,000
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-2 years
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #13
	Proposed Action:	Replace and/or upgrade bridges, culverts and other crossings throughout China.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$200,000 - $1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	2-5 years
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #14
	Proposed Action:	Implement drainage improvements throughout China. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 - $500,000
Potential Funding Sources:	HMGP, PDM, FMA, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #15
	Proposed Action:	Implement flood protection measures to protect from surges from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 - $3 Million
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-5 years
Incorporation into Existing Plans:	Master Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #16
	Proposed Action:	Construct or improve existing detention/retention ponds where appropriate to collect storm water to reduce flooding.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Flood
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #17
	Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #18
	Proposed Action:	Acquire flood prone properties (including Repetitive Loss and Severe Repetitive Loss Properties).
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000 - $140,000
Potential Funding Sources:	HMGP, FMA, PDM, RFC, SRL
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	12 months
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #19
	Proposed Action:	Elevate new and existing flood prone structures and infrastructure throughout China.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$20,000 - $100,000
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Local Ordinance, Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #20
	Proposed Action:	Bury underground, secure or otherwise harden exposed or vulnerable pipelines.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000 - $500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	3-5 years
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #21
	Proposed Action:	Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise, and other sources of salt water intrusion.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1 - $2 Million
Potential Funding Sources:	HMGP, PDM, USACE, Jefferson County, SETRPC
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	2-5 years
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of China– Action #22
	Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in China
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in China.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	HMGP, EMPG, PDM, local operating budgets
Lead Agency/Department Responsible:	City of China, Jefferson County
Implementation Schedule:	1-3 years
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2022 ANALYSIS:
Defer to Plan Update.

CITY OF GROVES

	City of Groves– Action #1
Proposed Action:	Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.
BACKGROUND INFORMATION	
Site and Location:	Various locations in Groves
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents in Groves.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Groves Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #2
	Proposed Action:	Storm harden/retrofit critical facilities throughout Groves. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.
	BACKGROUND INFORMATION	
	Site and Location:	Critical facilities in Groves
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facilities from damages and ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #3
	Proposed Action:	Identify and pursue any mitigation activities that would aid/enhance evacuations throughout Groves.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or fatality through improved evacuation routes and procedures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Wildfire, Flood
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #4
	Proposed Action:	Storm harden/retrofit City Hall, Police Station, and Activity Center Complex. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.
	BACKGROUND INFORMATION	
	Site and Location:	City Hall, Police Station, and Activity Center Complex
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect public facilities from damages and ensure continuity of services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #5
	Proposed Action:	Storm harden/retrofit Groves Fire Station. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors
	BACKGROUND INFORMATION	
	Site and Location:	Groves Fire Station
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect facility and fire trucks from damages and ensure continuity of emergency services. Life Safety benefits for first responders.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #6
	Proposed Action:	Storm harden/retrofit Public Works Complex. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.
	BACKGROUND INFORMATION	
	Site and Location:	Groves Public Works Complex
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect public works facilities from damages and ensure continuity of emergency services. Life Safety benefits for first responders.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #7
	Proposed Action:	Storm harden/retrofit Wastewater Treatment Plant. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.
	BACKGROUND INFORMATION	
	Site and Location:	Groves Wastewater Treatment Plant
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facility from damages and ensure continuity of services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Groves– Action #8	
Proposed Action:	Provide the public with educational brochures for mitigating damages, planning ahead for disasters and reducing the risk of injury during events including: Mitigation measures such as window film, elevated appliances, surge protectors, insulating pipes, drought tolerant landscaping. Education on when to take cover, when to evacuate, locations of local safe rooms, signs of dehydration, and proper storage of flammable materials, or other appropriate materials to mitigate damages and health hazards.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and structures through education and awareness.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Drought
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Groves Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #9
	Proposed Action:	Elevate or upgrade bridges, culverts and other crossings throughout Groves to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.
	BACKGROUND INFORMATION	
	Site and Location:	Undersized bridges and culverts in Groves
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to infrastructure and surrounding structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #10
	Proposed Action:	Pursue funding and implement drainage improvements throughout Groves. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout Groves
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to infrastructure and surrounding structures as a result of undersized drainage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Groves– Action #11	
Proposed Action:	Implement flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.
BACKGROUND INFORMATION	
Site and Location:	Various locations throughout Groves
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of storm surge flooding to structures and infrastructure.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #12
	Proposed Action:	Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise and other sources of salt water intrusion.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	HMGP, PDM, USACE, SETRPC
Lead Agency/Department Responsible:	City of Groves Public Works, SETRPC
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #13
	Proposed Action:	Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risks associated with drought through reduction in water usage during times of drought.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves City Administration
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinances

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #14
	Proposed Action:	Construct or upgrade existing detention/retention ponds where appropriate to collect storm water to reduce flooding and for use as an alternate water source throughout Groves.
	BACKGROUND INFORMATION	
	Site and Location:	Various Locations TBD
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through improved flood control measures. Water resource for irrigation use during drought.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Groves– Action #15	
Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Bury utility lines underground • Provide frangible lines/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increase the easement area/clearance of utility lines/poles from tree lines
BACKGROUND INFORMATION	
Site and Location:	Utility lines throughout Groves
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and ensure continuity of emergency services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	City of Groves Public Works, Entergy
Implementation Schedule:	Within 48-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update.

City of Groves– Action #16	
Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.
BACKGROUND INFORMATION	
Site and Location:	Various locations TBD
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to vulnerable populations during extreme heat events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves City Administration
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #17
	Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.
	BACKGROUND INFORMATION	
	Site and Location:	Wildland Urban Interface
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to structures in or near the WUI.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Fire Department
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Groves– Action #18	
Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property • Coordinate contracts to remove and/or trim trees that endanger structures, infrastructure and vital roadways
BACKGROUND INFORMATION	
Site and Location:	Trees near power lines throughout Groves.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and potential damages to structures.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinances

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #19
	Proposed Action:	Upgrade drainage system to reduce flooding on Van Buren from Wilson to Grant.
	BACKGROUND INFORMATION	
	Site and Location:	Van Buren from Wilson to Grant
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to structures and infrastructure due to inadequate drainage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #20
	Proposed Action:	Upgrade drainage system to reduce flooding issues on 34th Street and the south end of Franklin Street.
	BACKGROUND INFORMATION	
	Site and Location:	34th Street and the south end of Franklin Street
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to structures and infrastructure due to inadequate drainage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #21
	Proposed Action:	Acquire and demolish or relocate flood-prone properties with an emphasis on Repetitive and Severe Repetitive Loss Properties.
	BACKGROUND INFORMATION	
	Site and Location:	Flood-prone structures in Groves
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate flood damages to flood-prone structures. Reduce burden on emergency services during flood events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Groves Emergency Management
Implementation Schedule:	Within 48-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Groves– Action #22
	Proposed Action:	Elevate new and existing flood-prone structures and infrastructure throughout Groves.
	BACKGROUND INFORMATION	
	Site and Location:	Flood-prone structures and infrastructure in Groves
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to flood-prone structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Groves Emergency Management
Implementation Schedule:	Within 48-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinance, Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Groves– Action #23	
Proposed Action:	Secure, bury or otherwise harden exposed or vulnerable pipelines including water, sewer, liquid petroleum, and natural gas.
BACKGROUND INFORMATION	
Site and Location:	Various locations throughout Groves
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of pipeline failure through mitigation of exposed or vulnerable lines.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Pipeline Failure, Hazardous Materials
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

CITY OF NEDERLAND

	City of Nederland– Action #1
Proposed Action:	Build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 miles per hour winds and act as shelters of last resort. This is in conjunction with the Texas Safe Shelter Initiative.
BACKGROUND INFORMATION	
Site and Location:	Various locations in Nederland
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in Nederland.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.6 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Nederland Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Project is expected to begin in the next 24-35 months (update implementation schedule). Cost estimate needs to be updated to $3 million. Possible funding source from City and/or Grants.

		City of Nederland– Action #2
	Proposed Action:	Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in Nederland
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents in Nederland.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Nederland Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Project is expected to begin in the next 24-35 months. Cost estimate needs to be updated to $3 million. Possible funding source from City and/or Grants.

		City of Nederland– Action #3
	Proposed Action:	Storm harden/retrofit critical facilities throughout Nederland. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.
	BACKGROUND INFORMATION	
	Site and Location:	Critical facilities in Nederland
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facilities from damages and ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Project is partially completed. Cost estimate needs to be updated to $1 million. Possible funding source from City and/or Grants.

City of Nederland– Action #4	
Proposed Action:	Acquire and demolish or relocate flood-prone properties with an emphasis on Repetitive and Severe Repetitive Loss properties.
BACKGROUND INFORMATION	
Site and Location:	Flood-prone structures in Nederland
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate flood damages to flood-prone structures. Reduce burden on emergency services during flood events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Nederland Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Delete Action. There has been no demand for this. This most likely can be attributed to improvements made by Drainage District 7 in the city.

		City of Nederland– Action #5
	Proposed Action:	Elevate new and existing flood-prone structures and infrastructure throughout Nederland.
	BACKGROUND INFORMATION	
	Site and Location:	Flood-prone structures and infrastructure in Nederland
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to flood-prone structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Nederland Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinance, Emergency Management Plan

2022 ANALYSIS:
Delete Action. There has been no demand for this. This most likely can be attributed to improvements made by Drainage District 7 in the city.

		City of Nederland– Action #6
	Proposed Action:	Elevate or upgrade bridges, culverts and other crossings throughout Nederland to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.
	BACKGROUND INFORMATION	
	Site and Location:	Undersized bridges and culverts in Nederland
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to infrastructure and surrounding structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Project is partially completed, some areas have been addressed. Cost estimate needs to be updated to $5 million.

		City of Nederland– Action #7
	Proposed Action:	Pursue funding and implement drainage improvements throughout Nederland. Actions can include but are not limited to installing/ upgrading culverts and headwalls as well as enlarging storm water ditches and canals.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout Nederland
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to infrastructure and surrounding structures as a result of undersized drainage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Project is partially completed, some areas have been addressed. Cost estimate needs to be updated to $10 million. Implementation schedule updated to 2-5 years.

City of Nederland– Action #8	
Proposed Action:	Secure, bury or otherwise harden exposed or vulnerable pipelines including water, sewer, liquid petroleum, and natural gas.
BACKGROUND INFORMATION	
Site and Location:	Various locations throughout Nederland
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of pipeline failure through mitigation of exposed or vulnerable lines.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Nederland– Action #9
	Proposed Action:	Implement flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout Nederland
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of storm surge flooding to structures and infrastructure.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Plan

2022 ANALYSIS:
Defer to Plan Update. Priority level can updated to “Moderate”.

		City of Nederland– Action #10
	Proposed Action:	Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise and other sources of salt water intrusion.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	HMGP, PDM, USACE, SETRPC
Lead Agency/Department Responsible:	City of Nederland Public Works, SETRPC
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Update potential funding source to include LNVA.

		City of Nederland– Action #11
	Proposed Action:	Construct or upgrade existing detention/ retention ponds where appropriate to collect storm water to reduce flooding.
	BACKGROUND INFORMATION	
	Site and Location:	Various Locations TBD
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Project is partially completed, some projects are in progress. Cost estimate needs to be updated to $2 million.

City of Nederland– Action #12	
Proposed Action:	Retrofit existing structures or construct new structures to act as residential safe rooms during tornados or other severe weather events.
BACKGROUND INFORMATION	
Site and Location:	Various Locations TBD
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 per site
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan, Local Ordinance

2022 ANALYSIS:
Delete Action. Action did not meet the cost-benefit analysis in the past.

		City of Nederland– Action #13
	Proposed Action:	Identify and pursue any mitigation activities that would aid/enhance evacuations throughout Nederland.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or fatality through improved evacuation routes and procedures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Wildfire, Flood
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Nederland– Action #14
	Proposed Action:	Construct water retention ponds to collect storm water run-off, reduce flooding and use as an alternate water source throughout Nederland.
	BACKGROUND INFORMATION	
	Site and Location:	TBD site in Nederland
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Lifesaving water alternate source and localized flood reduction.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Thunderstorm Wind, Hurricane
Effect on new/existing buildings:	Reduce damages to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP, PDM, SETRPC
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan, Water Plan

2022 ANALYSIS:
Completed. LNVA completed project.

City of Nederland– Action #15	
Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Bury utility lines underground • Provide frangible lines/break away connections on utility poles • Increase the easement area/clearance of utility lines/poles from tree lines • Harden utility poles by converting from wood to concrete or metal utility poles
BACKGROUND INFORMATION	
Site and Location:	Utility lines throughout Nederland
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and ensure continuity of emergency services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	City of Nederland Public Works, Entergy
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update. Cost estimate needs to be updated to $1 million. Priority level updated to “Moderate”.

City of Nederland– Action #16	
Proposed Action:	Storm harden/retrofit Nederland Water Treatment Plant. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hookups, hail resistant roofing materials, and surge protectors.
BACKGROUND INFORMATION	
Site and Location:	Nederland Water Treatment Plant
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facility from damages and ensure continuity of services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed.

		City of Nederland– Action #17
	Proposed Action:	Storm harden/retrofit Nederland Service Center. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hookups, hail resistant roofing materials, and surge protectors.
	BACKGROUND INFORMATION	
	Site and Location:	Nederland Service Center
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facility from damages and ensure continuity of services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed.

		City of Nederland– Action #18
	Proposed Action:	Storm harden/retrofit Wastewater Treatment Plant. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hookups, hail resistant roofing materials, and surge protectors.
	BACKGROUND INFORMATION	
	Site and Location:	Wastewater Treatment Plant at 515 Hardy Avenue
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facility from damages and ensure continuity of services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed.

City of Nederland– Action #19	
Proposed Action:	Storm harden/retrofit Hughes Library. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hookups, hail resistant roofing materials, and surge protectors.
BACKGROUND INFORMATION	
Site and Location:	Hughes Library
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facility from damages and ensure continuity of services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Project is partially completed, pending additional funding.

City of Nederland– Action #20	
Proposed Action:	Provide the public with educational brochures for mitigating damages, planning ahead for disasters and reducing the risk of injury during events including: Mitigation measures such as window film, elevated appliances, surge protectors, insulating pipes, drought tolerant landscaping. Education on when to take cover, when to evacuate, locations of local safe rooms, signs of dehydration, and proper storage of flammable materials, or other appropriate materials to mitigate damages and health hazards**.**
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and structures through education and awareness.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Drought
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Nederland Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed and Defer to Plan Update.

		City of Nederland– Action #21
	Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations TBD
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to vulnerable populations during extreme heat events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Administration
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Delete Action. No demand from the public and no State support.

City of Nederland– Action #22	
Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.
BACKGROUND INFORMATION	
Site and Location:	Wildland Urban Interface
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to structures in or near the WUI.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Fire Department
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Nederland– Action #23	
Proposed Action:	Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risks associated with drought through reduction in water usage during times of drought.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,00 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Administration
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinances

2022 ANALYSIS:
Completed.

City of Nederland– Action #24	
Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property • Coordinate contracts to remove and/or trim trees that endanger structures, infrastructure and vital roadways
BACKGROUND INFORMATION	
Site and Location:	Trees near power lines throughout Nederland
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and potential damages to structures.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update. Cost estimate needs to be updated to $500,000.

		City of Nederland– Action #25
	Proposed Action:	Public structure strengthening by replacing drainage tile main feeders.
	BACKGROUND INFORMATION	
	Site and Location:	Drainage main and feeders
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to structures and infrastructure due to inadequate drainage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing and new structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Action description needs to be updated to enhance public drainage infrastructure by upgrading main channels, tributaries, and roadside ditches. Cost estimate needs to be updated to $5 million. Priority level updated to “Low”.

		City of Nederland– Action #26
	Proposed Action:	Storm harden/retrofit D. Bob Henson Building. Actions can include but are not limited to window shutters, roof straps, flood proofing, Roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hookups, hail resistant roofing materials, and surge protectors.
	BACKGROUND INFORMATION	
	Site and Location:	D. Bob Henson Building
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facility from damages and ensure continuity of services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Action description can delete out “remove roll-up door reinforcement”.

		City of Nederland– Action #27
	Proposed Action:	Improve underground storm sewer culvert size on Detroit Avenue.
	BACKGROUND INFORMATION	
	Site and Location:	Detroit Avenue
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to structures and infrastructure due to inadequate drainage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing and new structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Completed.

CITY OF NOME

		City of Nome– Action #1
	Proposed Action:	Build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters of last resort. This is in conjunction with the Texas Safe Shelter Initiative.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in Nome.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.6 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan, Jefferson County Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Nome– Action #2
	Proposed Action:	Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents in Nome.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Nome– Action #3
	Proposed Action:	Storm harden/retrofit critical facilities throughout Nome. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.
	BACKGROUND INFORMATION	
	Site and Location:	Critical facilities in Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facilities from damages and ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Nome– Action #4
	Proposed Action:	Acquire/demolish flood-prone properties with an emphasis on Repetitive and Severe Repetitive Loss properties.
	BACKGROUND INFORMATION	
	Site and Location:	Flood-prone structures in Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate flood damages to flood-prone structures. Reduce burden on emergency services during flood events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Completed. Demolished office at Fire Station.

		City of Nome– Action #5
	Proposed Action:	Elevate new and existing flood-prone structures and infrastructure throughout Nome.
	BACKGROUND INFORMATION	
	Site and Location:	Flood-prone structures in Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to flood-prone structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinance, Comprehensive Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Completion at Louisiana Lift Station. Lack of funding to pursue additional locations.

		City of Nome– Action #6
	Proposed Action:	Elevate or upgrade bridges, culverts and other crossings throughout Nome to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.
	BACKGROUND INFORMATION	
	Site and Location:	Undersized bridges and culverts in Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to infrastructure and surrounding structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Nome– Action #7
	Proposed Action:	Pursue funding and implement drainage improvements throughout Nome. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to infrastructure and surrounding structures as a result of undersized drainage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Nome– Action #8
	Proposed Action:	Secure, bury, or otherwise harden exposed or vulnerable pipelines including water and sewer.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of pipeline failure through mitigation of exposed or vulnerable lines.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Hazardous Material, Terrorism
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Nome– Action #9
	Proposed Action:	Purchase and install backup generator power systems with permanent hook-ups for critical facilities including lift stations, water plants, police stations, EMS, fire stations, and other first responder facilities throughout Nome.
	BACKGROUND INFORMATION	
	Site and Location:	Critical facilities as indicated above in Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facilities from loss of power and ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1-$2 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed.

		City of Nome– Action #10
	Proposed Action:	Implement flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of storm surge damages to structures and infrastructure.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3 Million
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Nome– Action #11
	Proposed Action:	Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise, and other sources of salt water intrusion.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1-$2 Million
Potential Funding Sources:	HMGP, PDM, USACE, SETRPC
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Nome– Action #12
	Proposed Action:	Construct or upgrade existing detention/ retention ponds where appropriate to collect storm water to reduce flooding.
	BACKGROUND INFORMATION	
	Site and Location:	Various Locations TBD throughout Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Hurricane
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Nome– Action #13
	Proposed Action:	Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations TBD
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 - $100,000 per site
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Nome– Action #14
	Proposed Action:	Identify and pursue any mitigation activities that would aid/enhance evacuations throughout Nome.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Life safety benefits through preparedness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Tornado, Thunderstorm Wind, Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budget
Lead Agency/Department Responsible:	City of Nome in coordination with Jefferson County
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed.

		City of Nome– Action #15
	Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source throughout Nome.
	BACKGROUND INFORMATION	
	Site and Location:	TBD site in Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Lifesaving water alternate source and localized flood reduction.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Thunderstorm Wind, Hurricane
Effect on new/existing buildings:	Reduce damages to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan, Water Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

City of Nome– Action #16	
Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Bury utility lines underground • Provide frangible lines/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increase the easement area/clearance of utility lines/poles from tree lines
BACKGROUND INFORMATION	
Site and Location:	Utility lines throughout Nome
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and ensure continuity of emergency services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000,000
Potential Funding Sources:	Utility Fees, Federal Grants
Lead Agency/Department Responsible:	City of Nome, Entergy
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Nome– Action #17
	Proposed Action:	Provide the public with educational brochures for mitigating damages, planning ahead for disasters and reduce the risk of injury during events including: mitigation measures such as window film, elevated appliances, surge protectors, insulating pipes, drought tolerant landscaping. Education on when to take cover, when to evacuate, locations of local safe rooms, signs of dehydration, and proper storage of flammable materials, or other appropriate materials to mitigate damages and health hazards.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and structures through education and awareness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Drought
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMGP
Lead Agency/Department Responsible:	County and City Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed.

		City of Nome– Action #18
	Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations (TBD) in Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to vulnerable populations during extreme heat events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Nome– Action #19
	Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.
	BACKGROUND INFORMATION	
	Site and Location:	Wildland Urban Interface of Nome
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to structures in or near the WUI.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2022 ANALYSIS:
Delete Action. No longer applicable.

		City of Nome– Action #20
	Proposed Action:	Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risks associated with drought through reduction in water usage during times of drought.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinances

2022 ANALYSIS:
Completed.

	City of Nome– Action #21
Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property • Coordinate contracts to remove and/or trim trees that endanger structures, infrastructure and vital roadways
BACKGROUND INFORMATION	
Site and Location:	Trees near power lines throughout Nome
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and potential damages to structures.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Nome
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

CITY OF PORT ARTHUR

		City of Port Arthur– Action #1
	Proposed Action:	Build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters of last resort. This is in conjunction with the Texas Safe Shelter Initiative.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in Port Arthur
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in Port Arthur.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.6 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Port Arthur
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan, Jefferson County Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be update to $50 million. We currently utilize the facility in Lumberton, to build our own dome in the City of Port Arthur, would be in the upward range of $50,000,000 that with building land up to meet flood plain standards and construction of structure.

		City of Port Arthur– Action #2
	Proposed Action:	Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in Port Arthur
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents in Port Arthur.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$2 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Port Arthur
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $45 million.

		City of Port Arthur– Action #3
	Proposed Action:	Storm harden/retrofit critical facilities throughout Port Arthur. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll-up door reinforcement (i.e. for fire stations), backup generator power with permanent hookups, hail resistant roofing materials, and surge protectors.
	BACKGROUND INFORMATION	
	Site and Location:	Critical facilities in Port Arthur
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facilities from damages and ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $5,000,000.

		City of Port Arthur– Action #4
	Proposed Action:	Acquire/demolish flood-prone properties with an emphasis on Repetitive and Severe Repetitive Loss properties.
	BACKGROUND INFORMATION	
	Site and Location:	Flood-prone structures in Port Arthur
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate flood damages to flood-prone structures. Reduce burden on emergency services during flood events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind
Effect on new/existing buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Port Arthur
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Port Arthur– Action #5
	Proposed Action:	Elevate new and existing flood-prone structures and infrastructure throughout Port Arthur.
	BACKGROUND INFORMATION	
	Site and Location:	Flood-prone structures and infrastructure in Port Arthur
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to flood-prone structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Port Arthur
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinance, Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Port Arthur– Action #6
	Proposed Action:	Elevate or upgrade bridges, culverts and other crossings throughout Port Arthur to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.
	BACKGROUND INFORMATION	
	Site and Location:	Undersized bridges and culverts in Port Arthur
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to infrastructure and surrounding structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $20,000,000.

		City of Port Arthur– Action #7
	Proposed Action:	Pursue funding and implement drainage improvements throughout Port Arthur. Actions can include but are not limited to installing/ upgrading culverts and headwalls as well as enlarging storm water ditches and canals.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations throughout Port Arthur
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to infrastructure and surrounding structures as a result of undersized drainage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $20,000,000.

City of Port Arthur– Action #8	
Proposed Action:	Secure, bury or otherwise harden exposed or vulnerable pipelines.
BACKGROUND INFORMATION	
Site and Location:	Various locations throughout Port Arthur
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of pipeline failure through mitigation of exposed lines.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $15,000,000.

City of Port Arthur– Action #9	
Proposed Action:	Implement flood protection measures to protect from surge from Hurricanes/Tropical Storms. Actions can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.
BACKGROUND INFORMATION	
Site and Location:	Various locations throughout Port Arthur
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of storm surge flooding to structures and infrastructure
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Flood
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM,
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $50,000,000.

		City of Port Arthur– Action #10
	Proposed Action:	Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise, and other sources of salt water intrusion.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	HMGP, PDM, USACE, SETRPC
Lead Agency/Department Responsible:	City of Port Arthur Public Works, SETRPC
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $50,000,000.

		City of Port Arthur– Action #11
	Proposed Action:	Construct or upgrade existing detention/ retention ponds where appropriate to collect storm water to reduce flooding.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations TBD
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budget
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $5,000,000.

		City of Port Arthur– Action #12
	Proposed Action:	Retrofit existing structures or construct new structures to act as residential safe rooms during tornados or other severe weather events.
	BACKGROUND INFORMATION	
	Site and Location:	Various Locations TBD
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 - $100,000 per site
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $100,000-$1,000,000 per site.

City of Port Arthur– Action #13	
Proposed Action:	Identify and pursue any mitigation activities that would aid/enhance evacuations throughout Port Arthur.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or fatality through improved evacuation routes and procedures.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Wildfire, Flood
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur in coordination with Jefferson County
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $5,000,000.

		City of Port Arthur– Action #14
	Proposed Action:	Construct water retention ponds to collect storm water run-off, reduce flooding and use as an alternate water source throughout Port Arthur.
	BACKGROUND INFORMATION	
	Site and Location:	TBD site in Port Arthur
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Lifesaving water alternate source and localized flood reduction.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Thunderstorm Wind, Hurricane
Effect on new/existing buildings:	Reduce damages to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP, PDM, SETRPC
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan, Water Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $50,000,000.

City of Port Arthur– Action #15	
Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Bury utility lines underground • Provide frangible lines/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increase the easement area/clearance of utility lines/poles from tree lines
BACKGROUND INFORMATION	
Site and Location:	Utility lines throughout Port Arthur
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and ensure continuity of emergency services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	City of Port Arthur Public Works, Entergy
Implementation Schedule:	Within 12-60 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $2,000,000.

City of Port Arthur– Action #16	
Proposed Action:	Provide the public with educational brochures for mitigating damages, planning ahead for disasters and reducing the risk of injury during events including: Mitigation measures such as window film, elevated appliances, surge protectors, insulating pipes, drought tolerant landscaping. Education on when to take cover, when to evacuate, locations of local safe rooms, signs of dehydration, and proper storage of flammable materials, or other appropriate materials to mitigate damages and health hazards.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and structures through education and awareness.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Drought
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Port Arthur
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing project that is completed annually.

		City of Port Arthur– Action #17
	Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations TBD
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to vulnerable populations during extreme heat events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $500,000.

City of Port Arthur– Action #18	
Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.
BACKGROUND INFORMATION	
Site and Location:	Wildland Urban Interface
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to structures in or near the WUI.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Fire Department
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2022 ANALYSIS:
Delete action. Not applicable.

City of Port Arthur– Action #19	
Proposed Action:	Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risks associated with drought through reduction in water usage during times of drought.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinances

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing project that is completed annually.

City of Port Arthur– Action #20	
Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property • Coordinate contracts to remove and/or trim trees that endanger structures, infrastructure and vital roadways
BACKGROUND INFORMATION	
Site and Location:	Trees near power lines throughout Port Arthur
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and potential damages to structures.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $1,000,000.

		City of Port Arthur– Action #21
	Proposed Action:	Increase channel capacity and improve multiple culvert crossings of Drainage Channel Main B.
	BACKGROUND INFORMATION	
	Site and Location:	Drainage Channel Main B
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to structures and infrastructure due to inadequate channel capacity and undersized culverts.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing and new structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $5,000,000.

		City of Port Arthur– Action #22
	Proposed Action:	Improve channel capacity and crossings in Lateral 3 of the Drainage Channel Main A system.
	BACKGROUND INFORMATION	
	Site and Location:	Drainage Channel Main A
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to structures and infrastructure due to inadequate channel capacity and undersized crossings.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works, and Drainage District #7
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $5,000,000.

City of Port Arthur– Action #23	
Proposed Action:	Improve culvert crossings in the Lakeview Drainage system.
BACKGROUND INFORMATION	
Site and Location:	Culvert crossings in Lakeview Drainage system
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to structures and infrastructure due to inadequate undersized culvert crossings.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $5,000,000.

		City of Port Arthur– Action #24
	Proposed Action:	Increase drainage capacity to reduce flooding on Westside.
	BACKGROUND INFORMATION	
	Site and Location:	Port Arthur Westside
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to s tructures and infrastructure due to inadequate drainage capacity.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $5,000,000.

City of Port Arthur– Action #25	
Proposed Action:	Upgrade concrete lining of the El Vista Pump Station.
BACKGROUND INFORMATION	
Site and Location:	El Vista Pump Station
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to pump station and channel.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $5,000,000.

		City of Port Arthur– Action #26
	Proposed Action:	Upgrade existing storm sewer in the Port Acres area and along Procter Street.
	BACKGROUND INFORMATION	
	Site and Location:	Port Acres area and along Procter Street
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to structures and infrastructure due to inadequate storm sewer capacity.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $5,000,000.

		City of Port Arthur– Action #27
	Proposed Action:	Develop/implement shelter-in-place presentations.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of death or injury to residents through education.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Lightning, Hail
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Completed.

City of Port Arthur– Action #28	
Proposed Action:	Develop/implement emergency first responder teams with Sabine Neches Chief's Association.
BACKGROUND INFORMATION	
Site and Location:	Regional
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, death or injury through improved emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations – Emergency Response

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Lightning, Hail, Winter Storm, Tornado
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Completed.

		City of Port Arthur– Action #29
	Proposed Action:	Develop/implement coastal storm presentations to public, groups, schools, etc. Educate residents on risk mitigation techniques, early mitigation strategies, emergency kits, evacuation routes, and other appropriate materials.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages and death or injury to residents through education and awareness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed.

City of Port Arthur– Action #30	
Proposed Action:	Adopt additional freeboard in the local floodplain ordinance. Require all new construction to meet/exceed minimum established flood elevations.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to new structures through higher elevation requirements.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$30,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Floodplain Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Floodplain Ordinance

2022 ANALYSIS:
Completed.

		City of Port Arthur– Action #31
	Proposed Action:	Receive maximum credit for the NFIP CRS.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to new structures through higher construction standards and restrictions on floodplain development.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$30,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Floodplain Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Floodplain Ordinance

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $20,000,000.

		City of Port Arthur– Action #32
	Proposed Action:	Develop/implement bus transportation for hurricane evacuations.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents through coordinated evacuation assistance.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations – Emergency Response

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	Local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update. Action description updated to include “tornados, winter storms, hurricanes and floods utilizing state and contracted resources.” Hazard Addressed to be updated as well to correspond with additional hazards that have been added. Cost estimate will need to be updated to $500,000.

		City of Port Arthur– Action #33
	Proposed Action:	Develop/implement transportation plan for special needs populations.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to special needs populations through coordinated evacuation assistance.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations – Emergency Response

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Tornado, Winter Storm
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	Local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update. Action description updated to state “Develop/implement transportation plan for special needs populations, related to tornado, winter storms, hurricanes and floods utilizing state and contracted resources.” Cost estimate will need to be updated to $500,000.

		City of Port Arthur– Action #34
	Proposed Action:	Assist in implementation of 211 TX Linkage Access Service.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents through Texas Health and Services information access.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations – Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $500,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM
Lead Agency/Department Responsible:	City of Port Arthur Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed.

City of Port Arthur– Action #35	
Proposed Action:	Improve storm water runoff by installing upgraded 8- foot by 7-foot concrete box in Tiger Bayou.
BACKGROUND INFORMATION	
Site and Location:	Tiger Bayou
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flooding through improved drainage.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $5,000,000.

		City of Port Arthur– Action #36
	Proposed Action:	Improve Hwy. 365 from Hwy. 69 to Rhodair Gully for improved emergency access.
	BACKGROUND INFORMATION	
	Site and Location:	Hwy. 365 from Hwy. 69 to Rhodair Gully
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Improve emergency access through road improvement.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Hail, Wildfire, Lightning, Winter Storm, Tornado
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Capital Improvement Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $5,000,000.

		City of Port Arthur– Action #37
	Proposed Action:	Decrease floodplain width in North Port Acres Ditch through improved drainage.
	BACKGROUND INFORMATION	
	Site and Location:	North Port Acres Ditch
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood risk to structures and infrastructure through improved drainage and reduction of the floodplain.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Cost estimate will need to be updated to $20,000,000.

CITY OF PORT NECHES

		City of Port Neches– Action #1
	Proposed Action:	Build a structure or structures (including a dome or domes) in coastal (or near coastal) jurisdictions that can withstand 200 mile per hour winds and act as shelters of last resort. This is in conjunction with the Texas Safe Shelter Initiative.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in Port Neches
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents and first responders in Port Neches.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.6 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City of Port Neches Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding.

		City of Port Neches– Action #2
	Proposed Action:	Retrofit existing structures and/or construct new structures to act as residential shelters during and after Hurricanes and other severe weather events.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations in Port Neches
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents in Port Neches.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$2 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	City Port Neches Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding. The City has applied for HMGP funds, not have not received notification if awarded.

City of Port Neches– Action #3	
Proposed Action:	Storm harden/retrofit critical facilities throughout Port Neches. Actions can include but are not limited to window shutters, roof straps, flood proofing, roll- up door reinforcement (i.e. for fire stations), backup generator power with permanent hook-ups, hail resistant roofing materials, and surge protectors.
BACKGROUND INFORMATION	
Site and Location:	Critical facilities in Port Neches
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect critical facilities from damages and ensure continuity of emergency services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Flood, Winter Storm, Wildfire, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Neches Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding. The City has applied for HMGP funds, not have not received notification if awarded.

		City of Port Neches– Action #4
	Proposed Action:	Elevate new and existing flood-prone structures and infrastructure throughout Port Neches.
	BACKGROUND INFORMATION	
	Site and Location:	Flood-prone structures and infrastructure in Port Neches
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to flood-prone structures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Port Neches Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinance, Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Port Neches– Action #5	
Proposed Action:	Elevate or upgrade bridges, culverts and other crossings throughout Port Neches to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.
BACKGROUND INFORMATION	
Site and Location:	Undersized bridges and culverts in Port Neches
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to infrastructure and surrounding structures.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1 Million
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Neches Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Port Neches– Action #6	
Proposed Action:	Pursue finding and implement drainage improvements throughout Port Neches. Actions can include but are not limited to installing/ upgrading culverts and headwalls as well as enlarging storm water ditches and canals.
BACKGROUND INFORMATION	
Site and Location:	Various locations throughout Port Neches
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to infrastructure and surrounding structures as a result of undersized drainage.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Neches Public Works
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Port Neches– Action #7	
Proposed Action:	Secure, bury or otherwise harden exposed or vulnerable pipelines.
BACKGROUND INFORMATION	
Site and Location:	Various locations throughout Port Neches
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of pipeline failure through mitigation of exposed lines.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Neches Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Port Neches– Action #8	
Proposed Action:	Provide generators/back-up power systems with permanent hook-ups for critical facilities (including but not limited to lift stations, water plants, police, EMS, fire and other first responder facilities) throughout Port Neches.
BACKGROUND INFORMATION	
Site and Location:	Various locations throughout Port Neches
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and ensure continuity of emergency services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail
Effect on new/existing buildings:	Reduce risk to existing infrastructure and structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $200,000 per site
Potential Funding Sources:	HMGP, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	City of Port Neches Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding. The City has applied for HMGP funds, not have not received notification if awarded.

City of Port Neches– Action #9	
Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: • Bury utility lines underground • Provide frangible lines/break away connections on utility poles • Harden utility poles by converting from wood to concrete or metal utility poles • Increase the easement area/clearance of utility lines/poles from tree lines
BACKGROUND INFORMATION	
Site and Location:	Utility lines throughout Port Neches
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and ensure continuity of emergency services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	HMPG, PDM, local operating budgets, TDEM
Lead Agency/Department Responsible:	City of Port Neches Emergency Management, Entergy
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update.

City of Port Neches– Action #10	
Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: • Pursue and coordinate a dangerous tree and limb removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property • Coordinate contracts to remove and/or trim trees that endanger structures, infrastructure and vital roadways
BACKGROUND INFORMATION	
Site and Location:	Trees near power lines throughout Port Neches
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of power and potential damages to structures.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	Port Neches Public Works, Entergy
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update. Lack of funding. The City has applied for HMGP funds, not have not received notification if awarded.

		City of Port Neches– Action #11
	Proposed Action:	Coordinate public-private partnerships to ensure special needs population are protected from extreme temperatures by establishing and promoting accessible heating or cooling centers in the community.
	BACKGROUND INFORMATION	
	Site and Location:	Local business and identified public facilities
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to vulnerable populations during extreme temperatures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm, Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, local business partners
Lead Agency/Department Responsible:	City of Port Neches Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Port Neches– Action #12
	Proposed Action:	Conduct coastal storm presentations to educate the public on evacuation procedures, mitigation techniques, and risk associated with coastal storms.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and structures through education and awareness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Neches Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Port Neches– Action #13	
Proposed Action:	Provide the public with educational brochures for mitigating damages, planning ahead for disasters and reducing the risk of injury during events including: Mitigation measures such as window film, elevated appliances, surge protectors, insulating pipes, drought tolerant landscaping, education on when to take cover, when to evacuate, locations of local safe rooms, signs of dehydration, and proper storage of flammable materials, or other appropriate materials to mitigate damages and health hazards.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and structures through education and awareness.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Drought
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Port Neches Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Port Neches– Action #14
	Proposed Action:	Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise and other sources of salt water intrusion.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	HMGP, PDM, USACE, SETRPC
Lead Agency/Department Responsible:	City of Port Neches Public Works, SETRPC
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Port Neches– Action #15	
Proposed Action:	Construct or upgrade existing detention/ retention ponds where appropriate to collect storm water to reduce flooding.
BACKGROUND INFORMATION	
Site and Location:	Various locations TBD
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through improved flood control measures.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budget
Lead Agency/Department Responsible:	City of Port Neches Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Port Neches– Action #16
	Proposed Action:	Retrofit existing structures or construct new structures to act as residential safe rooms during tornados or other severe weather events.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations TBD
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or death for residents.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Neches Public Works
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update.

SECTION 17: PREVIOUS ACTIONS

		City of Port Neches– Action #17
	Proposed Action:	Identify and pursue any mitigation activities that would aid/enhance evacuations throughout Port Neches.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or fatality through improved evacuation routes and procedures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Wildfire, Flood
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Neches Emergency Management
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

City of Port Neches– Action #18	
Proposed Action:	Acquire/demolish flood-prone properties with an emphasis on Repetitive and Severe Repetitive Loss properties.
BACKGROUND INFORMATION	
Site and Location:	Flood-prone structures in Port Neches
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate flood damages to flood-prone structures. Reduce burden on emergency services during flood events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	City of Port Neches Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Port Neches– Action #19
	Proposed Action:	Pursue flood protection measures to protect from surge from Hurricanes. Actions can include but are not limited to constructing and/ or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through improved flood control measures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP, PDM, USACE, SETRPC
Lead Agency/Department Responsible:	City of Port Neches Public Works
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Lack of funding. The City has applied for HMGP funds, not have not received notification if awarded. Soil erosion continues to impact the Riverwalk area of the City. This erosion has a potential impact to businesses and a boat ramp adjacent to the river. Additional action to be added which could include the building of a bulkhead to this area.

		City of Port Neches– Action #20
	Proposed Action:	Retrofit existing structures to act as cooling stations in times of extreme heat.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations TBD
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to vulnerable populations during extreme heat events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Neches Administration
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Port Neches– Action #21
	Proposed Action:	Develop areas of defensible space to prevent damage due to wildfires.
	BACKGROUND INFORMATION	
	Site and Location:	Wildland Urban Interface
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to structures in or near the WUI.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets, EMPG
Lead Agency/Department Responsible:	City of Port Neches Fire Department
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Community Wildfire Protection Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of Port Neches– Action #22
	Proposed Action:	Develop and enact water conservation or drought management plans, ordinances or strategies to be used during times of drought.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risks associated with drought through reduction in water usage during times of drought.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Port Neches Administration
Implementation Schedule:	Within 48 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Ordinances

2022 ANALYSIS:
Defer to Plan Update.

SOUTH EAST TEXAS REGIONAL PLANNING COMMISSION (SETRPC)

South East Texas Regional Planning Commission– Action #1		
	Proposed Action:	Plan for the Protection of Vulnerable Populations by identifying at-risk populations and coordinating with home health agencies, medical equipment companies, local churches, and neighborhood associations to assist these populations during extreme weather events. Organize strategies for protecting vulnerable populations and develop a plan to expediently activate strategies when need be.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protection of at-risk populations during extreme weather events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Wildfire, Lightning
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $100,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Jefferson County Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #2	
Proposed Action:	Public Awareness and Education of Vulnerable Population through creation of a database and special group in STAN (Southeast Texas Alerting Network regional emergency alerting system) whereby public information protection actions can be disseminated.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Expedient access to and ability to communicate with those individuals, nursing homes, assisted living centers, hospitals and others who are most at risk during extreme hazard events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Wildfire, Lightning, Hail
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	Area Agency on Aging and Disabilities, PDM, HMGP
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Operations Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #3	
Proposed Action:	Plan for future drought in the Southeast Texas region of Hardin, Jefferson, and Orange Counties by developing a drought emergency plan, developing criteria or triggers for drought-related actions, enact water conservation measures during drought conditions, and develop a drought communication plan and early warning system to facilitate timely communication of relevant information.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduction of risk due to drought for residents in the Southeast Texas region.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$75,000 - $100,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local water plans and ordinances

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #4	
Proposed Action:	Pursue the identification and construction of alternate freshwater resources.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce health risks associated with a lack of clean, uncontaminated water available to local residents.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000 - $200,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Local Water Management Plans

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #5	
Proposed Action:	Facilitate use of all mass notification systems including but not limited to the Southeast Texas Alerting Network (STAN), to notify and educate the public of impending hazardous events.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the loss of life and property as a result of a drought, extreme heat, flood, hurricane, lightning, thunderstorm wind, tornado, winter storm, or wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hurricane, Tornado, Wildfire, Thunderstorm Wind, Winter Storm, Lightning
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	PSGP, PDM, HMGP
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	EOPs

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #6	
Proposed Action:	Retrofit existing structures and/or construct new structures to act as shelters during and after Hurricanes, Floods, and other severe weather events.
BACKGROUND INFORMATION	
Site and Location:	Inland at strategic points outside the floodplain throughout the Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of life as a result of a natural disaster by providing a safe structure in which residents can temporarily be housed.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Flood, Thunderstorm Wind
Effect on new/existing buildings:	Reduce damages to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.5 - $5 Million
Potential Funding Sources:	Texas Safe Shelter Initiative, HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin County, Jefferson County, Orange County
Implementation Schedule:	Within 12-24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #7	
Proposed Action:	Retrofit/harden SETRPC building that serves as an alternate 911 Public Safety Answering Point (PSAP) site for local jurisdictions within the Southeast Texas region during times of natural disaster.
BACKGROUND INFORMATION	
Site and Location:	Inland at strategic points outside the floodplain throughout the Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of life as a result of a natural disaster by providing a safe structure in which residents can temporarily be housed.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Wildfire, Lightning
Effect on new/existing buildings:	Reduce risk to existing facility
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000 - $2,500,000
Potential Funding Sources:	HMGP, PDM,
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Within 24-36 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Operations Plans/Local PSAP Standard Operating Procedures

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #8	
Proposed Action:	Coordinate Emergency Management Plans for coastal storm/hurricane events. Specific efforts include encouraging jurisdictions to install and maintain back up power at identified facilities, construct and designate emergency operations centers for disaster/emergency operations and solicit participation in Community Emergency Response training.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Continuity of emergency operations which saves lives and property.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 - $50,000
Potential Funding Sources:	HMGP, EMPG
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, and Orange Counties/ Cities
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #9	
Proposed Action:	Conduct flood insurance educational seminars for area realtors to increase their knowledge of National Flood Insurance Program (NFIP) and the benefits to homeowners in security flood insurance.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	All homeowners in the Southeast Texas region could benefit from owning flood insurance. Through education with realtors, who homeowners often turn to first for advice when purchasing a home, this important message could be conveyed, and the public educated on the importance of flood insurance; whether or not a home is in the floodplain.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000 - $50,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #10	
Proposed Action:	Coordinate public/private partnerships to ensure special needs populations are protected from health risks due to extreme weather conditions. Actions will be targeted toward citizens with physical limitations and others who may be unable to reach safety in times of severe weather. Volunteer groups may be available to assist by visiting special needs groups to ensure their safety and comfort during extreme weather events or assist when evacuations are necessary.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of life to most vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Wildfire, Earthquake, Geologic Hazards, Tsunami, Water Contamination
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #11	
Proposed Action:	Coordinate and implement a natural hazards public awareness campaign among the jurisdictions. Efforts may include tropical storm/ hurricane awareness presentations, shelter-in-place presentations, evacuation maps, floodplain maps, mitigation damages, flood control projects, storm tracking maps, health and safety tips flyers, mitigation articles in local newspapers, and other such information as it relates to natural hazards. Target audiences will include schools, neighborhood watch groups, various civic groups, neighborhood associations, community groups, and industry groups. FEMA publications will also be made available in city buildings, municipal courts, police and fire departments, TV channels, and on the SETRPC and jurisdictional websites.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to structures through mitigation education. Reduce risk of injury or loss of life to area residents.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Hail, Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Lightning, Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures through mitigation education and early preparation
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $75,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #12	
Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source for agricultural resources throughout the Southeast Texas region.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Lifesaving water alternate source and localized flood reduction.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hurricane, Winter Storm, Thunderstorm Wind, Tornado, Wildfire, Earthquake, Geologic Hazards, Tsunami, Water Contamination
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #13	
Proposed Action:	Minimize damage to structures and infrastructure from falling trees. Actions include but are not limited to the following: Pursue and coordinate a dangerous tree and limp removal program to protect infrastructure and critical facilities from damage. This includes working with private homeowners for voluntary removal of hazardous trees and limbs on private property. Coordinate contracts to remove and/or trim trees that endanger structures, infrastructures, and vital roadways.
BACKGROUND INFORMATION	
Site and Location:	Trees near power lines throughout Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of life and property due to substantial damage from falling trees resulting in failing structures and reduce risk of power outages.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Tornado, Thunderstorm Wind, Hail, Lightning, Winter Storm
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	HMGP, PDM, local Utility Fees
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Public Works SOP

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #14	
Proposed Action:	Secure and maintain backup information systems to store critical information at off-site locations.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of critical government data and files through redundant systems.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Tornado, Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 - $350,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #15	
Proposed Action:	Coordinate with county and municipal governments to allow the SETRPC to maintain a copy of all local ordinances relevant to mitigation activities.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of local ordinances through redundant systems.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Drought, Extreme Heat, Tornado, Winter Storm, Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000 - $15,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #16	
Proposed Action:	Acquire flood-prone properties throughout the region with a focus on Repetitive and Severe Repetitive Loss properties.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduction in repetitive loss payments from FEMA for structures known to have flooded on more than one occasion.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Eliminate risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$90,000 - $10,000,000 (cost varies per structure)
Potential Funding Sources:	HMGP, PDM, FMA
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

SECTION 17: PREVIOUS ACTIONS

South East Texas Regional Planning Commission– Action #17	
Proposed Action:	Elevate flood-prone properties throughout the region.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduction in repetitive loss payments from FEMA for structures known to lie in a floodplain or that have flooded.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$90,000 - $2,000,000 (cost varies per structure)
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #18	
Proposed Action:	Storm harden/retrofit critical facilities throughout the Southeast Texas Region. Actions can include but are not limited to window shutters, roof straps, hail resistant roofing, flood proofing, roll-up door reinforcement (i.e., fire stations), emergency backup/generator power with permanent hook-ups, fire resistant construction materials, window film, and surge protectors.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Avoid loss of property and, due to the critical nature of the facilities included in this action, potential loss of life.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Thunderstorm Wind, Hail, Lightning, Winter Storm, Wildfire, Extreme Heat
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $2,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #19	
Proposed Action:	Pursue drainage improvements throughout the regions. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduction in property losses/repetitive loss buy outs and infrastructure damage.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000 - $5,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plans

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #20	
Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to: Bury utility lines underground Provide frangible links/break away connections on utility poles. Harden utility poles by converting from wood to concrete or metal utility poles Increase the easement area/clearance of utility lines/poles from tree lines
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of power loss, associated damages, and line repairs.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Hail, Lightning, Thunderstorm Wind, Tornado
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$150,000 - $600,000
Potential Funding Sources:	HMGP, PDM, Utility Fees
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #21	
Proposed Action:	Coordinate with federal, state and local partners to provide all hazards, ICS, and specialized training that may enhance preparedness for first responders.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Increase in public safety knowledge base through education and awareness.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Drought, Extreme Heat, Winter Storm, Tornado, Lightning, Thunderstorm Wind, Wildfire, Hail
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000 - $50,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Operations Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #22	
Proposed Action:	Identify and pursue any mitigation activities that would aid/enhance evacuations throughout the region.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Life safety benefits through education and awareness.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood, Winter Storm, Tornado, Thunderstorm Wind, Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $500,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #23	
Proposed Action:	Continually review, revise, update, and systematically maintain floodplain data and maps of flood prone areas throughout the Southeast Texas Region.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood risk to structures through understanding risk and vulnerability.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000 - $5,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Floodplain Ordinance

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project.

South East Texas Regional Planning Commission– Action #24	
Proposed Action:	Pursue the coordination, construction, expansion, and maintenance of flood control structures/barriers for the purpose of mitigating damage from storm surge and sea level rise and other sources of saltwater intrusion.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to structures and infrastructure from storm surge and flooding.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project. Action #25 is a duplicate action in the previous HMAP to action #24

South East Texas Regional Planning Commission– Action #25	
Proposed Action:	Pursue the coordination, construction, expansion, and maintenance of flood control structures/barriers for the purpose of mitigating damage from storm surge and sea level rise and other sources of saltwater intrusion.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region of Hardin, Jefferson, and Orange Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to structures and infrastructure from storm surge and flooding.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane, Flood
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	HMGP, PDM
Lead Agency/Department Responsible:	SETRPC, Hardin Jefferson and Orange Counties/ Cities within
Implementation Schedule:	Within 12 months of plan adoption pending available funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. Ongoing Project. Action #25 is a duplicate action in the previous HMAP to action #24

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SUMMARY

As discussed in Section 2, at the mitigation workshop the planning team and stakeholders met to develop mitigation actions for each of the natural hazards included in the Plan Update. Each of the actions in this section were prioritized based on FEMA's Social, Technical, Administrative, Political, Legal, Economic, and Environmental (STAPLEE) criteria necessary for the implementation of each action.

As part of the economic evaluation of the STAPLEE analysis, jurisdictions analyzed each action in terms of the overall costs, measuring whether the potential benefit to be gained from the action outweighed costs associated with it. As a result of this exercise, priority was assigned to each mitigation action by marking them as High (H), Moderate (M), or Low (L). An action that is ranked as "High" indicates that the action will be implemented as soon as funding is received. A "Moderate" action is one that may not be implemented right away depending on the cost and number of citizens served by the action. Actions ranked as "Low" indicate that they will not be implemented without first seeking grant funding and after "High" and "Moderate" actions have been completed.

All mitigation actions created by Planning Team members are presented in this section in the form of Mitigation Action Worksheets. More than one hazard is sometimes listed for an action, if appropriate. Actions presented in this section represent a comprehensive range of mitigation actions per current State and FEMA Guidelines, including two actions, per hazard, and of two different types for each participating jurisdiction. The term county-wide action refers to Jefferson

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County and the Cities of Beaumont, Bevil Oaks, China, Groves, Nederland, Nome, Port Arthur, Port Neches, and Taylor Landing. County-wide does not include special districts, unless otherwise noted within each action.

Table 18-1. Jefferson County Mitigation Action Matrix

TYPE OF ACTION	
Action #1 – Plans/Regulations (Blue)	Action #4 – Structural (Orange)
Action #2 – Education/Awareness (Red)	Action #5 – Preparedness/Response (Black)
Action #3 – Natural Systems Protections (Green)	

Jurisdiction	Flood	Hurricane Wind	Lightning	Thunderstorm Wind	Extreme Heat	Hail	Tornado	Wildfire	Winter Storm	Drought	Coastal Erosion
Jefferson County	XXXXX	XXXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXXX
City of Beaumont	XXXXX	XXXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	N/A
City of Bevil Oaks	XXXXX	XXXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	N/A
City of China	XXXXX	XXXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	N/A
City of Groves	XXXXX	XXXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	N/A
City of Nederland	XXXX	XXXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	N/A
City of Nome	XXXXX	XXXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	N/A
City of Port Arthur	XXXXX	XXXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	N/A
City of Port Neches	XXXXX	XXXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	N/A
City of Taylor Landing	XXXXX	XXXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	N/A
Lower Neches Valley Authority	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX	N/A
Port of Beaumont	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	N/A

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Jurisdiction	Flood	Hurricane Wind	Lightning	Thunderstorm Wind	Extreme Heat	Hail	Tornado	Wildfire	Winter Storm	Drought	Coastal Erosion
Port of Port Arthur	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	N/A
South East Texas Regional Planning Commission (SETRPC)	XXXXX	XXXXX	XXXX	XXXX	XXX	XXXX	XXXX	XXXX	XXXX	XXXX	N/A

JEFFERSON COUNTY – COUNTY-WIDE ACTIONS

		Jefferson County-wide – Action #1
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm, Hurricane Wind, Coastal Erosion (where applicable), Low Risk and Man-Made Hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	County and Local Emergency Managers
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

SECTION 18: MITIGATION ACTIONS

		Jefferson County-wide – Action #2
	Proposed Action:	Acquire and install generators with hard wired quick connections at all critical facilities.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provide power for critical facilities during power outages and ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm, Hurricane Wind, Low Risk and Man-Made Hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	County Public Works/City Engineer/City Administrator
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

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		Jefferson County-wide – Action #3
	Proposed Action:	Upgrade critical facilities to include drought mitigation measures such as greywater reuse systems and drought tolerant landscaping.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages at critical facilities.
	Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	County Public Works/City Engineer/City Administrator
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan (applicable jurisdictions)

COMMENTS:

		Jefferson County-wide – Action #4
	Proposed Action:	Harden/retrofit critical facilities to hazard-resistant levels.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages at critical facilities; Ensure continuity of critical services during and after event; Reduce risk of injury to emergency and critical personnel.
	Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm, Low Risk and Man-Made Hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	County Public Works/City Engineer/City Administrator
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan; Capital Improvement Plan (applicable jurisdictions)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County-wide – Action #5
	Proposed Action:	Adopt regulations to restrict development in areas susceptible to costal erosion.
	BACKGROUND INFORMATION	
	Site and Location:	All areas susceptible to coastal erosion
	Risk Reduction Benefit: *(Current Cost/Losses Avoided)*	Reduce damages to facilities due to coastal erosion
	Type of Action: *(Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Coastal Erosion
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on New/Existing Buildings:	Reduce risk to future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	County Public Works/City Engineer/City Administrators
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Local Ordinances

COMMENTS:
*This action is only applicable to communities in the planning area subject to coastal erosion. Action is not applicable to inland communities.

		Jefferson County-wide – Action #6
	Proposed Action:	Develop a Community Wildfire Protection Plan.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County and City Manager for participating local jurisdictions
Implementation Schedule:	Within 12-24 month(s) of plan adoption
Incorporation into Existing Plans:	Local Codes and Ordinances

COMMENTS:

		Jefferson County-wide– Action #7
	Proposed Action:	Plan for the Protection of Vulnerable Populations by identifying at-risk populations and coordinating with home health agencies, medical equipment companies, local churches, and neighborhood associations to assist during extreme weather events. Organize strategies for protecting vulnerable populations and develop a plan to activate strategies when need be.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens and at-risk populations from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Ongoing project
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred Action #1,2
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jefferson County-wide– Action #8
	Proposed Action:	Facilitate use of all mass notification systems including but not limited to the Southeast Texas Alerting Network (STAN), to notify and educate the public of impending hazardous events.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens and at-risk populations from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Ongoing project
Incorporation into Existing Plans:	EOPs

COMMENTS:
Deferred Action # 5
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jefferson County-wide– Action #9
	Proposed Action:	Public Awareness and Education of Vulnerable Population through creation of a database and special group in STAN (Southeast Texas Alerting Network regional emergency alerting system) whereby public information protection actions can be disseminated.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Expedite access and hazard awareness and protect citizens and at-risk populations from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Ongoing project
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jefferson County-wide– Action #10
	Proposed Action:	Coordinate and implement a natural hazards public awareness campaign among the jurisdictions. Target audiences will include schools, neighborhood watch groups, various civic groups, neighborhood associations, community groups, and industry groups. FEMA publications will also be made available in city hall libraries, municipal courts, police and fire departments, public works departments, public access TV channels, city libraries and on the SETRPC and jurisdictional websites.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens and at-risk populations from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $75,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Ongoing project
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred Action: #11
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jefferson County-wide– Action #11
	Proposed Action:	Coordinate with federal, state and local partners to provide all hazards, ICS, and specialized training that may enhance preparedness for first responders.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens and at-risk populations from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000 - $50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12 months of plan adoption, ongoing
Incorporation into Existing Plans:	Emergency Operations Plan

COMMENTS:
Deferred Action #21
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jefferson County-wide– Action #12
	Proposed Action:	Develop a drought emergency plan, incorporating criteria or triggers for drought-related actions, enact water conservation measures during drought conditions, and develop a drought communication plan and early warning system to facilitate timely communication of relevant information.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of potential injuries and fatalities
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$75,000 - $100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Ongoing project
Incorporation into Existing Plans:	Local water plans and ordinances

COMMENTS:
Deferred Action #3

		Jefferson County-wide– Action #13
	Proposed Action:	Harden/retrofit existing and/or construct new structures to act as shelters during severe weather events.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury and fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Thunderstorm Wind, Tornado, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,500,000 - $5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange and Jasper Counties
Implementation Schedule:	Within 12-24 months of plan adoption, ongoing
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred Action #6
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County-wide– Action #14
	Proposed Action:	Harden/retrofit critical facilities and infrastructures to hazard-resistant levels. Implement standard for new construction and developments.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 24 months of plan adoption, ongoing
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred Action #18
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County-wide– Action #15
	Proposed Action:	Coordinate Emergency Management Plans for coastal storm/hurricane events. Specific efforts include encouraging jurisdictions to install and maintain back up power at identified facilities, construct and designate emergency operations centers for disaster/emergency operations and solicit participation in Community Emergency Response training.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injury or fatalities. Ensures continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 - $50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12-36 months of plan adoption, ongoing
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Deferred Action #8

		Jefferson County-wide– Action #16
	Proposed Action:	Conduct flood insurance educational seminars for area realtors to increase their knowledge of National Flood Insurance Program (NFIP) and the benefits to homeowners in security flood insurance.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood insurance premiums for residents. Reduce flood risk and build resiliency.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000 - $50,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12 months of plan adoption, ongoing
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred Action #9
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County-wide– Action #17
	Proposed Action:	Coordinate public/private partnerships to ensure special needs populations are protected from health risks due to extreme weather conditions. Actions will be targeted toward citizens with physical limitations and others who may be unable to reach safety in times of severe weather. Volunteer groups may be available to assist by visiting special needs groups to ensure their safety and comfort during extreme weather events or assist when evacuations are necessary.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of potential injuries and fatalities especially for at-risk populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Ongoing project
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Deferred Action #10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jefferson County-wide– Action #18
	Proposed Action:	Acquisition / Buy-out: Acquire and demolish flood-prone properties that are deemed Repetitive and Severe Repetitive Loss properties.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$90,000 - $10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12-60 months of plan adoption, ongoing
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred Action #16, 17
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County-wide– Action #19
	Proposed Action:	Elevation of new and existing flood prone structures and infrastructures.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$90,000 - $2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12-60 months of plan adoption, ongoing
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County-wide– Action #20
	Proposed Action:	Continually review, revise, update, and systematically maintain floodplain data and maps of flood prone areas throughout the Southeast Texas Region.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood risk to structures through understanding risk and vulnerability.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000 - $5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12 months of plan adoption, ongoing
Incorporation into Existing Plans:	Floodplain Ordinance

COMMENTS:
Deferred Action #23
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jefferson County-wide– Action #21
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Action can include but not limited to: bury utility lines underground, frangible links/break away connections, harden utility poles, and easement area/clearance of utility lines/ poles from tree lines.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$150,000 - $600,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12-24 months of plan adoption, ongoing
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS:
Deferred Action #13, 20
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County-wide– Action #22
	Proposed Action:	Design and implement a program to remove and/ or minimize damage to structures and infrastructure from falling trees and debris.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 24 months of plan adoption, ongoing
Incorporation into Existing Plans:	Public Works SOP

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jefferson County-wide– Action #23
	Proposed Action:	Pursue drainage improvements. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000- $5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12 months of plan adoption, ongoing
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred Action #19
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jefferson County-wide– Action #24
	Proposed Action:	Identify and implement mitigation activities that would aid/enhance evacuations throughout the region.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Tornado, Winter Storm, Wildfire, Thunderstorm Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12-24 months of plan adoption, ongoing
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred Action #22
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jefferson County-wide– Action #25
	Proposed Action:	Coordinate and implement construction, expansion, and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect freshwater resources from storm surge, sea level rise, and other sources of saltwater intrusion; in addition to water contamination.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Coastal Erosion
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange and Jasper Counties
Implementation Schedule:	Within 12-24 months of plan adoption, ongoing
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Includes deferred action# 4, 24, 25
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County-wide– Action #26
	Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source for agricultural resources throughout the Southeast Texas region.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Improve alternate source of water. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Drought, Thunderstorm Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000- $250,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12 months of plan adoption, ongoing
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred Action #12
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County-wide– Action #27
	Proposed Action:	Pursue the identification and construction of alternate freshwater resources.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Improve alternate source of water. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000- $200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Within 12-24 months of plan adoption, ongoing
Incorporation into Existing Plans:	Local Water Management Plan

COMMENTS:

		Jefferson County-wide– Action #28
	Proposed Action:	Secure and maintain backup information systems to store critical information at off-site locations.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of critical government data and files through redundant systems.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 - $350,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 24 months of plan adoption, ongoing
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred Action #14
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jefferson County-wide– Action #29
	Proposed Action:	Coordinate with county and municipal governments to allow the SETRPC to maintain a copy of all local ordinances relevant to mitigation activities.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Jefferson County and all participating jurisdictions and special districts
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of local ordinances through redundant systems.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Extreme Heat, Hurricane Wind, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000 - $15,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 24 months of plan adoption, ongoing
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred Action #15
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

JEFFERSON COUNTY

		Jefferson County– Action #1
	Proposed Action:	Mason Road Bridge Replacement: Demo existing substandard bridge and construct new concrete bridge. Design replacement concrete bridge to handle modern traffic with “plus” grade elevation to prevent water surge from topping structure. Project to include but not limited to: all surveying, engineering, H & H studies, plan preparation, environmental planning and permitting, bidding activities, construction and grant administration and notifying residence of replacement and providing traffic safety plans.
	BACKGROUND INFORMATION	
	Site and Location:	Mason Road Bridge at Jefferson County Drainage District Drainage Ditch 804E.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages and injury. Enhances response for emergency responders.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,300,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County– Action #2
	Proposed Action:	Old Big Hill Bridge Road Bridge Replacement: Demo existing substandard bridge and construct new concrete bridge. Design replacement concrete bridge to handle modern traffic with "plus" grade elevation to prevent water surge from topping structure. Project to include but not limited to: all surveying, engineering, H & H studies, plan preparation, environmental planning and permitting, bidding activities, construction and grant administration, and notifying residence of replacement and providing traffic safety plans.
	BACKGROUND INFORMATION	
	Site and Location:	Old Big Hill Road at the May Haw Bayou
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages and injury. Enhances response for emergency responders.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,584,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County– Action #3
	Proposed Action:	Gilbert Lakes Estates Drainage Study and Improvements: Perform a topographic survey of all roads, drainage ditches and drainage structures throughout the Gilbert Lake estates subdivision and necessary offsite stormwater outfalls to support construction project to improve drainage. Project expected to include: Replacement of substandard or damaged culverts or other structures under roads or driveways and reshaping/regrading or improve ditches to promote positive flow. Project to include but not limited to: surveying, engineering, H & H studies, environmental planning, permitting, & construction.
	BACKGROUND INFORMATION	
	Site and Location:	Gilbert lake Estates off of Highway 365, north of I-10
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,420,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department, DD6
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County– Action #4
	Proposed Action:	Green Acres Subdivision Drainage Improvements: Perform a topographic survey of all roads, drainage ditches and drainage structures throughout the Green Acres subdivision and necessary offsite stormwater outfalls to support construction project to improve drainage. Project expected to include: Replacement of substandard or damaged culverts or other structures under roads, driveways and siphons under LNVA Canals and reshaping/regrading or otherwise improve ditches to promote positive flow. Project to include but not limited to: surveying, engineering, H & H studies, environmental planning, permitting, & construction.
	BACKGROUND INFORMATION	
	Site and Location:	South of Hwy 124, east of Hwy 365
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,400,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department, LNVA, DD6
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County– Action #5
	Proposed Action:	Hamshire Road Culvert Crossing at DD6 Ditch 710 Upgrade: Project expected to include: Replacement of substandard/undersized road and private drive culverts at the intersection of Hamshire Road and DD6 Ditch 710 to improve drainage. Project to include but not limited to: all surveying, engineering, H & H studies, plan preparation, environmental planning and permitting, bidding activities, construction and grant administration. Work also to include notifying residence and providing traffic safety plans.
	BACKGROUND INFORMATION	
	Site and Location:	Hamshire Road at DD6 Ditch 710
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$750,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department, DD6
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County– Action #6
	Proposed Action:	Hamshire Area Drainage Improvement: Perform a topographic survey of area roads, drainage ditches and drainage structures to the north and east of the Hamshire School facility and necessary offsite stormwater outfalls to support construction project to improve drainage. Project expected to include: Replacement of substandard or damaged culverts or other structures under roads and driveways, additional culverts or other drainage structures, reshaping/regrading or otherwise improve ditches to promote positive flow. Project to include but not limited to: surveying, engineering, H & H studies, environmental planning, permitting, & construction.
	BACKGROUND INFORMATION	
	Site and Location:	North and east of the Hamshire School
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,950,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department, DD6
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County– Action #7
	Proposed Action:	Lahown Road - Road base and drainage upgrade: Design and upgrade roadway base to provide a more water proof base and added resiliency during flooding events. Road base upgrades to include options such as placement of black base, stabilization with oil emulsion or stabilization with cement mixtures other upgrade/stabilization methods. Replace existing substandard or undersized culverts and other water control structures in project areas. Project to include but not limited to: surveying, engineering, H & H studies, plan preparation, environmental planning, permitting, construction and grant administration.
	BACKGROUND INFORMATION	
	Site and Location:	Lahown Road
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by providing a more resilient road base design and improving drainage capacity of stormwater crossings. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,750,0000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County– Action #8
	Proposed Action:	Mason Road - Road base and drainage upgrade: Design and upgrade roadway base to provide a more waterproof base and added resiliency during flooding events. Road base upgrades to include options such as placement of black base, stabilization with oil emulsion or stabilization with cement mixtures other upgrade/stabilization methods. Replace existing substandard or undersized culverts and other water control structures in project areas. Project to include but not limited to: surveying, engineering, H & H studies, environmental planning, permitting, construction and grant administration.
	BACKGROUND INFORMATION	
	Site and Location:	Mason Road
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by providing a more resilient road base design and improving drainage capacity of stormwater crossings. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Development

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,750,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Storm Water Runoff Pollution Prevention Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County– Action #9
	Proposed Action:	McDermand Road: Road base and drainage upgrade: Design and upgrade roadway base to provide a more water proof base and added resiliency during flooding events. Road base upgrades to include options such as placement of black base, stabilization with oil emulsion or stabilization with cement mixtures or other upgrade/stabilization methods. Replace existing substandard or undersized culverts and other water control structures in project areas. Project to include but not limited to: surveying, engineering, H & H studies, environmental planning, etc.
	BACKGROUND INFORMATION	
	Site and Location:	McDermand Road
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by providing a more resilient road base design and improving drainage capacity of stormwater crossings. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,750,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:

NFIP & WHY MITIGATION ACTION IS APPROPRIATE:		
Protects communities and reduces risk of flooding.		
		Jefferson County– Action #10
	Proposed Action:	Moore Road Residential Drainage: Perform a topographic survey of all roads, drainage ditches and drainage structures throughout the Moore Road residential areas and DD6 stormwater outfalls to support construction project to improve drainage in the area. Addition or replacement of undersized or damaged culverts or other structures under roads and driveways and reshaping/regrading or otherwise improve ditches to promote positive flow. Add or upgrade drainage structures under the LNVA Canals.
	BACKGROUND INFORMATION	
	Site and Location:	Moore Road (South of the DD6 Ditch 607 Crossing thence south to Old Sour Lake Road)
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department, LNVA, DD6
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Project to include but not limited to: all surveying, engineering, H & H studies, plan preparation, environmental planning and permitting, bidding activities, construction and grant administration.

NFIP & WHY MITIGATION ACTION IS APPROPRIATE:	
Protects communities and reduces risk of flooding.	
	Jefferson County– Action #11
Proposed Action:	Old Big Hill Road - Road base and drainage upgrade: Design and upgrade roadway base to provide a more waterproof base and added resiliency during flooding events. Road base upgrades to include options such as placement of black base, stabilization with oil emulsion or stabilization with cement mixtures or other upgrade/stabilization methods. Replace existing substandard or undersized culverts and other water control structures in project areas. Project to include but not limited to: all surveying, engineering, H & H studies, plan preparation, environmental planning and permitting, bidding activities, construction and grant administration.
BACKGROUND INFORMATION	
Site and Location:	Old Big Hill Road
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,850,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:

NFIP & WHY MITIGATION ACTION IS APPROPRIATE:	
Protects communities and reduces risk of flooding.	
	Jefferson County– Action #12
Proposed Action:	Tram Road Drainage: Perform topographic survey of all ditches and drainage structures on Tram Road from Hwy 105 to Tolivar Canal Road along with necessary offsite stormwater outfalls. Project to include: Replacement of substandard, undersized or damaged culverts or other structures under roads, driveways and siphons under LNVA Canals. Reshaping/regrading or otherwise improve ditches to promote positive flow. Design and build syphon systems, add additional structures along the drainage of LNVA Canal and DD6 drainage system, build levee diversion and detention.
BACKGROUND INFORMATION	
Site and Location:	Tram Road from Hwy 105 to Tolivar canal road
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,950,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department, LNVA, DD6
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Project to include but not limited to: all surveying, engineering, H & H studies, plan preparation, environmental planning and permitting, bidding activities, construction and grant administration.

NFIP & WHY MITIGATION ACTION IS APPROPRIATE:	
Protects communities and reduces risk of flooding.	
	Jefferson County– Action #13
Proposed Action:	Boyt Road from Hwy 124 North to Lawhon - Road base and drainage upgrade: Design and upgrade roadway base to provide a more water proof base and added resiliency during flooding events. Road base upgrades to include options such as placement of black base, stabilization with oil emulsion or stabilization with cement mixtures or other upgrade/stabilization methods. Replace existing substandard or undersized culverts and other water control structures in project areas. Project to include but not limited to: all surveying, engineering, H & H studies, plan preparation, environmental planning and permitting, bidding activities, construction and grant administration.
BACKGROUND INFORMATION	
Site and Location:	Boyt Road from Hwy 124 North to Lawhon
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by providing a more resilient road base design and improving drainage capacity of stormwater crossings. Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,950,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:

NFIP & WHY MITIGATION ACTION IS APPROPRIATE:	
Protects communities and reduces risk of flooding.	
	Jefferson County– Action #14
Proposed Action:	Central Gardens and Central Heights, Master Plan Drainage Study. Phase I: Perform Hydrologic and Hydraulic study of the Central Gardens and northwestern Central Heights subdivision areas. Project to include topographic survey of natural ground, structures, roads, drainage ditches and drainage structures throughout project area to support development. Project to support design and construction projects for the Central Gardens and Central Heights area as outlined in HMAP Action Items for Central Gardens and Central Heights areas Phases II thru V.
BACKGROUND INFORMATION	
Site and Location:	Nederland, Texas – Central Gardens Subdivision
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$600,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department, DD7, Utilities, TxDOT or LNVA.
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Project expected to include all topographic surveying, utility locations, H&H modeling and calculations, project option developments and cost estimation of various options to improve drainage.

NFIP & WHY MITIGATION ACTION IS APPROPRIATE:	
Protects communities and reduces risk of flooding.	
	Jefferson County– Action #15
Proposed Action:	Central Gardens Subdivision Drainage upgrades, Phase II, 5th thru 9th Avenues: Utilize Hydrologic-Hydraulic (H&H) study outlined in Proposed HMAP Action Item Central Garden & Central Heights Master Plan Drainage Study Phase I. Perform a topographic survey of all roads, drainage ditches and drainage structures. Project expected to include: Replacement of substandard or damaged culverts or other structures under roads or driveways, reshaping/regrading, deepening or otherwise improve ditches to promote positive flow.
BACKGROUND INFORMATION	
Site and Location:	Nederland, Texas – Central Gardens Subdivision
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,750,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department, DD7, and TXDOT
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Project to include but not limited to: surveying, engineering, H&H studies, plan preparation, environmental planning and permitting, bidding activities, utility relocation, construction and grant administration.

NFIP & WHY MITIGATION ACTION IS APPROPRIATE:		
Protects communities and reduces risk of flooding.		
		Jefferson County– Action #16
	Proposed Action:	Central Gardens Subdivision Drainage upgrades, Phase III, 1st thru 4th Avenues: Utilize Hydrologic – Hydraulic (H&H) study outlined in Proposed HMAP Action Item Central Garden & Central Heights Master Plan Drainage Study - Phase I. Perform a topographic survey of all roads, drainage ditches and drainage structures. Project expected to include: the installation of under storm drain system and inlets, replacement of substandard or damaged culverts or other structures under roads or driveways. Reshaping/regrading, deepening or otherwise improve ditches to promote positive flow to the new underground system.
	BACKGROUND INFORMATION	
	Site and Location:	Nederland, Texas – Central Gardens Subdivision
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,250,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department, DD7, and TXDOT
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Project to include but not limited to: surveying, engineering, H&H studies, environmental planning and permitting, utility relocation, construction and grant administration.

NFIP & WHY MITIGATION ACTION IS APPROPRIATE:	
Protects communities and reduces risk of flooding.	
	Jefferson County– Action #17
Proposed Action:	Central Gardens Subdivision Drainage upgrades, Phase IV, Central BLVD: Perform a topographic survey of all roads, drainage ditches and drainage structures throughout proposed area and also study the outfall routes of Central Gardens Ditch. Project expected to include: Replacement of substandard or damaged culverts or other structures under roads, canals or driveways, reshaping/regrading, deepening or ditch improvements to promote positive flow. Improve outfall structures or develop other structural solutions. Project to include but not limited to: surveying, engineering, H & H studies, environmental planning, utility relocation, & construction.
BACKGROUND INFORMATION	
Site and Location:	Nederland, Texas – Central Gardens Subdivision
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,800,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department, DD7, LNVA and TXDOT
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:

NFIP & WHY MITIGATION ACTION IS APPROPRIATE:		
Protects communities and reduces risk of flooding.		
		Jefferson County– Action #18
	Proposed Action:	Central Gardens Subdivision Drainage upgrades Phase V Drainage along Houston Avenue: Perform a topographic survey of all roads, drainage ditches and drainage structures throughout proposed area. Project expected to include: Replacement of substandard or damaged culverts or other structures under roads, or driveways. Coordination of siphons under the pipeline corridor or drainage structures along the corridor, reshaping/regrading, deepening or ditch improvements, improve outfall structures or develop other solutions. Project to include but not limited to: surveying, H & H studies, environmental planning and permitting, etc.
	BACKGROUND INFORMATION	
	Site and Location:	Nederland, Texas – Central Gardens Subdivision
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Engineering Department, DD7, the City of Nederland and Pipeline companies
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Utilize Hydrologic – Hydraulic (H&H) study outlined in Proposed HMAP Action Item Central Garden & Central Heights Master Plan Drainage Study Phase I.

NFIP & WHY MITIGATION ACTION IS APPROPRIATE:	
Protects communities and reduces risk of flooding.	
	Jefferson County– Action #19
Proposed Action:	Develop and construct an all hazard resistant, multi-jurisdictional EOC.
BACKGROUND INFORMATION	
Site and Location:	Site location to be determined with Jefferson County limits.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Improve coordinated emergency response and ensure continuity of services. Reduce risk of injury and loss of life.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County and City Emergency Management Personnel
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan; Capital Improvement Plan

COMMENTS:
Deferred county-wide action #14

NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue when caused by unforeseen events. Promotes public safety.

		Jefferson County– Action #20
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazard that can threaten the area and mitigation measures to reduce injuries fatalities and property damages. Include links to weather alerts and departmental phone listings with contact personnel for residents.
	BACKGROUND INFORMATION	
	Site and Location:	Areas of the county including residents downstream of the Sam Rayburn Dam and the Toleda Bend Dam
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Coastal Erosion, Drought, Extreme Heat, Flood, Hail Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County OEM
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #15, #20

NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jefferson County– Action #21
	Proposed Action:	Coordinate training opportunities for first responders for all hazards that effect planning area.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide emergency response personnel
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Improve coordinated emergency response and ensure continuity of services. Reduce risk of injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness- Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Coastal Erosion, Drought, Extreme Heat, Flood, Hail Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm, and low risk and man-man hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication, Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County OEM
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:

NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jefferson County– Action #22
	Proposed Action:	Harden/retrofit critical facilities and infrastructures to hazard-resistant levels, including cooling / warming stations and to act as shelters during severe weather events. Implement standard for new construction and developments.
	BACKGROUND INFORMATION	
	Site and Location:	County critical facilities including but not limited to County Courthouse/ S.O/ Jail.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000 - $5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Public Works and OEM
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred County-wide actions #1, 3, 11, & 16. Deferred action #2, 3

NFIP & WHY MITIGATION ACTION IS APPROPRIATE:		
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.		
		Jefferson County– Action #23
	Proposed Action:	Acquisition / Buy-out: Acquire and demolish flood-prone properties that are deemed Repetitive and Severe Repetitive Loss properties.
	BACKGROUND INFORMATION	
	Site and Location:	Repetitive loss and flood prone properties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate risk of flood damages to high risk structures and prevent future losses in high risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County OEM
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred county-wide action #2
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County– Action #24
	Proposed Action:	Elevation of new and existing flood prone structures and infrastructures.
	BACKGROUND INFORMATION	
	Site and Location:	Flood prone properties and infrastructure
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to high risk structures and prevent future losses in high risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000 - $5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County OEM
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred county-wide action #4
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County– Action #25
	Proposed Action:	Elevate or upgrade bridges, culverts and other crossings to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Public Works Department, TXDOT
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred county-wide action #5
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County– Action #26
	Proposed Action:	Implement drainage improvements. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000 - $5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Public Works, Engineering Departments, and Drainage Districts
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred county-wide action #6
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County– Action #27
	Proposed Action:	Secure, bury, or otherwise harden exposed or vulnerable pipelines including water and sewer.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of pipeline failure through mitigation of exposed or vulnerable lines.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County OEM
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #8
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County– Action #28
	Proposed Action:	Acquire and install generators with hard wired quick connections at all critical facilities.
	BACKGROUND INFORMATION	
	Site and Location:	County critical facilities and infrastructures
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provide power for critical facilities during power outages and ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Public Works Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #9
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Jefferson County– Action #29
	Proposed Action:	Construct or upgrade existing detention / retention ponds where appropriate to collect storm water to reduce flooding. Utilize retention ponds to collect storm water run-off and use as an alternate water source throughout Jefferson County.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000 +
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Public Works Department, Drainage Districts
Implementation Schedule:	Within 24 – 48 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan, Water Plan

COMMENTS:
Deferred action #10, 12
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County– Action #30
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Action can included but not limited to: bury utility lines underground, frangible links/break away connections, harden utility poles, and easement area/clearance of utility lines/ poles from tree lines.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide utility lines
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Public Works Department, Local Utility Companies (Entergy)
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS:
Deferred action #13
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County– Action #31
	Proposed Action:	Design and implement a program to remove and/ or minimize damage to structures and infrastructure from falling trees and debris.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Administration
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinances

COMMENTS:
Deferred county- wide action #19
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County– Action #32
	Proposed Action:	Develop water conservation strategies and/or ordinances for implementation during droughts.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Administration
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Local Ordinances

COMMENTS:
Deferred county-wide action #18

		Jefferson County– Action #33
	Proposed Action:	Develop areas and educate public on maintaining defensible space surrounding structures to prevent damage.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Communication
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Fire Department
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS:
Deferred county-wide action #17

		Jefferson County– Action #34
	Proposed Action:	Flood proof County Courthouse by installing a pump system.
	BACKGROUND INFORMATION	
	Site and Location:	County Courthouse
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage to critical infrastructure.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Public Works Department
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #9
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County– Action #35
	Proposed Action:	Construct structure(s) in coastal jurisdictions that can withstand 200 mile per hour winds and that can server as shelters. This is in conjunction with the Texas Safe Shelter Initiative.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide, various location to be determined
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to citizens by providing shelter in high risk areas during extreme weather events. Reduce risk of injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Hurricane Wind, Tornado
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,600,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County OEM
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #1

		Jefferson County– Action #36
	Proposed Action:	Implement flood protection measures to protect which can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Coastal Erosion
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$60,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Public Works Department, coordination with USACE
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Deferred action #4
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County– Action #37
	Proposed Action:	Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect fresh water resources from storm surge, sea level rise, and other sources of salt water intrusion.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Coastal Erosion
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County, SETRPC, coordination with USACE
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Deferred action #5
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jefferson County– Action #38
	Proposed Action:	Restore sand dunes to protect inland resources during storm surge events.
	BACKGROUND INFORMATION	
	Site and Location:	Coastal site locations throughout County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Coastal Erosion
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$60,000,000 - $100,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Administration
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Dune Restoration and Management Plan

COMMENTS:
Deferred action #6
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County– Action #39
	Proposed Action:	Identify and implement mitigation activities that would aid/enhance evacuations throughout the region.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Tornado, Winter Storm, Wildfire, Thunderstorm Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County OEM
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #7
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jefferson County– Action #40
	Proposed Action:	Adopt and implement land use restrictions in high risk coastal erosion areas.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide coastal areas
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Coastal Erosion
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to future structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$2,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	Jefferson County Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Local Ordinance

COMMENTS:
Deferred action #14

		Jefferson County– Action #41
	Proposed Action:	Convert 56-acre excavated dirt pit into a localized freshwater storage impoundment which would be used to support water to municipal water plants.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County, specifically areas within Nederland, Port Neches, and Groves
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk injuries and loss of life. Improve stormwater management.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,468,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Public Works
Implementation Schedule:	Within 12-48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #12
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and promotes public safety.

		Jefferson County– Action #42
	Proposed Action:	Coordinate and work with the Lower Neches Valley Authority in order to use an LNVA sand pit as a potential freshwater reservoir for all areas south of I- 10.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County south of I-10
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Lifesaving water alternate source and localized flood reduction.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Hurricane Wind, Thunderstorm Wind, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$75,000 - $200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County, LNVA
Implementation Schedule:	Within 48-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan, Water Plan

COMMENTS:
Deferred action #8
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and promotes public safety.

		Jefferson County– Action #43
	Proposed Action:	Retrofit the LNVA pumping system, which includes a number of pump stations, in order to increase capacity and allow stand-alone service when the Neches River is contaminated or a failure of the primary system occurs.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County LNVA pumping system
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Increase capacity and reduce risk of inundation and/ or contamination. Ensure continuity of services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,680,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Public Works, LNVA
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County– Action #44
	Proposed Action:	Retrofit the primary diversion point and pumping system in order for the LNVA to fully control isolation and selection of the source of the water which flows into the pumping station and isolate either the Neches River or Pine Island Bayou should contamination occur.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County LNVA pumping system
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Increase capacity and reduce risk of inundation and/ or contamination. Ensure continuity of services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$562,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Public Works, LNVA
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #11
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Jefferson County– Action #45
	Proposed Action:	Enhance existing structures and construct additional water control features to allow the LNVA to isolate segments of canals in the event of contamination or localized bank failures in order to conserve and protect unaffected waters and continue deliveries to as many customers as possible while a clean-up or repair is addressed, rather than having a single event affect all customers of the entire system.
	BACKGROUND INFORMATION	
	Site and Location:	LNVA Systems
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Drought, Hazardous Materials
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$375,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Jefferson County Public Works, LNVA
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #13
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and promotes public safety.

		Jefferson County– Action #46
	Proposed Action:	Coordinate with federal, state, and local partners to provide training opportunities for first responders, including but not limited to HAZMAT, \, Flood, Hurricane, Tornado, and other natural hazards as appropriate.
	BACKGROUND INFORMATION	
	Site and Location:	County-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of life through preparedness.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Tornado, Hail, Lightning, Wildfire, Extreme Heat, Winter Storm, Thunderstorm Wind, Low Risk or Man-made hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	Reduce risk to existing structures through improved response
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local operating budgets, HMGP, PDM, TDEM
Lead Agency/Department Responsible:	County and City Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Deferred county-wide action #7
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

CITY OF BEAUMONT

		City of Beaumont– Action #1
	Proposed Action:	Storm harden, water proof, and retrofit the city owned warehouse located at 125 Magnolia Street and acquire properties for access and additional parking, to serve as more secure warehouse for emergency supplies and points of dispensing (POD) Operations.
	BACKGROUND INFORMATION	
	Site and Location:	125 Magnolia St / Emergency Management Warehouse
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire Winter Storm, Extreme Heat
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$6,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Administration and OEM
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #2
	Proposed Action:	Waterproof exterior walls at the Civic Center located at 701 Main Street, and repair the damaged interior of the Civic Center so that it can continue to be used in emergency events. Water proofing includes, but is not limited to tuck point pointing masonry, and applying water seal products.
	BACKGROUND INFORMATION	
	Site and Location:	701 Main Street / Civic Center
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$450,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Administration and OEM
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #3
	Proposed Action:	Water proof exterior walls at the Jefferson Theater, located at 345 Fannin Street and protect interior to preserve this Texas Historic Landmark and to mitigate further damages to this structure. Water proofing includes, but is not, limited to tuck point masonry, cleaning masonry, and applying water seal products.
	BACKGROUND INFORMATION	
	Site and Location:	345 Fannin Street / Jefferson Theatre
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$280,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Administration and OEM
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #4
	Proposed Action:	Install a 1600 KW standby generator with elevated support structure, hardwired quick connections, and the capacity to operate all levels of the Emergency Operations Center located at 700 Orleans to support a fully expanded operation center during time disasters.
	BACKGROUND INFORMATION	
	Site and Location:	700 Orleans / Emergency Operations Center
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provide power for critical facilities during power outages and ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Administration and OEM
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		City of Beaumont– Action #5
	Proposed Action:	Complete phase 3 of retrofitting the 3rd floor of the EOC to accommodate expanding staffing needs and office space to carryout mission area of the Beaumont Emergency Management program.
	BACKGROUND INFORMATION	
	Site and Location:	700 Orleans / Emergency Operations Center
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,300,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Administration and OEM
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Beaumont– Action #6
Proposed Action:	Wind Harden the 1st Floor of Fire Headquarters at 400 Walnut. Actions include but are not limited to roof retrofits, installing storm shutters/screens, installing generators with permanent hook-ups, and hardening of bay doors.
BACKGROUND INFORMATION	
Site and Location:	400 Walnut Street / Beaumont Fire and EMS Headquarters
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm, Extreme Heat
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,125,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Administration and OEM
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Previous action #8, updated based on new mitigation action description / cost
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #7
	Proposed Action:	Buy-Out / Acquisition: The proposed action item is to acquire and demolish the 110 homes and deed restricting the properties after all improvements are removed. The properties are located along the Pine Island Bayou, Neches River, and varying locations in the City.
	BACKGROUND INFORMATION	
	Site and Location:	Various Locations in Beaumont
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$22,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 12-60 months of plan adoption, Ongoing Project
Incorporation into Existing Plans:	Community Development Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #8
	Proposed Action:	Elevation of flood prone structures to at least 18" above BFE, consistent with the City's floodplain ordinance. The properties are located along the Pine Island Bayou, Neches River and varying locations.
	BACKGROUND INFORMATION	
	Site and Location:	Various Locations in Beaumont
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 12-60 months of plan adoption, Ongoing Project
Incorporation into Existing Plans:	Community Development Plan

COMMENTS:
Deferred action #42
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #9
	Proposed Action:	Construct a new water treatment plant to be located on the west side of Beaumont and outside of flood prone areas would treat surface water provided by the Lower Neches Valley Authority (LNVA). The plant would be designed to provide 15 million gallons per day with the ability for the plant to be scaled up in the future, if needed. Once online, this plant would replace the Loeb ground water treatment plant.
	BACKGROUND INFORMATION	
	Site and Location:	West Side of Beaumont (TBD)
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding; Create redundant/reliable water source to protect during drought and wildfire; Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$35,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Public Works, LNVA
Implementation Schedule:	Within 36-48 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan, Water Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #10
	Proposed Action:	Pine Street Water Resiliency Line: This project will construct an additional transmission line from the Pine Street Surface Water Treatment Plant and add four isolation valves.
	BACKGROUND INFORMATION	
	Site and Location:	Pine Street Water Treatment Plant
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Continuity of services; Redundant transmission to prevent breakdown during events; Reduces water losses due to breaks or dated lines; Prevent backwater flooding.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$6,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 36-48 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan, Water Plan

COMMENTS:
Deferred action #2 & 9
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #11
	Proposed Action:	Wastewater Treatment Plant High Flow Detention Pond: This project will add a detention pond at the Wastewater Treatment Plant of additional capacity during heavy rain events.
	BACKGROUND INFORMATION	
	Site and Location:	Wastewater Treatment Plant
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by increasing drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,250,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Beaumont– Action #12
	Proposed Action:	Wastewater Treatment Plant Pond 2 Rehabilitation Project: This project will remove accumulated solids, excavate and re-grade the pond bottom to increase detention capacity, and install new aeration equipment.
	BACKGROUND INFORMATION	
	Site and Location:	Wastewater Treatment Plant
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring capacity.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,600,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 24-36months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Beaumont– Action #13
	Proposed Action:	Wastewater Treatment Plant Pond 3 Rehabilitation Project: This project will remove accumulated solids, excavate and re-grade the pond bottom to increase detention capacity, and install new aeration equipment.
	BACKGROUND INFORMATION	
	Site and Location:	Wastewater Treatment Plant
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring capacity.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,050,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 36-48 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Beaumont– Action #14
	Proposed Action:	South Park River diversion project: Interconnects to the storm sewer systems along Florida Avenue and Jim Gilligan Avenue to improve outfall conditions for stormwater systems. The western most reaches of the system will interconnect with the open channel and detention basins to increase downstream capacity by discharging directly east to the Neches River. The project will include roadway reconstruction and utility adjustments along with new inlets and includes single, dual, or triple barrel storm sewer systems coupled with a flap gate backflow preventer at the Neches River.
	BACKGROUND INFORMATION	
	Site and Location:	South Park Neighborhood
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring and improving drainage capacity.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Public Works, DD6
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Beaumont– Action #15
	Proposed Action:	The proposed project includes installation of a large storm drainage system to capture runoff from the downtown area and outfall rainwater to the Neches River. The proposed storm drain solution will ensure that storm water is sufficiently collected and taken away from the area reducing flood risk for the adjacent structures and allowing roadway access through the area to emergency responders during a major storm event.
	BACKGROUND INFORMATION	
	Site and Location:	4th Street
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring and improving drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Public Works, DD6
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
The lack of sufficient storm water conveyance results in storm water completely inundating the roadway, runoff leaving the right-of-way and flooding adjacent businesses and residential homes.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Beaumont– Action #16
	Proposed Action:	The proposed mitigation action consists of improvement to the storm drain system in the northwestern neighborhood of Beaumont. Two additional 60" RCPs will be installed alongside the existing culvert under the canal. A 6'x3' rectangle concrete channel will be widened and an additional 18" RCP will be added next to the 167 existing driveway culverts. The channel downstream of the canal will be widened to an 80' top width. Three additional 60" RCPs will be installed at the culvert between the two channels.
	BACKGROUND INFORMATION	
	Site and Location:	Northwest Beaumont, East of Eastex Freeway
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring and improving drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Public Works, DD6
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Beaumont– Action #17
Proposed Action:	The proposed mitigation action includes storm sewer improvements to include 8,500 linear feet of 10'x10' RCB to be installed in the project area. The box will run under the following streets: Fulton Avenue, Sycamore Street, Carroll Street, Schwarner Street, and Verone Street out-falling to the Neches River. This box will run under the following streets: Fulton Avenue, Sycamore Street, Carroll Street, Schwarner Street, and Verone Street; and outfall to the Neches River.
BACKGROUND INFORMATION	
Site and Location:	Fulton Street Projects
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring and improving drainage capacity. Reduce risk of injuries or fatalities.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Public Works, DD6
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
This box culvert will drain the project area and reduce structural flooding in the area.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Beaumont– Action #18
	Proposed Action:	Upgrade surveillance capabilities at critical and key infrastructure locations to include all lift stations and the Collier's Ferry which provides access to key infrastructure.
	BACKGROUND INFORMATION	
	Site and Location:	Various Locations in Beaumont
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages. Ensures continuity of critical services during severe hazard events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$340,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Public Works, Information Technology
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #19
	Proposed Action:	Acquire an additional/redundant internet connection and load balancing equipment that allows for single site sharing in the event of an internet outage/failure at the Municipal Court building where the Emergency Operations Center and 911 Communications systems are housed. (700 Orleans) This will allow for back up internet connections should one internet provider loses the ability to provide service.
	BACKGROUND INFORMATION	
	Site and Location:	700 Orleans / Emergency Operations Center
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensures continuity of critical services during severe hazard events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security, Communication
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Bonds
Lead Agency/Department Responsible:	City of Beaumont Information Technology
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Revised based on new action #22
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		City of Beaumont– Action #20
	Proposed Action:	Install mobile medical unit to quickly expand capacity for surges due to disaster related patient increase. The MMU would be internal to the hospital.
	BACKGROUND INFORMATION	
	Site and Location:	Baptist Hospital Campus
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure continuity of critical services during and after event. Reduce risk of contamination and fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Health/Medical, Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Administration, Baptist Hospitals of SETX
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Beaumont– Action #21
	Proposed Action:	Implement drainage improvements in the City of Beaumont. Projects include but are not limited to joint Drainage District 6 projects and Beaumont projects, such as Steve's Drive project, and High School ditch Project (which includes, Seventh Street, North Street, Broadway Box projects).
	BACKGROUND INFORMATION	
	Site and Location:	Various Locations in Beaumont
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Public Works, DD6
Implementation Schedule:	Within 12 – 24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Revised based on new action #24, deferred action #17
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Beaumont– Action #22
	Proposed Action:	Retrofit existing city structures or build new structure(s) (Including a dome or domes) in this jurisdiction that can withstand 200 mile per hour winds and act as shelters of last resort.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, various location to be determined
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to citizens by providing shelter in high risk areas during extreme weather events. Reduce risk of injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Hurricane Wind, Tornado
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$4,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Revised based on new action #1, deferred action #5
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #23
	Proposed Action:	Conduct flood insurance educational seminars for area realtors to increase their knowledge of the National Flood Insurance Program (NFIP) and the benefits to homeowners of securing flood insurance.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide flood-prone and flood risk properties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages, losses and risk.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communications
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds (staff funds), State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Floodplain Management
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Community Development Plant; Flood Plain Management

COMMENTS:
Revised based on new action #10, deferred action #31
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Beaumont– Action #24
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Actions can include but are not limited to burying utility lines underground, providing frangible links/breakaway connections on utility poles and increasing the easement areas, utility line clearance, and poles from tree lines.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide utility lines
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Public Works, Local Utility Companies (Entergy)
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Revised based on new action #20, deferred action #14
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #25
	Proposed Action:	Harden electric grid and communication to prevent damage to electric, phone, and cable infrastructure.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security, Communication
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Public Works, Local Utility Companies (Entergy)
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Revised based on new action #21, deferred action #15
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		City of Beaumont– Action #26
	Proposed Action:	Install generators and permanent hook-ups to Beaumont Independent School District at sites including but not limited to West Brook, Police Building, Administrative Building, and the United Educational support Center which are used for sheltering and emergency operation coordination centers.
	BACKGROUND INFORMATION	
	Site and Location:	BISD Campuses
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provide power for critical facilities during power outages and ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$845,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Administration, Beaumont ISD
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Revised based on new action #25, deferred action #12
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		City of Beaumont– Action #27
	Proposed Action:	Procure back-up generators for the Port of Beaumont and install permanent quick connections at critical locations.
	BACKGROUND INFORMATION	
	Site and Location:	City of Beaumont
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provide power for critical facilities during power outages and ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$78,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Administration, Port of Beaumont
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Revised based on new action #26, deferred action #13
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		City of Beaumont– Action #28
	Proposed Action:	Retrofit the primary LNVA diversion point and pumping system at 10550 Helbig. Rd to allow the LNVA to fully control, isolate and section off the source of the water that flows into the pumping station. This would allow the LNVA to isolate either the Neches River or Pine Island Bayou should one suffer any form of contamination.
	BACKGROUND INFORMATION	
	Site and Location:	LNVA's Helbig Diversion Point.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of water contamination and ensure continuity of services. Reduce risk of injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$731,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Administration, LNVA
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Master Plan

COMMENTS:
Revised based on new action #27, deferred action #25
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #29
	Proposed Action:	Install generators with permanent hook-ups and harden roof sites at Lamar University. Sites include but are not limited to the University Police Station and Soccer Field House which serves as an emergency operations center.
	BACKGROUND INFORMATION	
	Site and Location:	Lamar University
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure continuity of emergency services and reduce risk of injury and fatalities to students and faculty.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Winter Storm, Thunderstorm Wind, Tornado, Hail, Lightning, Wildfire, Extreme Heat
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security, Energy (Power/Fuel)
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$13,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont OEM, Lamar University
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Operation Plan

COMMENTS:
Revised based on new action #28. Deferred action #40
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		City of Beaumont– Action #30
	Proposed Action:	At Lamar University, replace/upgrade radio repeater/tower, replace/upgrade emergency notification siren tower equipment and tower, cleaning and restoration of tunnel network, and upgrade safety and security lighting throughout campus.
	BACKGROUND INFORMATION	
	Site and Location:	Lamar University
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to student and faculty.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Winter Storm, Thunderstorm Wind, Tornado, Hail, Lightning
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont OEM, Lamar University
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Operation Plan

COMMENTS:
Revised based on new action #29, deferred action #41
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events. Promotes public safety.

		City of Beaumont– Action #31
	Proposed Action:	Enhance GIS capabilities to develop and maintain a database and identify concentrations of at-risk structures. Acquire GIS hazard mapping online software of flood prone areas for residents and design professionals.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood risk and damages to structures and infrastructures.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security, Communication
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 +
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Floodplain Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action 1 & 2. Noted that OEM was pending feedback from GIS department on status and any additional amendments required to action. Please review and advise if any changes need to be made.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Beaumont– Action #32
	Proposed Action:	Enhance Damage Assessment capabilities to develop and maintain a database and identify concentrations of at-risk structures. Offer trainings on new software to appropriate personnel.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to structure and infrastructure.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security, Communication
Effect on new/existing buildings:	
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 +
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont OEM, Building Inspectors
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Emergency Response Plan

COMMENTS:
Included previous deferred action 3 & 4.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Beaumont– Action #33
	Proposed Action:	Harden/retrofit critical facilities and infrastructures to hazard-resistant levels. Individual projects will be conducted in phases.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide critical facilities, including: EOC 700 Orleans Police Headquarters 255 College EMS Station 1 and 2 South Radio Tower 1550 Pine Fire Headquarters 400 Walnut
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000 – $12,000,000
Potential Funding Sources:	Grants funds with City Match
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Include previous deferred action 6, 7, 8
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #34
	Proposed Action:	Harden/retrofit medical facilities and infrastructures to hazard-resistant levels. Install generators with hard-wired, quick-connect hook-ups.
	BACKGROUND INFORMATION	
	Site and Location:	Baptist Hospital 3080 College Beaumont TX
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury and fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security, Health/Medical
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Administration and Baptist Hospital
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Include previous deferred action #9
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Beaumont– Action #35
Proposed Action:	Harden/retrofit medical facilities and infrastructures to hazard-resistant levels. Install generators with hard-wired, quick-connect hook-ups.
BACKGROUND INFORMATION	
Site and Location:	Christus St. Elizabeth Hospital 2830 Calder Beaumont TX
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury and fatalities.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security, Health/Medical
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Administration and St. Elizabeth Hospital
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action 9. 10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #36
	Proposed Action:	Upgrade emergency communication systems to ensure continued communication with outside sources and first responders.
	BACKGROUND INFORMATION	
	Site and Location:	Christus St. Elizabeth Hospital 2830 Calder Beaumont TX Port of Beaumont District
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensures continuity of emergency services. Reduce risk of damages, injuries and fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$62,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Administration, St. Elizabeth Hospital, and Port of Beaumont
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Deferred action #11
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Beaumont– Action #37
	Proposed Action:	Implement drainage improvements. Actions can include but are not limited to installing/upgrading culverts, headwalls as well as enlarging storm water ditches and canal, stormwater detention and/or retention basins as deemed necessary to reduce flood risk.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide locations
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000 - $15,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 12 – 24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #18, #19
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Beaumont– Action #38
	Proposed Action:	Continue phase II of bank stabilization project at Riverfront Park.
	BACKGROUND INFORMATION	
	Site and Location:	Riverfront Park
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #20
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Beaumont– Action #39
	Proposed Action:	Pursue building a 50 million gallon holding lagoon to store wastewater in case of power outages and plant failure, and removal of sludge build-up in the two lagoons to increase the storage capacity at the Wastewater Treatment Plant in case of power outages and plant failure.
	BACKGROUND INFORMATION	
	Site and Location:	Wastewater Treatment Plant
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Increase storage capacity. Reduce risk contamination, injuries or fatalities. Ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood Hurricane Wind, Hail, Lightning, Winter Storm, Thunderstorm Wind, Tornado, Extreme Heat
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Wastewater Management Plan

COMMENTS:
Deferred action #21
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Beaumont– Action #40
	Proposed Action:	Pursue and construct alternate fresh water sources. This include, but is not limited to increased capacity to maintain water pressure in case of system failures at the water treatment plant; installation of a 36" water transmission line to provide an alternate water transport method; installation of a raw water pipeline to replace the existing canal to prevent intention or natural pollution of the City's water supply; installation of new chemical feed facilities and building to safely store and use chlorine, etc.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Increases adequate water supply. Reduce of injuries or fatalities
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Wildfire, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Long-Term Water Plan

COMMENTS:
Deferred action #22
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Beaumont– Action #41
	Proposed Action:	Relocate Fire Headquarters and Fire Station 2, 7, and 11 to improve coverage in accordance with the 2005 Pietsche (ISO) study.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide- relocation site locations to be determined
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of life due to improved neighborhood coverage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$21,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont OEM
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #33
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #43
	Proposed Action:	Design and implement a program to remove and/ or minimize damage to structures and infrastructure from falling trees and debris.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide locations where trees are in close proximity to power lines
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinances

COMMENTS:
Deferred action #43
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #44
	Proposed Action:	Elevate and/or upgrade Marina Drive in the City of Beaumont.
	BACKGROUND INFORMATION	
	Site and Location:	Marina Drive, Beaumont TX
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response/access.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$6,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #46
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #45
	Proposed Action:	Acquire or elevate flood prone structures throughout the City of Beaumont with an emphasis on current Repetitive Loss and Severe Repetitive Loss properties. Elevate flood prone properties/structures and key infrastructure and electrical equipment throughout the City of Beaumont.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, including Repetitive Loss and Severe Repetitive Loss properties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$6,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #35, 42
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #46
	Proposed Action:	Public Awareness, Education, and Protection Plan Vulnerable Population through identification of at-risk population, use of STAN (Southeast Texas Alerting Network regional emergency alerting system), and coordination with local agencies to notify, educate and activate strategies in the event of extreme hazardous events.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Winter Storm, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$40,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont OEM
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Emergency Operations Plan, Emergency Response Plan

COMMENTS:
Deferred actions #27, 28
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Beaumont– Action #47
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, and flyers, critical agencies to education citizens of hazard that can threaten the area and mitigation measure to reduce injuries, fatalities and property damages. Include link to weather alters and departmental phone lists with contact personnel for residents. Action also includes availability of shelters, evacuation routes, floodplain maps, etc.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Winter Storm, Wildfire, and low-risk/man-made hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont OEM
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #29
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Beaumont– Action #48
	Proposed Action:	Coordinate Emergency Management Plans for coastal storms/hurricane events. Specific efforts will include encouraging agencies to install and maintain back-up power at identified facilities, construct and designate emergency operations centers for disaster/ emergency operations and solicit participation in Community Emergency Response Training.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, including coastal communities within city-limits
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens from potential injuries and damages. Ensure continuity of emergency services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulation - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security, Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Beaumont OEM
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Deferred action #30
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Beaumont– Action #49
	Proposed Action:	Provide educational seminars and brochures regarding the voluntary Community Rating System (CRS).
	BACKGROUND INFORMATION	
	Site and Location:	City-wide flood-prone and flood risk properties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages, losses and risk.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communications
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds (staff funds), State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Floodplain Management
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #47
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Beaumont– Action #50
	Proposed Action:	Coordinate with federal, state, and local partners to provide training opportunities for first responders.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness- Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Winter Storm, Wildfire, and low-risk/man-made hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication, Safety and Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$15,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont OEM
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #32
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Beaumont– Action #51
	Proposed Action:	Improve quality of local information on vulnerable items (assets and populations) for the purpose of more accurate risk and damage assessments. Work with other agencies in city to get data as up-to-date and complete as possible.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Improve risk and vulnerability assessment. Reduce risk of damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Tornado, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security, Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of Beaumont Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #45
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Beaumont– Action #52
	Proposed Action:	Harden/Retrofit the LNVA pumping system and diversion point to enhance pumping capability.
	BACKGROUND INFORMATION	
	Site and Location:	LNVA at Highway 105
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of water contamination and ensure continuity of services. Reduce risk of injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$550,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Administration, LNVA
Implementation Schedule:	Within 36-48 months of plan adoption
Incorporation into Existing Plans:	Master Plan

COMMENTS:
Deferred action #24
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Beaumont– Action #53
	Proposed Action:	Install / Upgrade surveillance capabilities and security systems at critical infrastructure sites.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide critical facilities including: Water Utility Sites, Port of Beaumont, Fire Stations, Police Stations, EMS, Communication Towers, Lift Stations
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of terror attack on vulnerable targets
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$260,000 - $4,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont OEM
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Anti-Terrorism Plan

COMMENTS:
Deferred actions #37, 38 & 39. Noted that site locations with 39 will be separated into individual action for those that have not been completed.

		City of Beaumont– Action #54
	Proposed Action:	Coordinate security checkpoints on entry to Plant Road to access industrial and chemical production and storage complexes.
	BACKGROUND INFORMATION	
	Site and Location:	Plant Road, Beaumont TX
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of terror attack on vulnerable targets.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$175,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont OEM
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Anti-Terrorism Plan

COMMENTS:
Deferred action #36

		City of Beaumont– Action #55
	Proposed Action:	At Baptist Hospital, install an on-site filtering system for water well and new pressurized water supply system, and install a Built-in Decontamination System (includes shower, curtain system, hazardous water tank, and drain) in the main facility.
	BACKGROUND INFORMATION	
	Site and Location:	Baptist Hospital
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hazardous Materials
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$150,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Administration, Herman Memorial Hospital, Baptist Hospital
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Hospital Operations Plan

COMMENTS:
Deferred action #23.

		City of Beaumont– Action #56
	Proposed Action:	At Christus St. Elizabeth Hospital, install on-site well and new pressurized water supply system to support during loss of potable water.
	BACKGROUND INFORMATION	
	Site and Location:	St. Elizabeth Hospital
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of water contamination and ensure continuity of services. Reduce risk of injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hazardous Materials
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$162,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont Administration, St. Elizabeth Hospital
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Hospital Operations Plan

COMMENTS:
Deferred action #34

		City of Beaumont– Action #57
	Proposed Action:	Expand and upgrade security systems at St. Elizabeth Hospital for access control on all exterior doors for all buildings as well as installing cameras and increased perimeter surveillance and safety capabilities**.**
	BACKGROUND INFORMATION	
	Site and Location:	St. Elizabeth Hospital
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of terror attack on vulnerable targets
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$350,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Beaumont OEM, St. Elizabeth Hospital
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Hospital Operations Plan

COMMENTS:
Deferred action #48

		City of Beaumont– Action #58
	Proposed Action:	Pursue drainage improvements in the City of Beaumont. Projects include but are not limited to the Tyrell Park Project, Caldwood Outfall, Phelan Boulevard Drainage Project, the Cartwright/Corley Project, and the Brockman Drainage Project.
	BACKGROUND INFORMATION	
	Site and Location:	Various locations as indicated above
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages to structures and infrastructure due to inadequate drainage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	HMGP, PDM, local operating budgets
Lead Agency/Department Responsible:	City of Beaumont Public Works
Implementation Schedule:	Within 12-24 months of plan adoption pending available funding
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #16

CITY OF BEVIL OAKS

		City of Bevil Oaks– Action #1
	Proposed Action:	Complete enclosure of major flood/stormwater control and drainage features, such as box culverts.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants, CDBG-MIT
Lead Agency/Department Responsible:	City of Bevil Oaks Administration, Jefferson County, and DD6
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Bevil Oaks– Action #2
	Proposed Action:	Construct and install 6” water lines to permit fire hydrants.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages and injuries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$4,200,000
Potential Funding Sources:	Local Funds, State and Federal Grants, CDBG-MIT
Lead Agency/Department Responsible:	City of Bevil Oaks Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:

		City of Bevil Oaks– Action #3
	Proposed Action:	Installation of lift station to manage and mitigate stormwater flooding.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by enhancing drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,300,000
Potential Funding Sources:	Local Funds, State and Federal Grants, CDBG-MIT
Lead Agency/Department Responsible:	City of Bevil Oaks Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Bevil Oaks– Action #4
Proposed Action:	Enhancement to Civic Center / Emergency Community Shelter: Includes installation of generators, installation of concrete reinforce driveways and gathering areas to facility emergency response.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury. Enhances emergency response within the community.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$425,000
Potential Funding Sources:	Local Funds, State and Federal Grants, CDBG-MIT
Lead Agency/Department Responsible:	City of Bevil Oaks Administration, Jefferson County, and DD6
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Bevil Oaks– Action #5
	Proposed Action:	Hire Emergency Management Coordinator.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Enhances emergency response within the community.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety. Helps ensure critical services during and after severe events.

		City of Bevil Oaks– Action #6
	Proposed Action:	Conduct engineering and Hydrologic and Hydraulic (H&H) studies to better evaluate city-wide drainage.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities. Enhance risk assessment.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Bevil Oaks– Action #7
	Proposed Action:	Elevation and/or flood mitigation measures to flood prone structures throughout the City with an emphasis on current Repetitive Loss and Severe Repetitive Loss properties.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, repetitive loss and flood prone properties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate risk of flood damages to high risk structures and prevent future losses in high risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Administration
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Bevil Oaks– Action #8
	Proposed Action:	Harden/retrofit critical facilities and infrastructures to hazard-resistant levels, and to include heating/cooling stations for vulnerable populations.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide critical facilities
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000 - $2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Administration
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #1, 2, & 12
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Bevil Oaks– Action #9
Proposed Action:	Implement drainage improvements and debris removal. Actions can include but are not limited to installing/upgrading culverts, headwalls as well as enlarging storm water ditches and canal, stormwater detention and/or retention basins as deemed necessary to reduce flood risk.
BACKGROUND INFORMATION	
Site and Location:	City-wide locations
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Administration, Public Works, and Drainage District #6
Implementation Schedule:	Within 12 – 24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #6
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Bevil Oaks– Action #10
	Proposed Action:	Acquire and install generators with hard wired quick connections at all critical facilities.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide critical facilities and lift stations
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provide power for critical facilities and infrastructures during power outages and ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000 - $1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Administration, Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #7
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		City of Bevil Oaks– Action #11
	Proposed Action:	Acquisition / Buy-out flood prone structures throughout the City with an emphasis on current Repetitive Loss and Severe Repetitive Loss properties.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, repetitive loss and flood prone properties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate risk of flood damages to high risk structures and prevent future losses in high risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Administration
Implementation Schedule:	Within 12-60 months of plan adoption, Ongoing
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #3
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Bevil Oaks– Action #12
	Proposed Action:	Elevate or upgrade bridges, roadways and other crossings to reduce damages to infrastructure.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Public Works
Implementation Schedule:	Within 12-48 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #5
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Bevil Oaks– Action #13
	Proposed Action:	Identify and implement mitigation activities that would aid/enhance evacuations throughout the City.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Tornado, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Emergency Management
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Emergency Evacuation Plan

COMMENTS:
Deferred action #9
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety and prevents injury to residents.

		City of Bevil Oaks– Action #14
	Proposed Action:	Implement flood protection measures which can include but are not limited to waterways being cleared out/dredged, constructing and/or upgrading sea walls, flood barriers, berms, and various wet and dry flood proofing measures.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Administration, Jefferson County
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Deferred action #8
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Bevil Oaks– Action #15
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Action can included but not limited to: bury utility lines underground, frangible links/break away connections, harden utility poles, and increasing easement area/clearance of utility lines/ poles from tree lines.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide utility lines
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000 - $500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS:
Deferred action #10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Bevil Oaks– Action #16
	Proposed Action:	Design and implement a program to remove and/ or minimize damage to structures and infrastructure from falling trees and debris.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide locations where trees are in close proximity to power lines
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Administration
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinances

COMMENTS:
Deferred action #15
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Bevil Oaks– Action #17
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, and flyers, critical agencies to education citizens of hazard that can threaten the area and mitigation measure to reduce injuries, fatalities and property damages. Include link to weather alters and departmental phone lists with contact personnel for residents. Action also includes availability of shelters, evacuation routes, floodplain maps, etc.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Winter Storm, Wildfire, and low-risk/man-made hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Administration
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #11
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Bevil Oaks– Action #18
	Proposed Action:	Develop water conservation strategies and/or ordinances for implementation during droughts.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Administration
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Local Ordinances

COMMENTS:
Deferred action #14

		City of Bevil Oaks– Action #19
	Proposed Action:	Develop areas and educate public on maintaining fire break and/or defensible space surrounding structures to prevent damage.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Communication
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Bevil Oaks Administration
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS:
Deferred action #13

CITY OF CHINA

		City of China– Action #1
	Proposed Action:	Complete assessment on Sewer Plant, and implement mitigation measures to elevate or relocate facility.
	BACKGROUND INFORMATION	
	Site and Location:	City of China, Sewer Plant
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce and/or eliminate flood risk and damage to critical infrastructure. Continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of China– Action #2
	Proposed Action:	Construct and install larger water lines that support city-wide fire hydrants.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages and injuries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	CWPP

COMMENTS:

		City of China– Action #3
	Proposed Action:	Complete H&H study for drainage improvements within the city. Implement findings from study to better address backflow of stormwater/flood water into the City.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities. Improved risk assessment.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of China– Action #4
	Proposed Action:	Implement drainage improvements. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000 - $1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #14
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of China– Action #5
	Proposed Action:	Replace and/or upgrade bridges, culverts and other crossings.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improves emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$200,000 - $1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 24-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #13
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of China– Action #6
	Proposed Action:	Implement flood protection measures which can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000 - $3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration,
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Deferred action #15
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of China– Action #7
	Proposed Action:	Construct or upgrade existing detention / retention ponds where appropriate to collect storm water to reduce flooding and utilize as alternative water source.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by improving drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000 - $500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #9, 16
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of China– Action #8
	Proposed Action:	Acquisition / Buy-out: Acquire and demolish flood-prone properties that are deemed Repetitive and Severe Repetitive Loss properties.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, repetitive loss and flood prone properties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate risk of flood damages to high risk structures and prevent future losses in high risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #18
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of China– Action #9
	Proposed Action:	Elevation of new and existing flood prone structures and infrastructures.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide flood prone properties and infrastructure
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$20,000 - $100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Local Ordinance, Comprehensive Plan

COMMENTS:
Deferred action #3, 19
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of China– Action #10
	Proposed Action:	Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect freshwater resources from storm surge, sea level rise, and other sources of salt water intrusion.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration,
Implementation Schedule:	Within 24-60 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Deferred action #21
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of China– Action #11
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, and flyers, critical agencies to education citizens of hazard that can threaten the area and mitigation measure to reduce injuries, fatalities and property damages. Include link to weather alters and departmental phone lists with contact personnel for residents. Action also includes availability of shelters, evacuation routes, floodplain maps, etc.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Winter Storm, Wildfire, and low-risk/man-made hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 6-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, Hazard Mitigation Plan

COMMENTS:
Deferred action #11
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of China– Action #12
	Proposed Action:	Construct structure(s) in coastal jurisdictions that can withstand 200 mile per hour winds and that can server as shelters. This is in conjunction with the Texas Safe Shelter Initiative.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, various location to be determined
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events. Reduce risk of injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Hurricane Wind, Tornado
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,600,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #1

		City of China– Action #13
	Proposed Action:	Harden/retrofit critical facilities and infrastructures to hazard-resistant levels, including cooling / warming stations and to act as shelters/safe rooms during severe weather events. Implement standard for new construction and developments.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide critical facilities including: City Hall
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000 - $5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #2, 5, 7, 12, 17
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of China– Action #14
	Proposed Action:	Acquire and install generators with hard wired quick connections at all critical facilities.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide critical facilities
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provide power for critical facilities during power outages and ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $300,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #6
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		City of China– Action #15
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Action can included but not limited to: bury utility lines underground, frangible links/break away connections, harden utility poles, and easement area/clearance of utility lines/ poles from tree lines.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide utility lines
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000 - $500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration, Local Utility Company
Implementation Schedule:	Within 12-30 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS:
Deferred action #10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of China– Action #16
	Proposed Action:	Design and implement a program to remove and/ or minimize damage to structures and infrastructure from falling trees and debris.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinances

COMMENTS:
Deferred action #4
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of China– Action #17
	Proposed Action:	Secure, bury, or otherwise harden exposed or vulnerable pipelines.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Hail, Hazardous Material
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000 - $500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 36-60 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #20
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of China– Action #18
	Proposed Action:	Identify and implement mitigation activities that would aid/enhance evacuations throughout the region.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Tornado, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #8
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of China– Action #19
	Proposed Action:	Develop water conservation strategies and/or ordinances for implementation during droughts.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 6-12 months of plan adoption
Incorporation into Existing Plans:	Local Ordinances

COMMENTS:
Deferred action #3

		City of China– Action #20
	Proposed Action:	Develop areas and educate public on maintaining defensible space surrounding structures to prevent damage.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Communication
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of China Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS:
Deferred action #22

CITY OF GROVES

		City of Groves– Action #1
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate citizens of hazard that can threaten the area and mitigation measures to reduce injuries fatalities and property damages. Include links to weather alerts and departmental phone listings with contact personnel for residents.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves OEM
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #8
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Groves– Action #2
	Proposed Action:	Harden/retrofit critical facilities and infrastructures to hazard-resistant levels, including cooling / warming stations and to act as shelters during severe weather events. Implement standard for new construction and developments.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide critical facilities including but not limited to: City Hall, Police Station, Fire Station, Activity Center Complex, Public Works Complex, Wastewater Treatment Plan
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000 - $5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves Administration, Public Works
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred actions #1, 2, 4, 5, 6, 7, 16
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Groves– Action #3
	Proposed Action:	Identify and implement mitigation activities that would aid/enhance evacuations throughout the City.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Tornado, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves OEM
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #3
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Groves– Action #4
	Proposed Action:	Elevate or upgrade bridges, culverts and other crossings to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #9
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Groves– Action #5
	Proposed Action:	Implement flood protection measures to protect which can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms, and various wet and dry flood proofing measures.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #11
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Groves– Action #6
	Proposed Action:	Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect freshwater resources from storm surge, sea level rise, and other sources of saltwater intrusion.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves Public Works, Jefferson County, SETRPC
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #12
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Groves– Action #7
	Proposed Action:	Implement drainage improvements. Actions can include but are not limited to installing/upgrading culverts, headwalls, enlarging storm water ditches and canals, constructing/upgrading detention/retention ponds.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000 - $5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #10, 14
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Groves– Action #8
	Proposed Action:	Upgrade drainage improvements to reduce flooding.
	BACKGROUND INFORMATION	
	Site and Location:	Van Buren from Wilson to Grant 34th St. and the South end of Franklin St.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000 per site location
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 36-48 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #19, 20
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Groves– Action #9
	Proposed Action:	Acquisition / Buy-out: Acquire and demolish flood-prone properties that are deemed Repetitive and Severe Repetitive Loss properties.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, repetitive loss and flood prone properties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves OEM
Implementation Schedule:	Within 48-60 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #21
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Groves– Action #10
	Proposed Action:	Elevation of new and existing flood prone structures and infrastructures.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide flood prone properties and infrastructure
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000 - $5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves OEM
Implementation Schedule:	Within 36-60 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #22
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Groves– Action #11
	Proposed Action:	Design and implement a program to remove and/ or minimize damage to structures and infrastructure from falling trees and debris.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinances

COMMENTS:
Deferred action #18
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Groves– Action #12
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Action can included but not limited to: bury utility lines underground, frangible links/break away connections, harden utility poles, and easement area/clearance of utility lines/ poles from tree lines.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide utility lines
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves Public Works, Local Utility Company (Entergy)
Implementation Schedule:	Within 36-60 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS:
Deferred action #15
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Groves– Action #13
	Proposed Action:	Secure, bury, or otherwise harden exposed or vulnerable pipelines including water and sewer.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Hazardous Material
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000 - $1,000,00
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves Public Works
Implementation Schedule:	Within 36-48 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #23
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Groves– Action #14
	Proposed Action:	Develop areas and educate public on maintaining defensible space surrounding structures to prevent damage.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Communication
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves Fire Department
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS:
Deferred action #17

		City of Groves– Action #15
	Proposed Action:	Develop water conservation strategies and/or ordinances for implementation during droughts. .
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Groves Administration
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Local Ordinances

COMMENTS:
Deferred action #13

CITY OF NEDERLAND

		City of Nederland– Action #1
	Proposed Action:	Construct a hardened, wind rated, and elevated structure to serve as a housing/shelter for essential emergency personnel during and immediately after a catastrophic wind and/or flooding event.
	BACKGROUND INFORMATION	
	Site and Location:	1400 Boston Avenue, Nederland, Texas
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Continuity of critical services during a severe weather event. Enhances emergency response during severe events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Tornado
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland emergency management personnel
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Nederland– Action #2
	Proposed Action:	Construct structure(s) in coastal jurisdictions that can withstand 200 mile per hour winds and that can server as shelters. This is in conjunction with the Texas Safe Shelter Initiative.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, various location to be determined
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events. Reduce risk of injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Tornado, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland OEM
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #1
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Nederland– Action #3
	Proposed Action:	Harden/retrofit critical facilities and infrastructure to hazard-resistant levels, including cooling / warming stations and to act as shelters/safe rooms during severe weather events. Implement standard for new construction and developments.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide critical facilities and shelters
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hurricane Wind, Thunderstorm Wind, Tornado, Winter Storm, Lightning
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland OEM
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action # 2, 3, 19, 26
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Nederland– Action #4
	Proposed Action:	Harden/retrofit critical facilities to hazard-resistant levels and install backup generator with quick connections.
	BACKGROUND INFORMATION	
	Site and Location:	Fire Station Hughes Library D. Bob Henson Building
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm, Lightning
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #3
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		City of Nederland– Action #5
	Proposed Action:	Elevate or upgrade bridges, culverts and other crossings to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #6
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Nederland– Action #6
	Proposed Action:	Implement drainage improvements. Actions can include but are not limited to installing/upgrading culverts and headwalls, enlarging storm water ditches and canals, constructing/upgrading existing detention and retention ponds.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000- $10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 24-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #7, 11
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Nederland– Action #7
	Proposed Action:	Enhance public drainage infrastructure by upgrading main channels, tributaries and roadside ditches.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 24-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #25
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Nederland– Action #8
	Proposed Action:	Secure, bury, or otherwise harden exposed or vulnerable pipelines including water and sewer.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Hazardous Material
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #8
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Nederland– Action #9
	Proposed Action:	Implement flood protection measures to protect which can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms and various wet and dry flood proofing measures.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Deferred action #9
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Nederland– Action #10
	Proposed Action:	Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect freshwater resources from storm surge, sea level rise, and other sources of saltwater intrusion.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland Public Works, LNVA
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Deferred action #10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Nederland– Action #11
	Proposed Action:	Identify and implement mitigation activities that would aid/enhance evacuations throughout the region.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Tornado, Winter Storm, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland OEM
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #13
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Nederland– Action #12
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Action can included but not limited to: bury utility lines underground, frangible links/break away connections, harden utility poles, and easement area/clearance of utility lines/ poles from tree lines.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide utility lines
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland Public Works, Local Utility Companies (Entergy)
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS:
Deferred action #15
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Nederland– Action #13
	Proposed Action:	Design and implement a program to remove and/ or Minimize damage to structures and infrastructure from falling trees and debris.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinances

COMMENTS:
Deferred action #24
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Nederland– Action #14
	Proposed Action:	Develop areas and education public on maintaining defensible space surrounding structures to prevent damage.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Communication
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland Fire Department
Implementation Schedule:	Within 36-48 months of plan adoption
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS:
Deferred action #22

		City of Nederland– Action #15
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, and flyers, critical agencies to education citizens of hazard that can threaten the area and mitigation measure to reduce injuries, fatalities and property damages. Include link to weather alters and departmental phone lists with contact personnel for residents. Action also includes availability of shelters, evacuation routes, floodplain maps, etc.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Winter Storm, Wildfire, and low-risk/man-made hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Nederland OEM
Implementation Schedule:	Annually
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #20
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

CITY OF NOME

		City of Nome– Action #1
	Proposed Action:	Sanitary Sewer Lift Station: Design and construct a new submersible duplex lift station, sanitary sewer gravity collection system, and force main to the City's wastewater treatment plant.
	BACKGROUND INFORMATION	
	Site and Location:	Highway 365 and Highway 90 Nome, Texas
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood water contamination; Reduce risk of surface water infiltration and sewage backup; Ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,300,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nome Administration, Whiteley-Oliver Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Water and Sewage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Nome– Action #2
	Proposed Action:	Waterline Improvements (Waterline Loop): Design and construct a larger diameter waterline and provide a connected loop for fire protection and pressure maintenance. The proposed waterline will be constructed on Highway 90 and Highway 365 to McDermont Road.
	BACKGROUND INFORMATION	
	Site and Location:	Highway 90, Old Nome Road, and McDermont Road Nome, Texas
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages by restoring or improving drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nome Administration, Whiteley-Oliver Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Nome– Action #3
	Proposed Action:	Water Treatment Plant: Design and rehabilitate the de-commissioned internal / external equipment and steel clarifier to add water treatment redundancy.
	BACKGROUND INFORMATION	
	Site and Location:	Highway 365, Nome, Texas
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of property damages, injury and loss of life. Ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Drought, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nome Administration, Whiteley-Oliver Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Water and Sewage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Nome– Action #4
	Proposed Action:	Water Storage / Pressure Capacity: • Design and construct a 50,000-Gallon Ground Storage Tank. • Design and construct a 200,000-Gallon Elevated Storage Tank
	BACKGROUND INFORMATION	
	Site and Location:	Highway 365 and Louisiana Street Nome, Texas
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages by restoring or improving drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Drought, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nome Administration, Whiteley-Oliver Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Nome– Action #5
	Proposed Action:	Auto-Read Water Meters: Remove and replace existing deteriorated and inaccurate water meters with new auto-read water meters (includes software and hardware).
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to property damages. Reduce loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (Other)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Drought, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nome Administration, Whiteley-Oliver Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Nome– Action #6
	Proposed Action:	Construct structure(s) in coastal jurisdictions that can withstand 200 mile per hour winds and that can server as shelters. This is in conjunction with the Texas Safe Shelter Initiative.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, various location to be determined
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to citizens by providing shelter in high risk areas during extreme weather events. Reduce risk of injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Tornado, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,600,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nome Administration
Implementation Schedule:	Within 24-35 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #1
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Nome– Action #7
	Proposed Action:	Harden/retrofit critical facilities and infrastructure to hazard-resistant levels, including cooling / warming stations and to act as shelters/safe rooms during severe weather events. Implement standard for new construction and developments.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide critical facilities and shelters
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nome Administration
Implementation Schedule:	Within 24-35 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #2, 3, 13, 18
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Nome– Action #8
	Proposed Action:	Elevate or upgrade bridges, culverts and other crossings to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nome Administration
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #6
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Nome– Action #9
	Proposed Action:	Elevate flood prone properties/structures and key infrastructure and electrical equipment throughout the City.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, repetitive loss and flood prone properties and critical facilities
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000 - $5,000,00
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nome Public Works
Implementation Schedule:	Within 12-60 months of plan adoption, Ongoing Project
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #5
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Nome– Action #10
	Proposed Action:	Implement drainage improvements. Actions can include but are not limited to installing/upgrading culverts and headwalls, enlarging storm water ditches and canals, constructing/upgrading existing detention and retention ponds.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by restoring or improving drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000- $10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nome Administration
Implementation Schedule:	Within 24-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #7, 12, 15
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Nome– Action #11
	Proposed Action:	Secure, bury, or otherwise harden exposed or vulnerable pipelines including water and sewer.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Hazardous Material
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nome Administration
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #8
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Nome– Action #12
	Proposed Action:	Coordinate and implement construction, expansion and maintenance of flood protection measures to protect from surge from Hurricanes/Tropical Storms and flood control structures/barriers for the purpose of mitigating damage and protect freshwater resources from storm surge, sea level rise, and other sources of saltwater intrusion.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nome Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Deferred action #10, 11
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Nome– Action #13
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Action can included but not limited to: bury utility lines underground, frangible links/break away connections, harden utility poles, and easement area/clearance of utility lines/ poles from tree lines.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide utility lines
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nome Administration, Local Utility Companies (Entergy)
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS:
Deferred action #16
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Nome– Action #14
	Proposed Action:	Design and implement a program to remove and/ or Minimize damage to structures and infrastructure from falling trees and debris.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Nome Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinances

COMMENTS:
Deferred action #21
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

CITY OF PORT ARTHUR

		City of Port Arthur– Action #1
	Proposed Action:	Construct structure(s) in coastal jurisdictions that can withstand 200 mile per hour winds and that can server as shelters. This is in conjunction with the Texas Safe Shelter Initiative.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, various location to be determined
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events. Reduce risk of injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Tornado
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Administration
Implementation Schedule:	Within 24-35 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #1

		City of Port Arthur– Action #2
	Proposed Action:	Harden/retrofit critical facilities and infrastructures to hazard-resistant levels, including cooling / warming stations and to act as shelters/safe rooms during severe weather events. Implement standard for new construction and developments.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide critical facilities and shelters
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000 - $45,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #2, 3, 12, 17
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Port Arthur– Action #3
	Proposed Action:	Elevate or upgrade bridges, culverts and other crossings to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #6
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Port Arthur– Action #4
	Proposed Action:	Acquisition / Buy-out flood prone structures throughout the City with an emphasis on current Repetitive Loss and Severe Repetitive Loss properties.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, repetitive loss and flood prone properties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate risk of flood damages to high risk structures and prevent future losses in high risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Administration
Implementation Schedule:	Within 12-60 months of plan adoption, Ongoing Project
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #4
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Port Arthur– Action #5
	Proposed Action:	Elevate flood prone properties/structures and key infrastructure and electrical equipment throughout the City of Port Arthur.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, repetitive loss and flood prone properties and critical facilities
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to high-risk structures and prevent future losses in high risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Administration
Implementation Schedule:	Within 12-60 months of plan adoption, Ongoing Project
Incorporation into Existing Plans:	Emergency Management Plan, Local Ordinances

COMMENTS:
Deferred action #5
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Port Arthur– Action #6
	Proposed Action:	Implement flood protection measures to protect which can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms, and various wet and dry flood proofing measures.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Deferred action #9
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Arthur– Action #7
	Proposed Action:	Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect freshwater resources from storm surge, sea level rise, and other sources of saltwater intrusion.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Public Works, SETRPC
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Deferred action #10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Arthur– Action #8
	Proposed Action:	Identify and implement mitigation activities that would aid/enhance evacuations throughout the region.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Tornado, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Administration, Jefferson County
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #13
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Port Arthur– Action #9
	Proposed Action:	Develop/implement bus transportation for evacuations during extreme storm events especially for vulnerable and special needs populations.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Tornado, Winter Storm, Wildfire, Thunderstorm Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Administration, Jefferson County
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #32, 33
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Port Arthur– Action #10
	Proposed Action:	Improve Hwy. 365 from Hwy. 69 to Rhodair Gully for improved emergency access.
	BACKGROUND INFORMATION	
	Site and Location:	Hwy. 365 from Hwy. 69 to Rhodair Gully
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Tornado, Winter Storm, Wildfire, Thunderstorm Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Administration, Jefferson County
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #36
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Port Arthur– Action #11
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Action can included but not limited to: bury utility lines underground, frangible links/break away connections, harden utility poles, and easement area/clearance of utility lines/ poles from tree lines.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide utility lines
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Public Works, Local Utility Companies (Entergy)
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS:
Deferred action #15
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Port Arthur– Action #12
	Proposed Action:	Design and implement a program to remove and/ or Minimize damage to structures and infrastructure from falling trees and debris.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinances

COMMENTS:
Deferred action #20
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Port Arthur– Action #13
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, and flyers, critical agencies to education citizens of hazard that can threaten the area and mitigation measure to reduce injuries, fatalities and property damages. Include link to weather alters and departmental phone lists with contact personnel for residents. Action also includes availability of shelters, evacuation routes, floodplain maps, etc.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Winter Storm, Wildfire, and low-risk/man-made hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Administration
Implementation Schedule:	Annual
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #16
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Port Arthur– Action #14
Proposed Action:	Secure, bury, or otherwise harden exposed or vulnerable pipelines including water and sewer.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and loss of life.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Hazardous Material
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$15,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #8
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Port Arthur– Action #15
	Proposed Action:	Implement drainage improvements. Actions can include but are not limited to installing/upgrading culverts and headwalls, enlarging storm water ditches and canals, constructing/upgrading existing detention and retention ponds.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000 - $20,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 24-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #7, 11
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Arthur– Action #16
	Proposed Action:	Construct water retention ponds to collect storm water run-off, reduce flooding and use as an alternate water source.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 24-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #14, county-wide deferred #12
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Arthur– Action #17
	Proposed Action:	Increase / Improve channel capacity and improve multiple culvert crossings.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, including: Drainage Channel Main B Lateral 3 of Drainage Channel Main A Lakeview Drainage
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000 per site location
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #21, 22, 23
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Arthur– Action #18
	Proposed Action:	Increase drainage capacity to reduce flooding on Westside.
	BACKGROUND INFORMATION	
	Site and Location:	Westside of Port Arthur TX
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #24
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Arthur– Action #19
	Proposed Action:	Upgrade concrete lining of the El Vista Pump Station.
	BACKGROUND INFORMATION	
	Site and Location:	El Vista Pump Station
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #25
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Arthur– Action #20
	Proposed Action:	Upgrade existing storm sewer in the Port Acres area and along Procter Street.
	BACKGROUND INFORMATION	
	Site and Location:	Port Acres area and along Procter Street
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #26
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Arthur– Action #21
	Proposed Action:	Improve storm water runoff by installing upgraded 8- foot by 7-foot concrete box in Tiger Bayou.
	BACKGROUND INFORMATION	
	Site and Location:	Tiger Bayou
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #35
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Arthur– Action #22
	Proposed Action:	Decrease floodplain width in North Port Acres Ditch through improved drainage.
	BACKGROUND INFORMATION	
	Site and Location:	North Port Acres Ditch
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Public Works
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #37
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Arthur– Action #23
	Proposed Action:	Continue to receive maximum credit for NFIP CRS participation. Provide educational seminars and brochures regarding the voluntary Community Rating System (CRS) and National Flood Insurance Program (NFIP).
	BACKGROUND INFORMATION	
	Site and Location:	City-wide flood-prone and flood risk properties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages, losses and risk.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000,000
Potential Funding Sources:	Local Funds (staff funds), State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Floodplain Management
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #31
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Port Arthur– Action #24
	Proposed Action:	Develop water conservation strategies and/or ordinances for implementation during droughts.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Arthur Administration
Implementation Schedule:	Annually
Incorporation into Existing Plans:	Local Ordinances

COMMENTS:
Deferred action #19

CITY OF PORT NECHES

		City of Port Neches– Action #1
	Proposed Action:	Construct structure(s) in coastal jurisdictions that can withstand 200 mile per hour winds and that can server as shelters. This is in conjunction with the Texas Safe Shelter Initiative.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, various location to be determined
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to citizens by providing shelter in high-risk areas during extreme weather events. Reduce risk of injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Tornado
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches OEM
Implementation Schedule:	Within 24-35 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #1

		City of Port Neches– Action #2
	Proposed Action:	Harden/retrofit critical facilities and infrastructures to hazard-resistant levels, including cooling / warming stations and to act as shelters/safe rooms during severe weather events. Implement standard for new construction and developments.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide critical facilities and shelters
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000 - $2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches OEM, Public Works
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #2, 3, 16, 20
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Port Neches– Action #3
	Proposed Action:	Acquire and install generators with hard wired quick connections at all critical facilities.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide critical facilities.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provide power for critical facilities during power outages and ensure continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $200,000 per site
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches OEM
Implementation Schedule:	Within 12 - 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #3, 8
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		City of Port Neches– Action #4
	Proposed Action:	Elevate or upgrade bridges, culverts and other crossings to reduce damages to infrastructure and reduce flooding caused by undersized crossings and culverts.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #5
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Port Neches– Action #5
	Proposed Action:	Acquisition / Buy-out flood prone structures throughout the City with an emphasis on current Repetitive Loss and Severe Repetitive Loss properties.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, repetitive loss and flood prone properties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches OEM
Implementation Schedule:	Within 12-60 months of plan adoption, Ongoing Project
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #18
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Neches– Action #6
	Proposed Action:	Elevate flood prone properties/structures and infrastructure with City.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, repetitive loss and flood prone properties and critical facilities
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches OEM
Implementation Schedule:	Within 12-60 months of plan adoption, Ongoing Project
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #4
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Port Neches– Action #7
	Proposed Action:	Implement drainage improvements. Actions can include but are not limited to installing/upgrading culverts, headwalls as well as enlarging storm water ditches and canal, stormwater detention and/or retention basins as deemed necessary to reduce flood risk.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide locations
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000 - $1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches Public Works
Implementation Schedule:	Within 12 – 24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #6, 15
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Neches– Action #8
	Proposed Action:	Implement flood protection measures to protect which can include but are not limited to constructing and/or upgrading sea walls, flood barriers, berms, and various wet and dry flood proofing measures.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, including but not limited to Riverwalk Area
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Additional action should also identify bulkhead. Deferred action #19
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Neches– Action #9
	Proposed Action:	Construct / Upgrade bulkheads within City to reduce effects of flooding.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Added for City due to comment in about action about bulkhead, City did not provide action during review.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Neches– Action #10
	Proposed Action:	Coordinate and implement construction, expansion and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect freshwater resources from storm surge, sea level rise, and other sources of saltwater intrusion.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches Public Works, SETRPC
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Deferred action #14
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Neches– Action #11
	Proposed Action:	Identify and implement mitigation activities that would aid/enhance evacuations throughout the region.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Tornado, Winter Storm, Wildfire, Thunderstorm Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches OEM
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #17
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Port Neches– Action #12
	Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Action can included but not limited to: bury utility lines underground, frangible links/break away connections, harden utility poles, and easement area/clearance of utility lines/ poles from tree lines.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide utility lines
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches OEM
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS:
Deferred action #9
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Port Neches– Action #13
	Proposed Action:	Design and implement a program to remove and/ or Minimize damage to structures and infrastructure from falling trees and debris.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches Public Works
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management

COMMENTS:
Deferred action #10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Port Neches– Action #14
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, and flyers, critical agencies to education citizens of hazard that can threaten the area and mitigation measure to reduce injuries, fatalities and property damages. Include link to weather alters and departmental phone lists with contact personnel for residents. Action also includes availability of shelters, evacuation routes, floodplain maps, etc.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Winter Storm, Wildfire, and low-risk/man-made hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches OEM
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #13
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		City of Port Neches– Action #15
	Proposed Action:	Secure, bury, or otherwise harden exposed or vulnerable pipelines including water and sewer.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Wildfire, Tornado, Lightning, Extreme Heat, Hail, Hazardous Material
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches Public Works
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #7
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of Port Neches– Action #16
	Proposed Action:	Develop water conservation strategies and/or ordinances for implementation during droughts.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000 - $50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches Administration
Implementation Schedule:	Annually
Incorporation into Existing Plans:	Local Ordinances

COMMENTS:
Deferred action #22

		City of Port Neches– Action #17
	Proposed Action:	Create defensible space and education public on maintaining defensible space surrounding structures to prevent damage.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Communication
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches Fire Department
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Community Wildfire Protection Plan

COMMENTS:
Deferred action #21

		City of Port Neches– Action #18
	Proposed Action:	Coordinate public-private partnerships to ensure special needs population are protected from extreme temperatures by establishing and promoting accessible heating or cooling centers in the community.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote awareness and protect vulnerable populations from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm, Extreme Heat
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches OEM
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #11

		City of Port Neches– Action #19
	Proposed Action:	Conduct coastal storm presentations to educate the public on evacuation procedures, mitigation techniques, and risk associated with coastal storms.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, and loss of life.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Communication
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Neches OEM
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #12
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

CITY OF TAYLOR LANDING

		City of Taylor Landing– Action #1
	Proposed Action:	Completed engineering and/or H&H study of city drainage system. Implement suggestions based on study.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Taylor Landing Administration
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Taylor Landing– Action #2
	Proposed Action:	Drainage improvements. Actions can include but are not limited to installing/upgrading culverts, headwalls, enlarging storm water ditches and canals, constructing/upgrading detention/retention ponds.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Taylor Landing Administration
Implementation Schedule:	Within 24-48 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Taylor Landing– Action #3
	Proposed Action:	Implement city-wide alert system to notify residents of severe weather events and how to prepare.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Taylor Landing Administration
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

LOWER NECHES VALLEY AUTHORITY

		Lower Neches Valley Authority– Action #1
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate residents in the LNVA service area and employees of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.
	BACKGROUND INFORMATION	
	Site and Location:	LNVA Service Area
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm, Hurricane Wind, Low Risk and Man-Made Hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Community Outreach

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Lower Neches Valley Authority– Action #2
	Proposed Action:	Require erosion/sedimentation controls for new construction; Include on-site sediment retention as a development requirement.
	BACKGROUND INFORMATION	
	Site and Location:	LNVA Service Area in erosion risk areas
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce or eliminate damages to structures and infrastructure.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to future structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	SOP

COMMENTS:

		Lower Neches Valley Authority– Action #3
	Proposed Action:	Construct water treatment improvements necessary to use groundwater well for municipal demand in the event of disruption of water supply from the West Regional Treatment Plant.
	BACKGROUND INFORMATION	
	Site and Location:	LNVA Areas
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provides redundant potable water capacity to avoid loss of water on Bolivar Peninsula.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought, Hurricane Wind, Tornado, Wildfire, Winter Storm, Terrorism, Water Contamination, Hazardous Materials
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Health/Medical, Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$4,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Lower Neches Valley Authority– Action #4
	Proposed Action:	Construct pump station improvements with electric drivers and on-site generators with hardwired quick connections at Neches 1st and Neches 2nd to provide alternate power supply in the event of discontinuity of electric or natural gas service.
	BACKGROUND INFORMATION	
	Site and Location:	Neches Pumping Plants, Jefferson County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provides alternate power source to prevent loss of water service to entire system, including multiple municipalities and refineries. Continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Tornado, Winter Storm, Low Risk and Man-Made Hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Health/Medical, Safety/Security, Power/Fuel
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Long Term Capital Improvements Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Lower Neches Valley Authority– Action #5
	Proposed Action:	Construct pump station improvements with electric drivers and on site generators with hardwired quick connections at BI 1st and BI 2nd to provide alternate power supply in the event of discontinuity of electric or natural gas service.
	BACKGROUND INFORMATION	
	Site and Location:	BI Pumping Plants, Jefferson County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provides alternate power source to prevent loss of water service to entire system, including multiple municipalities and refineries. Continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Tornado, Winter Storm, Terrorism
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Health/Medical, Safety/Security, Power/Fuel
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Lower Neches Valley Authority– Action #6
	Proposed Action:	Purchase and store one driver, pump, and pump control unit off site for use in flood prone pumping plants after disaster.
	BACKGROUND INFORMATION	
	Site and Location:	Multiple Pumping Plants,
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Continuity of critical services due to preventing complete loss of water service to municipalities and refineries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Tornado, Terrorism
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Health/Medical, Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$750,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Lower Neches Valley Authority– Action #7
	Proposed Action:	Demolish and reconstruct existing pumping facility approximately 350' east of current location.
	BACKGROUND INFORMATION	
	Site and Location:	Devers 1st Pumping Plant
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Continuity of critical services. Reduces repeated flood loss.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Health/Medical, Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 15,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Capital Improvements Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Lower Neches Valley Authority– Action #8
	Proposed Action:	Construct additional reservoir capacity and associated infrastructure at Devers Reservoir to facilitate rapid deployment for pumping from the reservoir in the event of disruption of water supply from the Trinity River.
	BACKGROUND INFORMATION	
	Site and Location:	Devers Reservoir, Jefferson County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Continuity of critical services. Enhances reservoir capacity to prevent complete loss of water service.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought, Hail, Hurricane Wind, Wildfire, Terrorism
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Health/Medical, Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Capital Improvements Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Lower Neches Valley Authority– Action #9
	Proposed Action:	Install passive canal overflow structures at strategic locations on canal system.
	BACKGROUND INFORMATION	
	Site and Location:	Throughout system, Jefferson County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages and loss of water service. Continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Health/Medical, Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Capital Improvements Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Lower Neches Valley Authority– Action #10
	Proposed Action:	Construct bypass canals.
	BACKGROUND INFORMATION	
	Site and Location:	Throughout system, Jefferson County
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of water service. Continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Hurricane Wind, Tornado, Wildfire, Terrorism, Water Contamination, Hazardous Materials
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Health/Medical, Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:

		Lower Neches Valley Authority– Action #11
	Proposed Action:	Construct hardened Central Operations Center.
	BACKGROUND INFORMATION	
	Site and Location:	Jefferson County, Texas
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Preparedness, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Hurricane Wind, Tornado, Wildfire, Winter Storm, Extreme Heat, Lightning, Thunderstorm Wind, Terrorism
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Health/Medical, Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$7,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Lower Neches Valley Authority– Action #12
	Proposed Action:	Modernize building envelope.
	BACKGROUND INFORMATION	
	Site and Location:	Neches 2nd and BI 2nd Pumping plants
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce potential damages to buildings and loss of water service. Continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Extreme Heat
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Health/Medical, Communication
Effect on new/existing buildings:	Reduce risk to existing building.
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$800,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Capital Improvements Plan

COMMENTS:

		Lower Neches Valley Authority– Action #13
	Proposed Action:	Modernize backup power sources. Upgraded generators with hardwired quick connections at critical sites.
	BACKGROUND INFORMATION	
	Site and Location:	Main Office
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Continuity of critical services. Provides an alternative source for power in the event of a severe weather event.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Hurricane Wind, Tornado, Wildfire, Winter Storm, Extreme Heat, Lightning, Thunderstorm Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Health/Medical, Energy (Power/Fuel), Communication
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Capital Improvements Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Lower Neches Valley Authority– Action #14
	Proposed Action:	Coordinate first responder training opportunities with City of Beaumont and SETRPC.
	BACKGROUND INFORMATION	
	Site and Location:	LNVA Office
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promotes hazard awareness. Reduces risk of injury and fatalities.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Tornado, Wildfire, Winter Storm, Terrorism, Water Contamination, Hazardous Materials
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Health/Medical
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:

		Lower Neches Valley Authority– Action #15
	Proposed Action:	Coordinate Damage Assessment Training with City of Beaumont and SETRPC.
	BACKGROUND INFORMATION	
	Site and Location:	LNVA Office
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promotes hazard awareness. Enhances ability properly assess damaged infrastructure to ensure safety immediately after catastrophic events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Tornado, Wildfire, Winter Storm, Terrorism, Water Contamination, Hazardous Materials
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Health/Medical, Communications
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:

		Lower Neches Valley Authority– Action #16
	Proposed Action:	Coordinate Community Emergency Response Training with City of Beaumont and SETRPC.
	BACKGROUND INFORMATION	
	Site and Location:	LNVA
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promotes hazard awareness. Enhances ability in disaster preparedness, light search and rescue, team organization, and disaster medical operations in order to properly handle catastrophic events and aftermath.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Tornado, Wildfire, Winter Storm, Terrorism, Water Contamination, Hazardous Materials
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Health/Medical
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:

		Lower Neches Valley Authority– Action #17
	Proposed Action:	Construct auxiliary forebay at the Neches 1st Pumping Facility to facilitate rapid deployment of bypass pumping in the event Neches 1st and BI 1st Pumping Facilities become inoperable. Purchase bypass pumps to have on standby.
	BACKGROUND INFORMATION	
	Site and Location:	Neches 1st Plant
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of total loss of water service throughout system. Continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Wildfire, Tornado, Lightning,
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Health/Medical
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$30,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Long Term Capital Improvements Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Lower Neches Valley Authority– Action #18
	Proposed Action:	Bury above ground utilities.
	BACKGROUND INFORMATION	
	Site and Location:	Throughout system
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of services during and after event. Reduce damages associated with power outages. Reduce risk of injuries or fatalities
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Thunderstorm Wind, Lightning, Winter Storm, Hail, Wildfire, Tornado
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Health/Medical, Energy (Power/Fuel), Communication
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$250,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to personnel.

		Lower Neches Valley Authority– Action #19
	Proposed Action:	Provide/install remote operation of water control structures.
	BACKGROUND INFORMATION	
	Site and Location:	Throughout system
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Continuity of critical services during a severe weather event.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Tornado, Wildfire, Winter Storm, Hurricane Wind, Terrorism, Hazardous Materials
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Health/medical, Communication
Effect on new/existing buildings:	Reduce risk to existing infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Capital Improvements Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to personnel.

		Lower Neches Valley Authority– Action #20
	Proposed Action:	Upgrade security at critical infrastructure.
	BACKGROUND INFORMATION	
	Site and Location:	Throughout system
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Prevent unauthorized access and related damage.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Health/Medical
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Capital Improvements Plan

COMMENTS:

		Lower Neches Valley Authority– Action #21
	Proposed Action:	Install drainage facilities at critical infrastructure sites.
	BACKGROUND INFORMATION	
	Site and Location:	Throughout system
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages. Continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures.
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Capital Improvements Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Lower Neches Valley Authority– Action #22
	Proposed Action:	Construct security/flood wall around WRTP.
	BACKGROUND INFORMATION	
	Site and Location:	West Regional Treatment Plant, Winnie, Texas
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damage and loss.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Water Contamination
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$400,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Lower Neches Valley Authority– Action #23
	Proposed Action:	Repair water control structures in canal system.
	BACKGROUND INFORMATION	
	Site and Location:	Throughout system
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Water Contamination
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Capital Improvements Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during unforeseen events.

		Lower Neches Valley Authority– Action #24
	Proposed Action:	Implement reclamation/erosion control in canal system.
	BACKGROUND INFORMATION	
	Site and Location:	Throughout system
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduces risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Capital Improvements Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Lower Neches Valley Authority– Action #25
	Proposed Action:	Purchase and install water quality monitors in canal and intake system.
	BACKGROUND INFORMATION	
	Site and Location:	In system
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Continuity of critical services. Provides an alternative water source during extreme weather events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism, Water Contamination, Hazardous Materials
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$250,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:

		Lower Neches Valley Authority– Action #26
	Proposed Action:	Construct additional upstream reservoir capacity.
	BACKGROUND INFORMATION	
	Site and Location:	East Texas
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages by enhancing drainage capacity. Reduce risk of injuries or fatalities to vulnerable populations. Continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures.
Priority (High, Moderate, Low):	Low
Estimated Cost:	$250,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Long Term Capital Improvements Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Lower Neches Valley Authority– Action #27
	Proposed Action:	Construct additional reservoir capacity and associated infrastructure at mid-county reservoir to facilitate rapid deployment for pumping from the reservoir in the event of disruption of water supply from the Neches River and/or Pine Island Bayou.
	BACKGROUND INFORMATION	
	Site and Location:	Mid-County Reservoir, Jefferson County, Texas
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Enhances reservoir capacity to prevent loss of water service for multiple municipalities and refineries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought, Hurricane Wind, Tornado, Wildfire, Winter Storm, Terrorism, Water Contamination, Hazardous Materials
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Health/Medical, Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Capital Improvements Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Lower Neches Valley Authority– Action #28
	Proposed Action:	Purchase land and construct water reservoir and associated infrastructure to meet normal industrial and municipal demand in the event of disruption of water supply from the Neches River and Pine Island Bayou.
	BACKGROUND INFORMATION	
	Site and Location:	West Beaumont, Jefferson County, Texas
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Enhances reservoir capacity to prevent loss of water service for all LNVA customers, including multiple municipalities and refineries.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought, Hurricane Wind, Tornado, Wildfire, Winter Storm, Terrorism, Water Contamination, Hazardous Materials
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Health/Medical, Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$90,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	LNVA
Implementation Schedule:	Within 5 years of plan adoption
Incorporation into Existing Plans:	LNVA Long Term Capital Improvements Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

PORT OF BEAUMONT

		Port of Beaumont– Action #1
	Proposed Action:	Implement education and awareness program utilizing public meetings, social media, bulletins, flyers, etc. to educate employees and area residents of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages within the planning area.
	BACKGROUND INFORMATION	
	Site and Location:	Port of Beaumont
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect employees and citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm, Hurricane Wind, Low Risk and Man-Made Hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	Port of Beaumont Administration
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Port of Beaumont– Action #2
	Proposed Action:	Require erosion/sedimentation controls for improvements at the port.
	BACKGROUND INFORMATION	
	Site and Location:	Port of Beaumont
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce or eliminate damages to structures and infrastructure.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to future structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Port of Beaumont Administration
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	SOP

COMMENTS:

		Port of Beaumont– Action #3
	Proposed Action:	Upgrade port facilities to include drought mitigation measures such as greywater reuse systems and drought tolerant landscaping.
	BACKGROUND INFORMATION	
	Site and Location:	Port of Beaumont
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at port facilities
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Port of Beaumont Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

COMMENTS:

		Port of Beaumont– Action #4
	Proposed Action:	Install hazard resistant safety lighting at docks.
	BACKGROUND INFORMATION	
	Site and Location:	Port of Beaumont: Dock 5, 6,7 Harbor Island Docks Carrol Street Warf (CSW) Dock Roll-On Roll-Off Ramp
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Hail, Lightning, Thunderstorm Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$88,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Port of Beaumont Administration
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services caused by unforeseen events.

		Port of Beaumont– Action #5
	Proposed Action:	Upgrade and harden transit sheds. Install generators and hardwired quick connections at site to ensure continuity of operations.
	BACKGROUND INFORMATION	
	Site and Location:	Port of Beaumont: Main Street Terminal 2, 5,6,7 CSW Sheds A and B Harbor Island Sheds A, B, C (w/ fire pump house)
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Tornado, Hail, Lightning, Extreme Heat, Winter Storm, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structure.
Priority (High, Moderate, Low):	High
Estimated Cost:	$25.8 million
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Port of Beaumont Administration
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to personnel.

		Port of Beaumont– Action #6
	Proposed Action:	Replacement of roofing and/or harden/retrofit critical facilities and infrastructures to hazard-resistant levels.
	BACKGROUND INFORMATION	
	Site and Location:	Port of Beaumont: CSW Sheds A and B Harbor Island Sheds A,B,C
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structure.
Priority (High, Moderate, Low):	High
Estimated Cost:	$2.7 million
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Port of Beaumont Administration
Implementation Schedule:	Within 24months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to personnel.

		Port of Beaumont– Action #7
	Proposed Action:	Upgrade gutters to hazard-resistant levels.
	BACKGROUND INFORMATION	
	Site and Location:	Port of Beaumont: CSW Sheds A and B Harbor Island Sheds A,B,C
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structure.
Priority (High, Moderate, Low):	High
Estimated Cost:	$102,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Port of Beaumont Administration
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to personnel.

PORT OF PORT ARTHUR

		Port of Port Arthur– Action #1
	Proposed Action:	Implement education and awareness program utilizing public meetings, social media, bulletins, flyers, etc. to educate employees and area residents of hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages within the planning area.
	BACKGROUND INFORMATION	
	Site and Location:	Port of Port Arthur
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect employees and citizens from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm, Hurricane Wind, Low Risk and Man-Made Hazards
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	Port of Port Arthur Administration
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Port of Port Arthur– Action #2
	Proposed Action:	Require erosion/sedimentation controls for improvements at the port.
	BACKGROUND INFORMATION	
	Site and Location:	Port of Port Arthur
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce or eliminate damages to structures and infrastructure.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to future structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Port of Port Arthur Administration
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	SOP

COMMENTS:

		Port of Port Arthur– Action #3
	Proposed Action:	Upgrade port facilities to include drought mitigation measures such as greywater reuse systems and drought tolerant landscaping.
	BACKGROUND INFORMATION	
	Site and Location:	Port of Port Arthur
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at port facilities
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Port of Port Arthur Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

COMMENTS:

		Port of Port Arthur– Action #4
	Proposed Action:	Relocate Overhead Utilities Underground:
	BACKGROUND INFORMATION	
	Site and Location:	Port of Port Arthur. 100 W. Lakeshore to 221 Houston Ave to 501 Houston Ave. Port Arthur, TX
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to employees.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2.3 million
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Port of Port Arthur
Implementation Schedule:	Within 6 months of adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Frequent outages due to significant weather events. Exampled by average 6 interruptions per month. Peak annual (September 2021) had 22 events. Catastrophic weather events like ice storms, tropical depressions, tropical storms and hurricane events render area without power. Days or weeks to fully restore overhead power. Some power generation available albeit limited**.** Continuity of operations, emergency response capability as the port was utilized in Harvey, Spill Response, ice storm. Est. $40,000 loss per day of disrupted power.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Port of Port Arthur– Action #4
	Proposed Action:	Mitigation (harden and retrofit) and Relocation of IT, Operations and Administration Functions to an area away from and on the protected side of the flood protection levee.
	BACKGROUND INFORMATION	
	Site and Location:	Port of Port Arthur. From 100 W. Lakeshore and 221 Houston to 501 Houston Ave
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood risk to structures and infrastructure in flood prone areas. Reduce risk of injuries to employees. Ensure continuity of critical services during and after event.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail, Wildfire, Extreme Heat
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1.3 million
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Port of Port Arthur
Implementation Schedule:	Within 6 months of the plan adoption.
Incorporation into Existing Plans:	N/A

COMMENTS:
Relocate certain information technology, operations and administrative resources, emergency response. Pending realignment of the Port Arthur Flood Protection Levee, the port will be in an area of reduced flood protection as compared to areas behind the new alignment. Port activities of cargo handling do not move, certain operations and administrative activities are at risk in a surge event, like Ike. Estimated cost $1.0 million per flood event. In the event of a storm with flood protection levee gates closed access is restricted.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

SOUTH EAST TEXAS REGIONAL PLANNING COMISSION (SETRPC)

South East Texas Regional Planning Commission (SETRPC)– Action #1		
	Proposed Action:	Plan for the Protection of Vulnerable Populations by identifying at-risk populations and coordinating with home health agencies, medical equipment companies, local churches, and neighborhood associations to assist during extreme weather events. Organize strategies for protecting vulnerable populations and develop a plan to activate strategies when need be.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens and at-risk populations from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Ongoing project
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred Action #1,2
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

South East Texas Regional Planning Commission (SETRPC)– Action #2		
	Proposed Action:	Facilitate use of all mass notification systems including but not limited to the Southeast Texas Alerting Network (STAN), to notify and educate the public of impending hazardous events.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens and at-risk populations from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Ongoing project
Incorporation into Existing Plans:	EOPs

COMMENTS:
Deferred Action # 5
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

South East Texas Regional Planning Commission (SETRPC)– Action #3		
	Proposed Action:	Public Awareness and Education of Vulnerable Population through creation of a database and special group in STAN (Southeast Texas Alerting Network regional emergency alerting system) whereby public information protection actions can be disseminated.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Expedite access and hazard awareness and protect citizens and at-risk populations from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Ongoing project
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

South East Texas Regional Planning Commission (SETRPC)– Action #4	
Proposed Action:	Coordinate and implement a natural hazards public awareness campaign among the jurisdictions. Target audiences will include schools, neighborhood watch groups, various civic groups, neighborhood associations, community groups, and industry groups. FEMA publications will also be made available in city hall libraries, municipal courts, police and fire departments, public works departments, public access TV channels, city libraries and on the SETRPC and jurisdictional websites.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens and at-risk populations from potential injuries and damages.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000 - $75,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Ongoing project
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred Action #11
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

South East Texas Regional Planning Commission (SETRPC)– Action #5		
	Proposed Action:	Coordinate with federal, state and local partners to provide all hazards, ICS, and specialized training that may enhance preparedness for first responders.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens and at-risk populations from potential injuries and damages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000 - $50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12 months of plan adoption, ongoing
Incorporation into Existing Plans:	Emergency Operations Plan

COMMENTS:
Deferred Action #21
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

South East Texas Regional Planning Commission (SETRPC)– Action #6	
Proposed Action:	Develop a drought emergency plan, incorporating criteria or triggers for drought-related actions, enact water conservation measures during drought conditions, and develop a drought communication plan and early warning system to facilitate timely communication of relevant information.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of potential injuries and fatalities
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$75,000 - $100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Ongoing project
Incorporation into Existing Plans:	Local water plans and ordinances

COMMENTS:
Deferred Action #3

South East Texas Regional Planning Commission (SETRPC)– Action #7	
Proposed Action:	Harden/retrofit existing and/or construct new structures to act as shelters during severe weather events.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury and fatalities.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Thunderstorm Wind, Tornado, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,500,000 - $5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange and Jasper Counties
Implementation Schedule:	Within 12-24 months of plan adoption, ongoing
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred Action #6
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

South East Texas Regional Planning Commission (SETRPC)– Action #8	
Proposed Action:	Harden/retrofit SETRPC building that serves as an alternate 911 Public Safety Answering Point (PSAP) site for local jurisdictions within the Southeast Texas region during times of natural disaster.
BACKGROUND INFORMATION	
Site and Location:	2210 Eastex Freeway, Beaumont, Texas 77703
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or fatalities. Ensures continuity of critical services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Thunderstorm Wind, Tornado, Flood, Lightning, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000 - $2,500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Within 12-36 months of plan adoption, ongoing
Incorporation into Existing Plans:	Emergency Operations Plans/ Local PSAP Standard Operating Procedures

COMMENTS:
Deferred Action #7
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

South East Texas Regional Planning Commission (SETRPC)– Action #9	
Proposed Action:	Harden/retrofit critical facilities and infrastructures to hazard-resistant levels. Implement standard for new construction and developments.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and after event. Reduce risk of injury to emergency personnel.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 24 months of plan adoption, ongoing
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred Action #18
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

South East Texas Regional Planning Commission (SETRPC)– Action #10		
	Proposed Action:	Coordinate Emergency Management Plans for coastal storm/hurricane events. Specific efforts include encouraging jurisdictions to install and maintain back up power at identified facilities, construct and designate emergency operations centers for disaster/emergency operations and solicit participation in Community Emergency Response training.
	BACKGROUND INFORMATION	
	Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injury or fatalities. Ensures continuity of critical services.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000 - $50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12-36 months of plan adoption, ongoing
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Deferred Action #8

South East Texas Regional Planning Commission (SETRPC)– Action #11	
Proposed Action:	Conduct flood insurance educational seminars for area realtors to increase their knowledge of National Flood Insurance Program (NFIP) and the benefits to homeowners in security flood insurance.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood insurance premiums for residents. Reduce flood risk and build resiliency.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000 - $50,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12 months of plan adoption, ongoing
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred Action #9
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

South East Texas Regional Planning Commission (SETRPC)– Action #12	
Proposed Action:	Coordinate public/private partnerships to ensure special needs populations are protected from health risks due to extreme weather conditions. Actions will be targeted toward citizens with physical limitations and others who may be unable to reach safety in times of severe weather. Volunteer groups may be available to assist by visiting special needs groups to ensure their safety and comfort during extreme weather events or assist when evacuations are necessary.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of potential injuries and fatalities especially for at-risk populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Ongoing project
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Deferred Action #10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

South East Texas Regional Planning Commission (SETRPC)– Action #13	
Proposed Action:	Acquisition / Buy-out: Acquire and demolish flood-prone properties that are deemed Repetitive and Severe Repetitive Loss properties.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$90,000 - $10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12-60 months of plan adoption, ongoing
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred Action #16, 17
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

South East Texas Regional Planning Commission (SETRPC)– Action #14	
Proposed Action:	Elevation of new and existing flood prone structures and infrastructures.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of flood damages to high-risk structures and prevent future losses in high-risk flood hazard areas.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Natural Systems Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$90,000 - $2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12-60 months of plan adoption, ongoing
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

South East Texas Regional Planning Commission (SETRPC)– Action #15	
Proposed Action:	Continually review, revise, update, and systematically maintain floodplain data and maps of flood prone areas throughout the Southeast Texas Region.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood risk to structures through understanding risk and vulnerability.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000 - $5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12 months of plan adoption, ongoing
Incorporation into Existing Plans:	Floodplain Ordinance

COMMENTS:
Deferred Action #23
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

South East Texas Regional Planning Commission (SETRPC)– Action #16	
Proposed Action:	Mitigate damage to utilities in order to maintain function during and after a hazard event. Action can include but not limited to: bury utility lines underground, frangible links/break away connections, harden utility poles, and easement area/clearance of utility lines/ poles from tree lines.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Energy (Power/Fuel)
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$150,000 - $600,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12-24 months of plan adoption, ongoing
Incorporation into Existing Plans:	Comprehensive Plan, Local Ordinance

COMMENTS:
Deferred Action #13, 20
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

South East Texas Regional Planning Commission (SETRPC)– Action #17	
Proposed Action:	Design and implement a program to remove and/ or minimize damage to structures and infrastructure from falling trees and debris.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Ensure continuity of critical services during and after event. Reduce risk of injuries or fatalities to vulnerable populations.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Winter Storm, Tornado, Lightning, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 - $100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 24 months of plan adoption, ongoing
Incorporation into Existing Plans:	Public Works SOP

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

South East Texas Regional Planning Commission (SETRPC)– Action #18	
Proposed Action:	Pursue drainage improvements. Actions can include but are not limited to installing/upgrading culverts and headwalls as well as enlarging storm water ditches and canals.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flooding by maintaining or restoring drainage capacity. Reduce risk of injuries or fatalities.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000- $5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12 months of plan adoption, ongoing
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred Action #19
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

South East Texas Regional Planning Commission (SETRPC)– Action #19	
Proposed Action:	Identify and implement mitigation activities that would aid/enhance evacuations throughout the region.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and loss of life. Improve evacuation and emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Tornado, Winter Storm, Wildfire, Thunderstorm Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structure and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000 - $500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12-24 months of plan adoption, ongoing
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred Action #22
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

South East Texas Regional Planning Commission (SETRPC)– Action #20	
Proposed Action:	Coordinate and implement construction, expansion, and maintenance of flood control structures/barriers for the purpose of mitigating damage and protect freshwater resources from storm surge, sea level rise, and other sources of saltwater intrusion; in addition to water contamination.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury, and loss of life.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange and Jasper Counties
Implementation Schedule:	Within 12-24 months of plan adoption, ongoing
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Includes deferred action #4, 24, 25
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

South East Texas Regional Planning Commission (SETRPC)– Action #21	
Proposed Action:	Construct water retention ponds to collect storm water run-off and use as an alternate water source for agricultural resources throughout the Southeast Texas region.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Improve alternate source of water. Reduce risk of injuries or fatalities.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Drought, Thunderstorm Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000- $250,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 12 months of plan adoption, ongoing
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred Action #12
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

South East Texas Regional Planning Commission (SETRPC)– Action #22	
Proposed Action:	Pursue the identification and construction of alternate freshwater resources.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Improve alternate source of water. Reduce risk of injuries or fatalities.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000- $200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC
Implementation Schedule:	Within 12-24 months of plan adoption, ongoing
Incorporation into Existing Plans:	Local Water Management Plan

COMMENTS:

South East Texas Regional Planning Commission (SETRPC)– Action #23	
Proposed Action:	Secure and maintain backup information systems to store critical information at off-site locations.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of critical government data and files through redundant systems.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000 - $350,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 24 months of plan adoption, ongoing
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred Action #14
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

South East Texas Regional Planning Commission (SETRPC)– Action #24	
Proposed Action:	Coordinate with county and municipal governments to allow the SETRPC to maintain a copy of all local ordinances relevant to mitigation activities.
BACKGROUND INFORMATION	
Site and Location:	Southeast Texas Region for Hardin, Jefferson, Orange, and Jasper Counties
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of local ordinances through redundant systems.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Flood, Extreme Heat, Hurricane Wind, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000 - $15,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	SETRPC, Hardin, Jefferson, Orange, and Jasper Counties
Implementation Schedule:	Within 24 months of plan adoption, ongoing
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred Action #15
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

SECTION 19: PLAN MAINTENANCE

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PLAN MAINTENANCE PROCEDURES

The following is an explanation of how the participating jurisdictions within Jefferson County, and the general public will be involved in implementing, evaluating, and enhancing the Plan over time. When the plan is discussed in all maintenance procedures it includes mitigation actions and hazard assessments. The sustained hazard mitigation planning process consists of four main parts:

- Incorporation
- Monitoring and Evaluation
- Updating
- Continued Public Involvement

INCORPORATION

Participating jurisdictions within Jefferson County will be responsible for further development and implementation of mitigation actions. Each action has been assigned to a specific department within the participating jurisdictions. The following describes the process by which participating jurisdictions will incorporate elements of the mitigation plan into other planning mechanisms.

PROCESS OF INCORPORATION

Once the Plan Update is adopted, participating jurisdictions within Jefferson County will implement actions based on priority and the availability of funding. The Planning Area currently implements policies and programs to reduce loss to life and property from hazards. The mitigation actions developed for this Plan Update enhance this ongoing effort and will be implemented through other program mechanisms where possible.

The potential funding sources listed for each identified action may be used when the jurisdiction seeks funds to implement actions. An implementation time period or a specific implementation date has been assigned to each action as an incentive for completing each task and gauging whether actions are implemented in a timely manner.

SECTION 19: PLAN MAINTENANCE

Participating jurisdictions within Jefferson County will integrate implementation of their mitigation actions with other plans and policies such as construction standards and emergency management plans, and ensure that these actions, or proposed projects, are reflected in other planning efforts. Coordinating and integrating components of other plans and policies into goals and objectives of the Plan Update will further maximize funding and provide possible cost-sharing of key projects, thereby reducing loss of lives and property and mitigating hazards affecting the area.

Upon formal adoption of the Plan Update, planning team members from each participating jurisdiction will work to integrate the hazard mitigation strategies into other plans and codes as they are developed. Participating team members will conduct periodic reviews of plans and policies, once per year at a minimum, and analyze the need for revisions in light of the approved Plan. The planning team will review all comprehensive land use plans (applicable jurisdictions only), capital improvement plans (applicable jurisdictions only), annual budget reviews, emergency operations or management plans, and transportation plans (applicable jurisdictions only) to guide and control development. Participating jurisdictions will ensure that capital improvement planning (applicable jurisdictions only) in the future will also contribute to the goals of this hazard mitigation Plan Update to reduce the long-term risk to life and property from all hazards. Within one year of formal adoption of the Hazard Mitigation Plan Update, existing planning mechanisms will be reviewed by each jurisdiction.

Jefferson County is committed to supporting the participating jurisdictions as they implement their mitigation actions. Planning team members will review and revise, as necessary, the long-range goals and objectives in strategic plan and budgets to ensure that they are consistent with this mitigation action plan. Additionally, the Planning Area will work to advance the goals of this hazard mitigation plan through its routine, ongoing, long-range planning, budgeting, and work processes.

Table 19-1 identifies types of planning mechanisms and examples of methods for incorporating the Plan Update into other planning efforts. The team members, listed in Table 19-2 below, will be responsible for the review of these planning mechanisms and their incorporation of the plan, with the exception of the Floodplain Management Plans; the jurisdictions who have a Floodplain Administrator on staff will be responsible for incorporating the plan when floodplain management plans are updated or new plans are developed.

Table 19-1. Methods of Incorporation of the Plan

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
Annual Budget Review	Jefferson County: EMC City of Beaumont: EMC City of Bevil Oaks: City Clerk City of China: City Secretary City of Groves: Fire Chief City of Nederland: Fire Chief City of Nome: City Clerk City of Port Arthur: EMC City of Port Neches: Fire Chief City of Taylor Landing: Mayor LNVA: Manager of Engineering	Various departments and key personnel that participated in the planning process for participating jurisdictions within Jefferson County will review the Plan and mitigation actions therein when conducting their annual budget review. Allowances will be made in accordance with grant applications sought, and mitigation actions that will be undertaken, according to the implementation schedule of the specific action.

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
	Port of Beaumont: Director of Security and Emergency Management Port of Port Arthur: Executive Director SETRPC: Director of Homeland Security	
Capital Improvement Plans	Jefferson County: EMC City of Beaumont: EMC City of Bevil Oaks: City Clerk City of Groves: Fire Chief City of Nederland: Fire Chief City of Nome: City Clerk City of Port Arthur: EMC City of Port Neches: Fire Chief LNVA: Manager of Engineering Port of Beaumont: Director of Security and Emergency Management Port of Port Arthur: Executive Director	Participating jurisdictions within Jefferson County have a Capital Improvement Plan (CIP) in place. Prior to any revisions to the CIP, County, City, and other departments will review the risk assessment and mitigation strategy sections of the HMAP, as limiting public spending in hazardous zones is one of the most effective long-term mitigation actions available to local governments.
Comprehensive Plans	City of Beaumont: EMC City of China: City Secretary City of Groves: Fire Chief City of Nederland: Fire Chief City of Nome: City Clerk City of Port Arthur: EMC City of Port Neches: Fire Chief City of Taylor Landing: Mayor Port of Beaumont: Director of Security and Emergency Management Port of Port Arthur: Executive Director	Participating jurisdictions within Jefferson County have Long-term Comprehensive Development Plans in place. Since comprehensive plans involve developing a unified vision for a community, the mitigation vision and goals of the Plan will be reviewed in the development or revision of a Comprehensive Plan.
Floodplain Management Plans	Jefferson County: Floodplain Administrator City of Beaumont: Floodplain Administrator City of Bevil Oaks: Floodplain Administrator	Floodplain management plans include preventative and corrective actions to address the flood hazard. Therefore, the actions for flooding and information found in Section 6 of this Plan Update discussing the people and property at risk to flood will be reviewed and

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
	City of Groves: Floodplain Administrator City of Nederland: Floodplain Administrator City of Nome: Floodplain Administrator City of Port Arthur: Floodplain Administrator City of Port Neches: Floodplain Administrator City of Taylor Landing: Floodplain Administrator Port of Port Arthur: Floodplain Administrator	revised when participating jurisdictions within Jefferson County update their management plans or develops new plans.
Grant Applications	Jefferson County: EMC City of Beaumont: EMC City of Bevil Oaks: City Clerk City of China: City Secretary City of Groves: Fire Chief City of Nederland: Fire Chief City of Nome: City Clerk City of Port Arthur: EMC City of Port Neches: Fire Chief City of Taylor Landing: Mayor LNVA: Manager of Engineering Port of Beaumont: Director of Security and Emergency Management Port of Port Arthur: Executive Director SETRPC: Director of Homeland Security	The Plan will be evaluated by participating jurisdictions within Jefferson County when grant funding is sought for mitigation projects. If a project is not in the Plan Update, a Plan Revision may be necessary to include the action in the Plan.
Regulatory Plans	Jefferson County: EMC City of Beaumont: EMC City of Bevil Oaks: City Clerk City of China: City Secretary City of Groves: Fire Chief City of Nederland: Fire Chief City of Nome: City Clerk City of Port Arthur: EMC City of Port Neches: Fire Chief City of Taylor Landing: Mayor	Currently, participating jurisdictions within Jefferson County have regulatory plans in place, such as Emergency Management Plans, Continuity of Operations Plans, Land Use Plans, and Evacuation Plans. The Plan Update will be consulted when County, City, and other departments review or revise their current regulatory planning mechanisms, or in the

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
	LNVA: Manager of Engineering Port of Beaumont: Director of Security and Emergency Management Port of Port Arthur: Executive Director SETRPC: Director of Homeland Security	development of regulatory plans that are not currently in place.

MONITORING AND EVALUATION

Periodic revisions of the Plan are required to ensure that goals, objectives, and mitigation actions are kept current. When the plan is discussed in these sections it includes the risk assessment and mitigation actions as a part of the monitoring, evaluating, updating and review process. Revisions may be required to ensure the Plan is in compliance with federal and state statutes and regulations. This section outlines the procedures for completing Plan revisions, updates, and review. Table 19-2 indicates the department and title of the party responsible for Plan monitoring, evaluating, updating, and review of the Plan.

Table 19-2. Team Members Responsible for Plan Monitoring, Evaluating, Updating, and Review of the Plan

JURISDICTION	TITLE
Jefferson County	Emergency Management Coordinator
City of Beaumont	Emergency Management Coordinator
City of Bevil Oaks	City Clerk
City of China	City Secretary
City of Groves	Fire Chief
City of Nederland	Fire Chief
City of Nome	City Clerk
City of Port Arthur	Emergency Management Coordinator
City of Port Neches	Fire Chief / Marshall
City of Taylor Landing	Mayor
Lower Neches Valley Authority	Manager of Engineering
Port of Beaumont Navigation District	Director of Security and Emergency Management
Port of Port Arthur Navigation District	Executive Director / CEO

SECTION 19: PLAN MAINTENANCE

JURISDICTION	TITLE
South East Texas Regional Planning Commission (SETRPC)	Director of Homeland Security

MONITORING

Designated Planning Team members are responsible for monitoring, evaluating, updating, and reviewing the Plan, as shown in Table 19-2. Individuals holding the title listed in Table 19-2 will be responsible for monitoring the Plan on an annual basis. Plan monitoring includes reviewing and incorporating into the Plan other existing planning mechanisms that relate or support goals and objectives of the Plan; monitoring the incorporation of the Plan into future updates of other existing planning mechanisms as appropriate; reviewing mitigation actions submitted and coordinating with various County, City and special district departments to determine if mitigation actions need to be re-evaluated and updated; evaluating and updating the Plan as necessary; and monitoring plan maintenance to ensure that the process described is being followed, on an annual basis, throughout the planning process. The Planning Team will develop a brief report that identifies policies and actions in the plan that have been successfully implemented and any changes in the implementation process needed for continued success. A summary of meeting notes will report the particulars involved in developing an action into a project. In addition to the annual monitoring, the Plan will be similarly reviewed immediately after extreme weather events include but not limited to state and federally declared disasters.

EVALUATION

As part of the evaluation process, the Planning Team will assess changes in risk; determine whether the implementation of mitigation actions is on schedule; determine whether there are any implementation problems, such as technical, political, legal, or coordination issues; and identify changes in land development or programs that affect mitigation priorities for each respective department or organization.

The Planning Team will meet on an annual basis to evaluate the Plan and identify any needed changes and assess the effectiveness of the plan achieving its stated purpose and goals. The team will evaluate the number of mitigation actions implemented along with the loss-reduction associated with each action. Actions that have not been implemented will be evaluated to determine if any social, political, or financial barriers are impeding implementation and if any changes are necessary to improve the viability of an action. The team will evaluate changes in land development and/or programs that affect mitigation priorities in their respective jurisdictions. The annual evaluation process will help to determine if any changes are necessary. In addition, the Plan will be similarly evaluated immediately after extreme weather events including but not limited to state and federally declared disasters.

UPDATING

PLAN REVISIONS

At any time, minor technical changes may be made to update the Jefferson County Hazard Mitigation Action Plan Update 2022. Material changes to mitigation actions or major changes in the overall direction of the Plan or the policies contained within it, must be subject to formal adoption by the participating jurisdictions.

SECTION 19: PLAN MAINTENANCE

The participating jurisdictions within Jefferson County will review proposed revisions and vote to accept, reject, or amend the proposed change. Upon ratification, the Revision will be transmitted to TDEM.

In determining whether to recommend approval or denial of a Plan Revision request, participating jurisdictions will consider the following factors:

- Errors or omissions made in the identification of issues or needs during the preparation of the Plan Update;
- New issues or needs that were not adequately addressed in the Plan Update; and
- Changes in information, data, or assumptions from those on which the Plan Update was based.

FIVE (5) YEAR REVIEW

The Plan will be thoroughly reviewed by the Planning Team at the end of three years from the approval date, to determine whether there have been significant changes in the planning area that necessitate changes in the types of mitigation actions proposed. Factors that may affect the content of the Plan include new development in identified hazard areas, increased exposure to hazards, disaster declarations, increase or decrease in capability to address hazards, and changes to federal or state legislation.

The Plan review process provides the participating jurisdictions within Jefferson County an opportunity to evaluate mitigation actions that have been successful, identify losses avoided due to the implementation of specific mitigation measures, and address mitigation actions that may not have been successfully implemented as assigned.

It is recommended that the full Executive and Advisory Planning Team (Section 2, Tables 2-1 and 2-2) meet to review the Plan at the end of three years because grant funds may be necessary for the development of a five-year update. Reviewing planning grant options in advance of the five-year Plan update deadline is recommended considering the timelines for grant and planning cycles can be in excess of a year.

Following the Plan review, any revisions deemed necessary will be summarized and implemented according to the reporting procedures and Plan Revision process outlined herein. Upon completion of the review, update, and revision process the revised Plan will be submitted to TDEM for final review and approval in coordination with FEMA.

CONTINUED PUBLIC INVOLVEMENT

Public input was an integral part of the preparation of this Plan and will continue to be essential for Plan updates. The Public will be directly involved in the annual evaluation, monitoring, reviews and cyclical updates. Changes or suggestions to improve or update the Plan will provide opportunities for additional public input.

The public can review the Plan on the participating jurisdictions' websites, where officials and the public are invited to provide ongoing feedback, via email.

The Planning Team may also designate voluntary citizens from the planning area or willing stakeholder members from the private sector businesses that were involved in the Plan's development to provide feedback on an annual basis. It is important that stakeholders and the immediate community maintain a vested interest in preserving the functionality of the planning

area as it pertains to the overall goals of the mitigation plan. The Planning team is responsible for notifying stakeholders and community members on an annual basis and maintaining the Plan.

Media, including local newspaper and radio stations, will be used to notify the public of any maintenance or periodic review activities during the implementation, monitoring, and evaluation phases. Additionally, local news media will be contacted to cover information regarding Plan updates, status of grant applications, and project implementation. Local and social media outlets, such as Facebook and Twitter, will keep the public and stakeholders apprised of potential opportunities to fund and implement mitigation projects identified in the Plan.

APPENDIX A: LOW RISK AND MANMADE HAZARDS

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Study Area Definition 1
Hazard Profiles, Vulnerability, and Impact 3
Geologic Hazard 3
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Dam Failure 5
Earthquake 6
Water Contamination 7
Hazardous Materials Incident (Fixed and Mobile) 9
Terrorism 13

OVERVIEW

During the early stages of the planning process the team analyzed several natural hazards that were considered low risk. These hazards include Earthquake, Tsunami, Dam Failure and Geologic Hazards. In addition, the team reviewed technological hazards including Hazardous Material Incidents, Terrorism, and Water Contamination. A description of the hazard and Jefferson County's overall vulnerability to that hazard was developed. Annualized loss data is provided where available and impact is addressed looking at the warning time or potential speed of onset of the hazard, where appropriate.

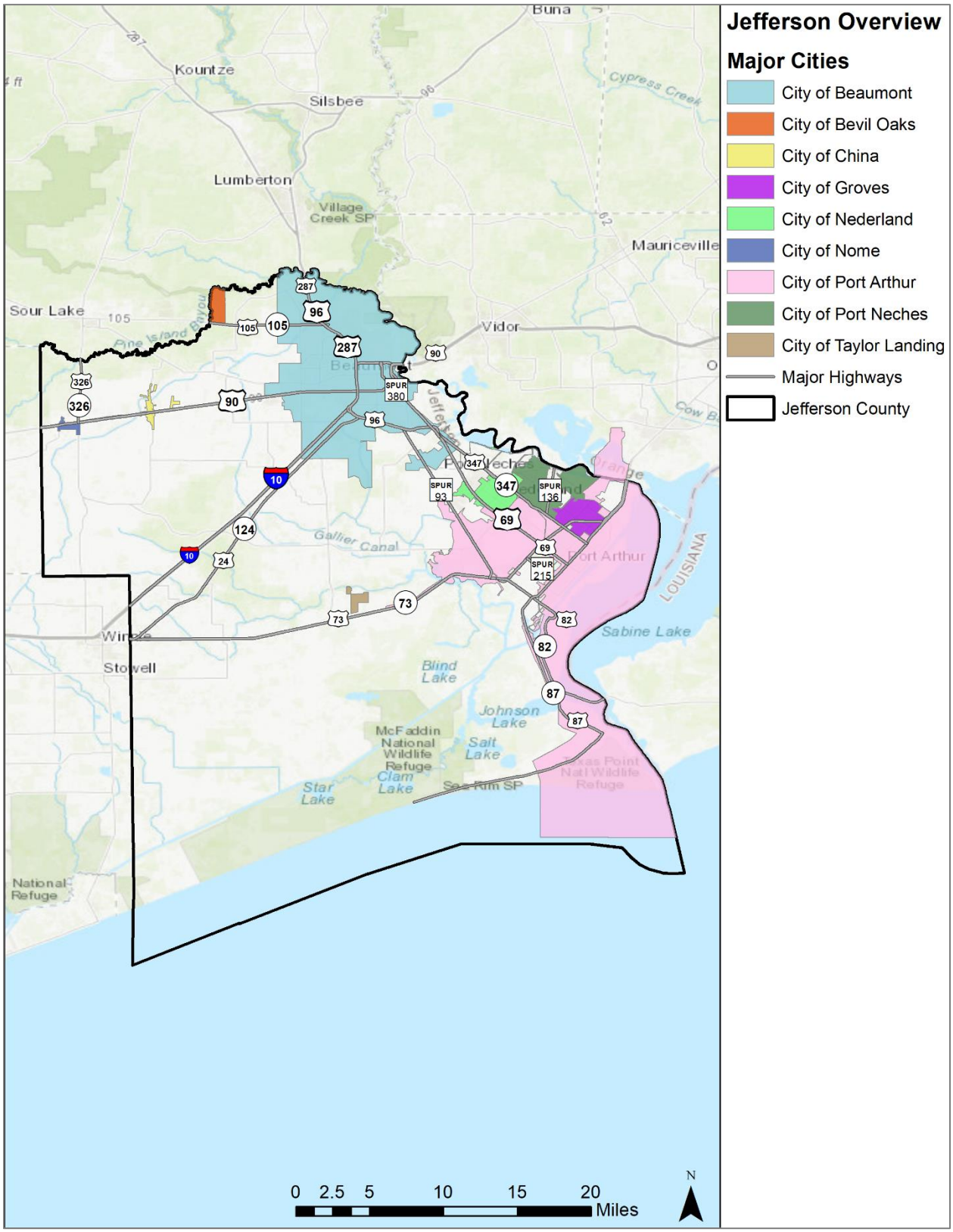
None of these hazards have had reported damages to any of the critical facilities for the Jefferson County planning area, therefore the planning area has not had any impact due to these hazards nor do they pose a risk to the critical services provided. In the 44 CFR 201.6(c)(2)(i) & 44 CRF 201.6(c)(2)(iii) the intent is to, "To understand the potential and chronic hazards affecting the planning area in order to identify which hazard risks are most significant (…),". Based on the intent, it is the participating jurisdictions belief that earthquakes, tsunamis, geologic hazards, and dam failure are not hazards that are most significant to the jurisdiction. During public outreach none of these hazards were a concern of the public population.

STUDY AREA DEFINITION

All areas of Jefferson County, including the SETRPC, special districts and participating jurisdictions are included. Figure A-1 shows the study area for the Jefferson County HMAP Update.

APPENDIX A: LOW RISK AND MANMADE HAZARDS

Figure A-1. Jefferson County Study Area



HAZARD PROFILES, VULNERABILITY, AND IMPACT

Each low-risk natural hazard includes a description of the hazard and a summary of the planning area's risk. For each of the three technological hazards, a description of the hazard and Jefferson County's overall vulnerability to that hazard was developed. Impact is addressed looking at the warning time or potential speed of onset of the hazard. Impact statements are defined in Table A-1 below.

Table A-1. Impact Statements

POTENTIAL SEVERITY	DESCRIPTION
Substantial	Multiple deaths. Complete shutdown of facilities for 30 days or more. More than 50 percent of property destroyed or with major damage.
Major	Injuries and illnesses resulting in permanent disability. Complete shutdown of critical facilities for at least two weeks. More than 25 percent of property destroyed or with major damage.
Minor	Injuries and illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than one week. More than 10 percent of property destroyed or with major damage.
Limited	Injuries and illnesses are treatable with first aid. Shutdown of critical facilities and services for 24 hours or less. Less than 10 percent of property destroyed or with major damage.

The term "technological hazards" refers to the origins of incidents that can arise from human activities such as (for the purposes of this risk assessment) the use of gas and oil pipeline and their manufacture, transportation, and storage. The use of hazardous materials across all industries is a technological hazard, as well as water contamination and acts of terrorism.

The scope of this risk assessment assumes that hazardous material incidents and water contamination events addressed in this section would be accidental in nature and that their consequences are unplanned and unintended.

GEOLOGIC HAZARD

A geologic hazard is a natural geologic event that can endanger human lives and threaten property and infrastructure. While geologic hazards are by definition a natural event, they can be caused or exacerbated by human activities. For the purpose of this hazard mitigation action plan update for Jefferson County, included in this hazard type are riverine erosion, landslides, and land subsidence (sinkholes). The U.S. Geological Survey (USGS) serves as the primary data and forecasting source for geologic hazards.

Riverine erosion is defined as downstream flow, shifting, or removal of sediment from a watershed. Caving river and stream banks are common associations with the migration of river channel alignment, and can threaten structures, undermine bridge foundations, and pose public safety risk.

Landslide is a general term used to describe the process of movement of material (i.e., soil, rock, mud, etc.) down a slope by falling, sliding or flowing under the force of gravity. The major causes of landslides are earthquakes, volcanic eruptions, or extreme rain events. Landslides are commonly associated with areas of steep slopes but can also occur in relatively level topography on un-retained constructed slopes and dirt embankments. Sloughing fill material can cause property and infrastructure damage, and indirectly threaten public safety.

Land Subsidence can occur either gradually or dramatically (as in sinkhole occurrence), and refers to the loss of surface elevation due to remove of subsurface support. Land subsidence can be caused by crustal deformation; sediment compaction; withdrawal of groundwater, hydrocarbons (crude oil and natural gas), geothermal fluids or minerals (Sulphur); or increased surface load associated with high-rise buildings.

All three geologic hazards were researched for previous occurrences. Impacts of geologic hazards in Jefferson County are not widespread, and historically have been limited to negligible land loss along waterways, Sabine Lake and the banks of the Gulf Inter-Coastal Water Way. Probability of future events is considered unlikely. Due to relatively isolated occurrence of impacts and no recorded occurrence of damages, injuries or fatalities, the hazard is considered to have a negligible impact on the planning area and is therefore considered a nuisance.

TSUNAMI

The National Oceanic and Atmospheric Administration (NOAA) describes a tsunami as a series of ocean waves generated by sudden displacements in the sea floor, landslides, volcanic activity or other large, abrupt disturbance of the sea-surface. Tsunamis have reached heights of more than 100 feet. As the waves approach shallow coastal waters, they appear normal and the speed decreases. If the disturbance is close to the coastline, tsunamis can demolish coastal communities within minutes, and a large disturbance can cause inundation and destruction thousands of miles away from its epicenter.

The USGS monitors earthquakes through network of seismic detectors. This information is critical to understand when a tsunami wave might be generated. The USGS and NOAA's National Ocean Service has the responsibilities for providing ocean bathymetry, coastlines and topography. The information is critical to understand how and where a tsunami wave will come ashore. NOAA research develops models that forecast tsunami impacts and create inundation maps of modeled events. NOAA research provides the forecast models to the NOAA's Weather Service forecasters and the inundation models and maps to state and national planner and emergency managers. NOAA monitors sea height through a network of buoys and tide gauges. This information is critical to understand the height a tsunami wave may be when it comes ashore. NOAA completed the original 6-buoy operational array in 2001 and expanded to a full network of 30 stations in March 2008 which includes the Gulf of Mexico.

According to the National Oceanic and Atmospheric Administration (NOAA), since 1900, over 200 tsunami events have affected the coasts of the United States and its territories, causing more than 500 deaths. Tsunami events are well documented in the Pacific Ocean Basin. Tsunamis have also occurred in the Gulf of Mexico. In 1991, a magnitude 7.6 earthquake in Costa Rica produced a six-foot-high tsunami that flooded nearly 1,000 feet inland on the Caribbean side of the country. The Caribbean also has a number of active submarine volcanoes and fault systems that are capable of producing large earthquakes like that in Haiti, which could generate a tsunami. There are no recorded occurrences of tsunami impacts in Jefferson County.

The National Tsunami Hazard Mitigation Program produced an assessment in August 2008 that assigned a "very low" hazard classification for the U.S. Gulf Coast based on previous frequency and local earthquake probability. Probability of future events is considered unlikely. Overall vulnerability to tsunami is considered very low based on the remote potential for causal.

DAM FAILURE

Dams are water storage, control, or diversion structures that impound water upstream in reservoirs. Dam failure can take several forms, including a collapse of or breach in the structure. While most dams have storage volumes small enough that failures have few or no repercussions, dams storing large amounts can cause significant flooding downstream. Currently, there are 3 dams located in Jefferson County which are classified as "low-hazard" dams (Table A-2).

Table A-2. Jefferson County Dam Survey

JURISDICTION	DAM NAME	HEIGHT (ft.)	STORAGE (Acre ft.)	POTENTIAL HAZARD CLASSIFICATION
Jefferson County	McBride Lake Levee	7	450	Low
Port Arthur	Port Arthur Raw Water Reservoir Levee	14	300	Low
Jefferson County	Spindletop Weir Saltwater Barrier	12	375	Low

The extent or magnitude of a dam failure event is described in terms of the classification of damages that could result from a dam's failure; not the probability of failure. Dams classified as "significant" were those at which failure or mis-operation probably would not result in loss of human life but could cause economic loss, environmental damage, and disruption of lifeline facilities or other significant damage. Low hazard potential dams were those at which failure or mis-operation probably would not result in loss of human life but would cause limited economic and/or environmental losses. Losses would be limited mainly to the owner's property. Classifications for extent after 2009 are found in Table A-3 below.

Table A-3. Extent Classifications

HAZARD POTENTIAL CLASSIFICATION	LOSS OF HUMAN LIFE	DAM STORAGE CAPACITY
Low	None Expected	Less than 10,000 acre-feet
Significant	Probable (1 to 6)	Between 10,000 and 100,000 acre-feet
High	Loss of Life Expected (7 or More)	100,000 acre-feet or more

The dams in the planning area have an extent classification of "Low" due to the small size and limited capacity of each dam. There has not been a recorded dam failure event for the entire Jefferson County planning area, including the SETRPC and all participating jurisdictions and

special districts. The planning area has no history of damages due to dam failure and no future damages are anticipated. A breach at any of the planning area dams would not result in injuries or loss of life and damages to structures, or infrastructure is not anticipated. Based on the probability of future occurrences and magnitude/severity, the overall vulnerability is considered low, and the hazard is considered to have a negligible impact on the planning area including the SETRPC and all participating jurisdictions and special districts.

EARTHQUAKE

An earthquake is a sudden motion or trembling of the earth caused by an abrupt release of stored energy in the rocks beneath the earth's surface. The energy released results in vibrations known as seismic waves that are responsible for the trembling and shaking of the ground during an earthquake. Ground motion is expressed as peak ground acceleration (PGA). PGA is expressed as a percent of gravity or "g".

Earthquakes are typically described in terms of magnitude and intensity. The traditional measurement of amplitude of the seismic wave through the assignment of a single number to quantify the amount of seismic energy released by an earthquake is the Richter scale. The intensity of how strong the shock was felt at a particular location is the Modified Mercalli Intensity (MMI) scale. The scale quantifies the effects of an earthquake on the Earth's surface, humans, objects of nature and man-made structures. Table A-4 below is a combined earthquake magnitude and intensity comparison from the United States Geological Survey.

Table A-4. Earthquake Magnitude/Intensity Comparison[1]

PGA (% g)	Magnitude (Richter)	Intensity (MMI)	Description
<0.17	1.0 - 3.0	I	**I**. Not felt except by a very few under especially favorable conditions.
0.17 - 1.4	3.0 - 3.9	II - III	**II**. Felt only by a few persons at rest, especially on upper floors of buildings. **III**. Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
1.4 - 9.2	4.0 - 4.9	IV - V	**IV**. Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably. **V**. Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.

[1] Source: Wald, D., et al., 1999, "Relationship between Peak Ground Acceleration, Peak Ground Motion, and Modified Mercalli Intensity in California," *Earthquake Spectra*, v. 15, p. 557 – 564.
USGS Magnitude/Intensity Comparison http://earthquake.usgs.gov/learn/topics/mag_vs_int.php

PGA (% g)	Magnitude (Richter)	Intensity (MMI)	Description
9.2 - 34	5.0 - 5.9	VI - VII	**VI**. Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. **VII**. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
34 - 124	6.0 - 6.9	VII - IX	**VIII**. Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. **IX**. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
>124	7.0 and higher	VIII or higher	**X**. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. **XI**. Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly **XII**. Damage total. Lines of sight and level are distorted. Objects thrown into the air.

There are no recorded earthquakes with epicenters in Jefferson County, and the planning area is roughly 80-100 miles south from the region of recent (minor) seismic activity in east Texas and 120-150 miles northeast of recent (minor) seismic activity in south central Texas. The annual probability for earthquakes capable of structural damage in the planning area is considered very low. The magnitude or intensity of a potential earthquake in the planning area, including the SETRPC and all participating jurisdictions and special districts, based on historical data is an Intensity level of I or II (Table A-4). Based on the probability of future occurrences and magnitude/severity the overall vulnerability is considered low and the hazard is considered to have a negligible impact on the planning area.

WATER CONTAMINATION

HAZARD PROFILE

Water Contamination is the introduction of point and non-point source pollutants into public ground and/or surface water supplies. Microbiological and chemical contaminants can enter water supplies. Chemicals can leach through soils from leaking underground storage tanks, feedlots and waste disposal sites. Human wastes and pesticides can also be carried into surface waters during high water events.

The Environmental Protection Agency (EPA) is the federal agency authorized to protect the environment and public health. Congress writes the laws and the President signs them into law.

The EPA is a regulatory agency with the duty to prepare administrative rules and procedures on how these laws and Presidential Executive Orders will be implemented and enforced.

The Clean Water Act establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under the Clean Water Act, the EPA has implemented pollution control programs. The Clean Water Act made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. The EPA's National Pollution Discharge Elimination System (NPDES) permit program controls discharges.

Further, the EPA is the federal authority to protect drinking water. The Safe Water Drinking Act was established to protect the quality of drinking water in the U.S. The law focuses on all water actually or potentially designed for drinking use, whether from above ground or underground sources. The Act authorizes the EPA to establish minimum standards to protect tap water and requires all owners or operators of public water systems to comply with these primary health related standards[2].

States must adopt rules that are at least as restrictive as the Clean Water Act and the Safe Water Drinking Act standards. The Texas Commission on Environmental Quality establishes State rules and regulations for public water systems and also specifies construction and operational standards for public water supply systems.

Disasters such as hurricanes and floods can disrupt drinking water supply and wastewater disposal systems. The Texas Commission on Environmental Quality provides guidance on remediation of public water supply systems after potential contamination due to natural disasters.

LOCATION

Potential and ongoing water contamination is present along all waterways and in the groundwater supply. Per a 2022 State Water Plan, Jefferson County is part of the East Texas Regional Water Planning area comprised of all or parts of twenty counties including Jefferson County. The principal surface water sources of the East Texas Region are the Sabine and Neches Rivers. For the East Texas Region, surface water accounts for 80-percent of the total existing water supply. Groundwater needs, including all municipal requirements in Jefferson County, were met almost entirely from the Gulf Coast Aquifer.

EXTENT

In general, levels of water contamination can influence community health when considered severe. Accordingly, magnitude and severity of water contamination is considered Critical by the Team, with potential public safety risks present and the potential for extended loss of function for water processing facilities. The high concentration of hazardous materials processing and shipping facilities in the planning area, low topographic gradient influencing river discharge rates and levels of dissolved oxygen, and relatively high total maximum daily load readings (TMDLs) in monitored surface water, all contribute to the magnitude and severity assessment by the Team.

PREVIOUS OCCURRENCES

According to the Evaluation of Water Resources of Orange and Eastern Jefferson Counties (Texas Water Development Board, 1990), the main ground-water quality problem is elevated chloride concentrations caused by saline-water encroachment in areas of concentrated plumage,

[2] Source: EPA

although from the late 1970's to 1988, chloride concentrations have not changed significantly due to decreased ground-water withdrawals.

PROBABILITY OF FUTURE EVENTS

Considering ongoing problems and previous water quality monitoring results, probability of future occurrence is considered highly likely.

VULNERABILITY AND IMPACT

Water contamination can have a “substantial” impact. Overall vulnerability for the planning area could result in multiple deaths during extreme contamination events.

HAZARDOUS MATERIALS INCIDENT (FIXED AND MOBILE)

HAZARD PROFILE

In a hazardous materials incident, solid, liquid, and/or gaseous contaminants may be released from fixed or mobile containers, although this profile focuses on fixed sites. Weather conditions will directly affect how the hazard develops.

The location of the most concentrated and potentially hazardous materials in the planning area are: fixed industrial facilities including oil and gas wells and storage facilities, pipelines, large and small industrial complexes that use or process chemicals or petroleum products, highways, and railroads. Numerous other sources are also present across the planning area, including storage areas for insecticides, herbicides, and fertilizers, wrecking yards, retail fueling stations, and abandoned industrial facilities. With regard to pipeline locations, roughly one third (1/3) of the 367,000 linear miles of pipelines transporting hazardous materials in the State of Texas are located in the southeast region of the state. This concentration of pipelines in the region that includes Jefferson County relates to a corresponding high probability of hazardous material transport accidents.

The Toxics Release Inventory (TRI) is a publicly available database from the federal Environmental Protection Agency (EPA) that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industry groups, as well as federal facilities. This inventory was established under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and expanded by the Pollution Prevention Act of 1990. Each year, facilities that meet certain activity thresholds must report their releases and other waste management activities for listed toxic chemicals to EPA and to their state or tribal entity. A facility must report if it meets the following three criteria:

- The facility falls within one of the following industrial categories: manufacturing; metal mining; coal mining; electric generating facilities that combust coal and/or oil; chemical wholesale distributors; petroleum terminals and bulk storage facilities; RCRA Subtitle C treatment, storage and disposal (TSD) facilities; and solvent recovery services.
- Have 10 or more full-time employee equivalents.
- Manufactures or processes more than 25,000 pounds or otherwise uses more than 10,000 pounds of any listed chemical during the calendar year. Persistent, bioaccumulative and toxic (PBT) chemicals are subject to different thresholds of 10 pounds, 100 pounds or 0.1 grams, depending on the chemical.

Tier 2 data is a publicly available database from the Texas Department of State Health Services Tier 2 Chemical Reporting Program. Under the community right-to-know program laws upheld at the state and federal level, all facilities which store significant quantities of hazardous chemicals

must share this information with state and local emergency responders and planners. Facilities in Texas share this information by filing annual hazardous chemical inventories with the state, with Local Emergency Planning Committees (LEPCs) and with local fire departments. The Texas Tier 2 Reports contain facility identification information and detailed chemical data about hazardous chemicals stored at the facility.

A facility must report if it meets the following criteria:

- Any company using chemicals that could present a physical or health hazard must report them, according to Tier 2 requirements.
- If an industry has an OSHA deemed hazardous chemical that exceeds the appropriate threshold at a certain point in time, that chemical must be reported. These chemicals may be on the list of 356 Extremely Hazardous Substances (EHS) or could be one of the 650,000 reportable hazardous substances (not on the EHS list). This reporting format is for a "snapshot in time." EHS chemicals have to be reported if the quantity is either greater than 500 pounds, or if the Threshold Planning Quantity (TPQ) amount is less than 500 pounds.

LOCATION

The locations of available TRI and Tier 2 toxic sites in the Jefferson County planning area are shown below in Table A-5.

Table A-5. Toxic Sites in Jefferson County[3]

JURISDICTION	FACILITY NAME	ADDRESS	NUMBER OF CHEMICALS
Jefferson County	Chemtreat Inc.	4200 Twin City Hwy	2
Jefferson County	The Dow Chemical Co. – Beaumont Aniline	5470 N Twin City Hwy	10
Jefferson County	Sasol Chemicals (USA) LLC	Hwy 124 & Rollins Road	3
Jefferson County	Phillips 66 Pipeline LLC – Beaumont Terminal	Hwy 366 ½ Mile E of intersection W Hwy 347	14
Jefferson County	US Doe Big Hill SPR Site	24784 Big Hill Road	3
Jefferson County	TXI-MID County Ready Mix	7662 Beauxart Garden Road	1
Beaumont	Martin Operating PTNR – Neches	1 Gulf States Road	5
Beaumont	Martin Operating PTNR – Stanolind	10 Sulfur Plant Road	5
Beaumont	Eastham Forge Inc.	1050 Neches Street	5
Beaumont	Suez Water Technologies & Solutions Inc. – Beaumont	10658 Hwy 90	10
Beaumont	Goodyear Tire & Rubber Co.	11241 Interstate Hwy 10	18
Beaumont	Mobil Chemical Co. Beaumont Polyethylene Plant	11440 Hwy 90	8
Beaumont	Total Petrochemicals & Refining USA Inc. – Beaumont Plant	11455 Interstate Hwy 10	2

[3] Source: EPA Toxic Release Inventory

APPENDIX A: LOW RISK AND MANMADE HAZARDS

JURISDICTION	FACILITY NAME	ADDRESS	NUMBER OF CHEMICALS
Beaumont	Chemtrade Refinery Services Inc.	1400 Olin Road	2
Beaumont	BASF Corp. – Beaumont	14385 W Port Arthur Road	17
Beaumont	Colonial Tank Farm	14713 W Port Arthur Road	10
Beaumont	TXI Operations LP – Dollinger Ready Mix Plant	2525 Dollinger	1
Beaumont	LNVA – North Regional Treatment Plant	2655 Gulf States Road	30
Beaumont	ExxonMobile Oil Corp. Beaumont Chemical Plant	2775 Gulf States Road	32
Beaumont	Arkema Inc.	2810 Gulf States Road	11
Beaumont	AZZ Galvanizing Services – Beaumont	500 Industrial Road	2
Beaumont	Federal Correctional Complex	5430 Knauth Road	1
Beaumont	NOV XL Systems Beaumont	5780 Hagner Road	3
Beaumont	Coastal Chemical Co. LLC	6534 Industrial Road	5
Beaumont	ExxonMobil Oil Beaumont Refinery	E End of Burt Street	43
Beaumont	J A M Distributing	3795 Stone Oak Drive	1
Beaumont	Motiva Enterprises LLC Beaumont Terminal	9406 W Port Arthur Road	12
Groves	Renewable Biofuels Port Neches LLC	6501 Hogaboom Road	1
Nederland	Mitsubishi Chemical America Inc.	6350 N Twin City Hwy	11
Nederland	OCI Beaumont LLC	5470 N Twin City Hwy	11
Port Arthur	Air Products LLC	1801 S Gulfway Drive	43
Port Arthur	Valero, Port Arthur Refinery	1801 S Gulfway Drive	42
Port Arthur	TXI Port Arthur Ready Mix	2.36 M from the Interx of Gulfway Drive & Hwy 82	1
Port Arthur	Chevron Phillips Chemical Co.	2001 S Gulfway Drive	21
Port Arthur	Standard Alloys Inc. (Port Arthur)	201 W Lakeshore Drive	2
Port Arthur	KMTEX LLC	2450 S Gulfway Drive	20
Port Arthur	Motiva – Port Arthur Refinery	2555 Savannah Ave	31
Port Arthur	Linde Port Arthur Hydrogen Facility 497	2555 Savannah Ave	1
Port Arthur	Oxbow Calcining LLC	3901 Coke Dock Road	6
Port Arthur	Motiva – Port Arthur Terminal	3901 Texaco Island Road	11

JURISDICTION	FACILITY NAME	ADDRESS	NUMBER OF CHEMICALS
Port Arthur	Motiva Chemicals LLC	4241 Savannah Ave	19
Port Arthur	Team Fabricators	650 Main Avenue	1
Port Arthur	Total Petrochemicals & Refining USA Inc. – Port Arthur Refinery	7600 32nd Street	24
Port Arthur	Veolia ES Technical Solutions LLC Port Arthur Facility	Hwy 73, 3.5 miles W of Taylor Bayou	184
Port Arthur	BASF Total Petrochemicals LLC	NE of Intersection of Hwy 73 & Hwy 366	20
Port Arthur	Chevron Port Arthur Lubricants Plant	End of W 7th Street	1
Port Arthur	Reladyne – Port Arthur	947 Procter Street	1
Port Arthur	Afton Chemical Additives Corp.	4245 Savannah Ave	1
Port Arthur	Linde Port Arthur 2	1801 S Gulfway Drive	1
Port Neches	Lion Elastomers LLC	1615 Main Street	5
Port Neches	TPC Group	2102 Spur 136	10
Port Neches	Indorama Ventures, Port Neches	6001 Hwy 366	35
Port Neches	Motiva Port Neches Terminal	Corner Spur 136 & Grigsby Dr	7

EXTENT

From a hazardous materials incident, the micro-meteorological effects of the buildings and terrain can alter travel and duration of agents. Shielding in the form of sheltering-in-place can protect people and property from harmful effects. Non-compliance with fire and building codes, as well as failure to maintain existing fire and containment features can substantially increase the damage from a hazardous materials release. The duration of a hazardous materials incident can range from hours to days. Warning time for hazardous materials incidents is minimal to none.

PREVIOUS OCCURRENCES

Hazardous materials are substances which if released or misused can cause death, serious injury, long-lasting health effects, and damage to structure and other properties as well as to the environment. Many products containing hazardous chemicals are used and stored in homes routinely. These products are also shipped daily on the nation's highways, railroads, waterways, and pipelines.

A total of 320 transportation incidents have been reported in the Jefferson County planning area over the last 72 years. The data collected is from 1950 through 2021 and identifies the hazardous materials transportation incidents as in-transit, loading, and unloading of transport vehicles. A summary of reported events is listed in Table A-6 below by jurisdiction.

Table A-6. Jefferson County Hazardous Material Incident Events by Jurisdiction[4]

JURISDICTION	NUMBER OF INCIDENTS	INJURIES	FATALITIES	PROPERTY AND CROP DAMAGE
City of Beaumont	78	0	0	$497,043
City of Bevil Oaks	0	0	0	$0
City of China	1	0	0	$535
City of Groves	0	0	0	$0
City of Nederland	20	0	0	$121
City of Nome	2	0	0	$85,963
City of Port Arthur	185	23	0	$604,461
City of Port Neches	22	9	1	$9,270
Jefferson County	12	0	0	$167,061
TOTAL LOSSES	**320**	**32**	**1**	**$1,364,454**

PROBABILITY OF FUTURE EVENTS

Based on the historic incident records, the frequency of occurrence is highly likely, and an event is probable in the next year in the Jefferson County planning area.

VULNERABILITY AND IMPACT

Hazardous materials or toxic releases can have a “substantial” impact. Such events can cause multiple deaths, completely shut down facilities for 30 days or more, and cause more than 50 percent of affected properties to be destroyed or suffer major damage.

TERRORISM

HAZARD PROFILE

The Federal Bureau of Investigation (FBI) categorizes terrorism in the United States as one of two types—domestic terrorism or international terrorism. Domestic terrorism involves groups or individuals whose terrorist activities are directed at elements of our government or population without foreign direction. International terrorism involves groups or individuals whose terrorist activities are foreign-based and/or directed by countries or groups outside of the United States, or whose activities transcend their national boundaries.

A terrorist attack can take several forms, depending on the technological means available to the terrorist, the nature of issue motivating the attack, and the points of weakness of the terrorist’s target. Bombings are the most frequently used terrorist method in the United States. A terrorist using a chemical or biological weapon is of particular concern to officials. Special training and equipment is needed in order to safely manage a Weapons of Mass Destruction incident.

[4] Damages reported in 2022 dollars.

Biological agents are infectious microbes or toxins used to produce illness or death in people, animals or plants. Biological agents can be dispersed as aerosols or airborne particles. Terrorists may use biological agents to contaminate food or water, as they are extremely difficult to detect.

Chemical agents kill or incapacitate people, destroy livestock, or ravage crops. Some chemical agents are odorless and tasteless and are therefore difficult to detect. These chemical agents can have an immediate effect (a few seconds to a few minutes) or a delayed effect (several hours to several days).

The Department of Defense estimates that as many as 26 nations may possess chemical agents and/or weapons, and an additional 12 may be seeking to develop them. The Central Intelligence Agency reports that at least 10 countries are believed to possess or are currently conducting research on biological agents for weaponization.

Terrorist incidents – as with other natural and technological disasters – involve the application of one or more modes of harmful force to the built environment. These modes include contamination (as in the case of chemical, biological radiological or nuclear hazards), energy (explosives, arson, and even electromagnetic waves), or denial of service (sabotage, infrastructure breakdown, and transportation service disruption).

LOCATION

There is no distinct geographic boundary to the threat of terrorism. An event is possible throughout the Jefferson County planning area.

EXTENT

The Homeland Security Advisory System, issued by the U. S. Department of Homeland Security, previously used a color-coded terrorism warning system that identified five threat levels. In 2011, the Department of Homeland Security (DHS) replaced the color-coded alerts of the Homeland Security Advisory System (HSAS) with the National Terrorism Advisory System (NTAS), designed to more effectively communicate information about terrorist threats by providing timely, detailed information to the American public.

NTAS now consists of two types of advisories: Bulletins and Alerts. DHS has added Bulletins to the advisory system to be able to communicate current developments or general trends regarding threats of terrorism. NTAS Bulletins permit the Secretary to communicate critical terrorism information that, while not necessarily indicative of a specific threat against the United States, can reach homeland security partners or the public quickly, thereby allowing recipients to implement necessary protective measures. Because DHS may issue NTAS Bulletins in circumstances not warranting a more specific warning, NTAS Bulletins provide the Secretary with greater flexibility to provide timely information to stakeholders and members of the public.

When there is specific, credible information about a terrorist threat against the United States, DHS will share an NTAS Alert with the American public when circumstances warrant doing so. The Alert may include specific information, if available, about the nature of the threat, including the geographic region, mode of transportation, or critical infrastructure potentially affected by the threat, as well as steps that individuals and communities can take to protect themselves and help prevent, mitigate or respond to the threat. The Alert may take one of two forms: Elevated, if there is credible threat information, but only general information about timing and target such that it is reasonable to recommend implementation of protective measures to thwart or mitigate against an

attack; or Imminent, if the threat is believed credible, specific, and impending in the very near term. Terrorism Advisory System Alerts are described in Figure A-2.[5]

Figure A-2. National Terrorism Advisory

The Red Cross also issues Advisory System Recommendations for individuals, families, neighborhoods, schools and businesses for each alert level. These may be found at: *www.redcross.org.*

Heightened periods for terrorism risk are based on intelligence and other information. A potential terrorist event could devastate the community physically, economically and psychologically for many years to come. Warning time for terrorism is minimal to none.

PREVIOUS OCCURRENCES

The history of terrorism on United States soil includes the attacks of September 11, 2001, on the World Trade Center in New York and the Pentagon in Washington, D.C. and the ensuing anthrax attacks; the 1995 bombing of the Murrah Federal Building in Oklahoma City; and the bombing of the World Trade Center in 1993.

Jefferson County has not experienced a terrorist act. While complete prevention of an attack may not be attainable, the County can lessen the likelihood and/or the potential effects of an incident. The County continues to improve its readiness to respond to a terrorist incident through participation in state and federal programs that provide training and equipment for agencies that would respond to a local terrorist incident, and in exercises that help to improve agency coordination and test local response plans.

PROBABILITY OF FUTURE EVENTS

The types, frequencies, and locations of many natural hazards are identifiable and, even in some cases, predictable, as the laws of physics and nature govern them. Malevolence, however, cannot be forecast with any accuracy. There is, therefore, some potential for most, if not all, types of intentional terrorist acts to occur anywhere and at any time.

VULNERABILITY AND IMPACT

There is no defined geographic boundary for a terrorist event. All of the population, buildings, critical facilities, infrastructure and lifelines and hazardous materials facilities are considered exposed to the hazards of terrorism and could potentially be affected.

There are no past local events. Therefore, all assets and facilities are potentially at risk to damages that may, for the most part, be secondary.

Terrorist events can have a “substantial” severity of impact. They can cause multiple deaths, completely shut down facilities for 30 days or more, and cause more than 50 percent of affected properties to be destroyed or suffer major damage.

[5] Source: Department of Homeland Security, https://www.dhs.gov/national-terrorism-advisory-system

APPENDIX B: PLANNING TEAM

Planning Team Members 1
Stakeholders 3

PLANNING TEAM MEMBERS

Jefferson County Hazard Mitigation Action Plan 2022 was organized using a direct representative model. An Executive Planning Team from the participating jurisdictions, shown in Table B-1, was formed to coordinate planning efforts and request input and participation in the planning process. Table B-2 reflects the Advisory Planning Team, consisting of area organizations and departments that participated throughout the planning process. Table B-3 is comprised of stakeholders who were invited to provide Plan input. Public outreach efforts and meeting documentation is provided in Appendix E.

Table B-1. Executive Planning Team

ORGANIZATION / DEPARTMENT	TITLE
South East Texas Regional Planning Commission (SETRPC)	Director of Homeland Security
South East Texas Regional Planning Commission (SETRPC)	Regional Emergency Planner
Jefferson County	Emergency Management Coordinator
City of Beaumont	Emergency Management Coordinator
City of Bevil Oaks	City Clerk
City of China	City Secretary
City of Groves	Fire Chief
City of Nederland	Fire Chief
City of Nome	City Clerk
City of Port Arthur	Emergency Management Coordinator
City of Port Neches	Fire Chief / Marshall
City of Taylor Landing	Mayor
Lower Neches Valley Authority	Manager of Engineering
Port of Beaumont Navigation District	Director of Security and Emergency Management
Port of Port Arthur Navigation District	Executive Director / CEO

Table B-2. Advisory Planning Team

ORGANIZATION / DEPARTMENT	TITLE
South East Texas Regional Planning Commission (SETRPC)	Contract and Financial Specialist
South East Texas Regional Planning Commission (SETRPC)	Program Specialist, 911 Network
South East Texas Regional Planning Commission (SETRPC)	Regional Emergency Planner
Jefferson County	County Engineer
Jefferson County	County Engineering Department Staff
Jefferson County	Deputy Emergency Management Coordinator
Jefferson County	Precinct 2 Commissioner
City of Beaumont	Deputy Emergency Management Coordinator
City of Beaumont	Grants Coordinator
City of Beaumont	Emergency Management Specialist
City of Bevil Oaks	Mayor
City of China	Mayor
City of Groves	Director of Public Works
City of Nederland	Assistant Fire Chief
City of Nederland	Chief of Police
City of Nederland	Sergeant
City of Nome	Mayor
City of Port Arthur	Assistant City Manager
City of Port Arthur	City Engineer
City of Port Arthur	City Manager
City of Port Arthur	Deputy Emergency Management Coordinator
City of Port Arthur	Director of Public Works
City of Port Arthur	Planning and Zoning Senior Planner
City of Port Neches	City Manager
City of Port Neches	Deputy Emergency Management Coordinator / Director of Public Works

ORGANIZATION / DEPARTMENT	TITLE
City of Port Neches	Economic Development Coordinator
City of Port Neches	Emergency Management Coordinator / Assistant Fire Chief
Lower Neches Valley Authority	Engineer
Port of Port Arthur Navigation District	Director of Accounting

STAKEHOLDERS

The following groups listed in Table B-3 represent a list of organizations invited to stakeholder meetings, public meetings, and workshops throughout the planning process and include: non-profit organizations, private businesses, universities, and legislators. The public were also invited to participate via e-mail throughout the planning process. Many of the invited organizations and stakeholders participated and were integral to providing comments and data for the Plan. For a list of attendees at meetings, please see Appendix E[1].

Table B-3. Stakeholders

AGENCY	TITLE
Baptist Hospital of South East Texas	Director of Administrative Facilities Management
Baptist Hospital of South East Texas	Executive Director
Baptist Hospital of South East Texas	Safety Office
Baptist Hospital of South East Texas	Trauma Program Manager
Batson Fire	Volunteer Fire Department
Christus Health	Operations Manager
Colonial Pipeline	General Representative
Colonial Pipeline	Operations Manager
Consultant at Carroll and Blackman, Inc.	PE, Vice President
Consultant at David Waxman	Engineering
Consultant at MPTX Associates	Certified Floodplain Manager
Consultant at Sabine River Authority	Technical Service Manager
Consultant at Texas FFA Association	Regional Manager
Department of Homeland Security	Advisor

[1] Information contained in Appendix E is exempt from public release under the Freedom of Information Act (FOIA).

APPENDIX B: PLANNING TEAM

AGENCY	TITLE
Department of Transportation	Director
Environmental Protection Agency (EPA)	Regional Representative
General Land Office (GLO)	Regional Representative
Hardin County ESD #5	Fire Chief
Jasper-Newton County Health	Program Director
Jefferson County Drainage District #7	General Laborer
Jefferson County Drainage District #7	Supervisor
Jefferson County ESD #3	Fire Chief
Jefferson County ESD #4	District Administrator
Lamar University	Professor, Department of Industrial and Systems Engineering
Local Emergency Planning Committee	Southeast Regional Representative
Long-term Care Partnership (LTCP)	State Farm Representative
National Parks Conservation Association	Consultant
National Parks Conservation Association	Regional Director Texas & Oklahoma
National Oceanic and Atmospheric Administration (NOAA)	Regional Representative
Orange County Economic Development Center	Executive Director
Orange County ESD #2	VFD Chief
Orange County Navigation and Port District	Executive Port Director
Saratoga Fire	Volunteer Fire Department
South East Texas Disaster Recovery Group	Representative
South East Texas Ground Water Conservation Group	General Manager
Texas Commission on Environmental Quality (TCEQ)	Outreach Coordinator
Texas Division on Emergency Management (TDEM)	Regional Representative
Texas A&M University (TAMU)	District Forester I, Forest Resource Development & Sustainable Forestry
Texas A&M University (TAMU)	Professor, Department of Marketing and Commerce
Texas A&M University (TAMU)	Texas A&M Agrilife County Extension Agent

APPENDIX B: PLANNING TEAM

AGENCY	TITLE
Texas Department of Public Safety (TDPS)	Telecommunication Division
Texas Congress	District Director to Congressman
Texas House District 19	Representative
Texas House District 19	Representative
Texas House District 21	Representative
Texas House District 22	Representative
Texas Senate	District Coordinator
Texas Senate District 3	Senate
Texas Senate District 4	Senate
Thicket Fire	Volunteer Fire Department
United Way	Beaumont Office Representative
United Way	Orange County Office Representative

APPENDIX C: PUBLIC SURVEY RESULTS

Overview 1
Public Survey Results 2

OVERVIEW

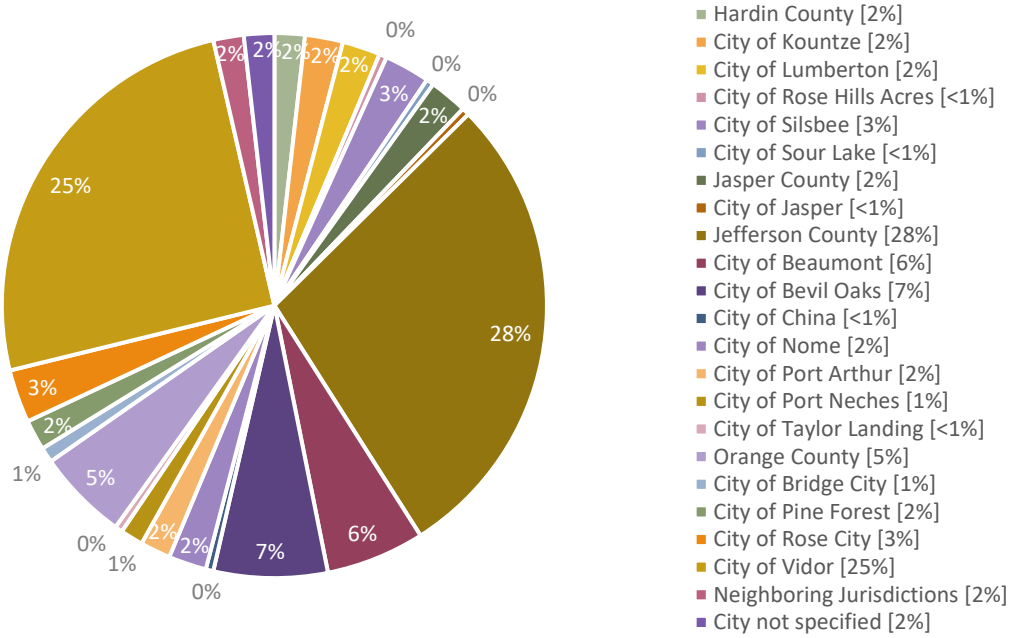
South East Texas Regional Planning Commission and Jefferson County prepared a public survey that requested public opinion on a wide range of questions relating to natural hazards. The survey was made available via their websites to all Counties the SETRPC coordinated to update, including Jefferson County and participating jurisdictions. This survey link was also distributed at public meetings and stakeholder events throughout the planning process.

A total of 221 surveys were collected, the results of which are analyzed in Appendix C. The purpose of the survey was twofold: 1) to solicit public input during the planning process, and 2) to help the jurisdictions identify any potential actions or problem areas.

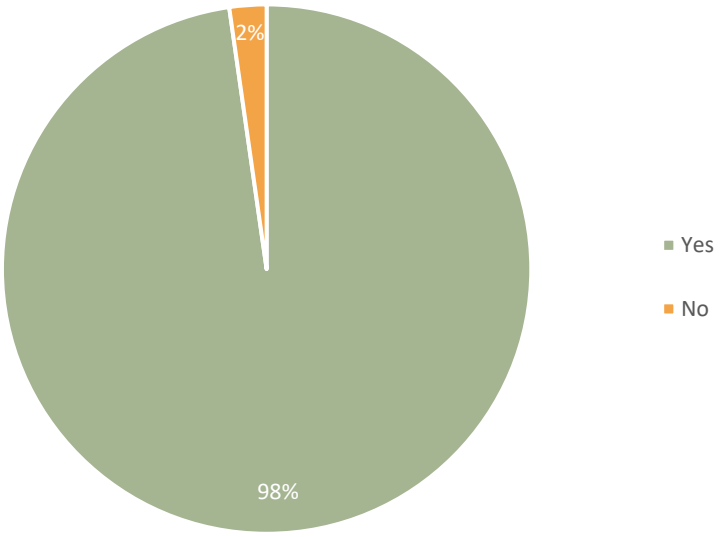
The following survey results depict the percentage of responses for each answer. Similar responses have been summarized for questions that did not provide a multiple-choice answer or that required an explanation.

PUBLIC SURVEY RESULTS

1. Please state the jurisdiction (city or community) where you reside.[1]

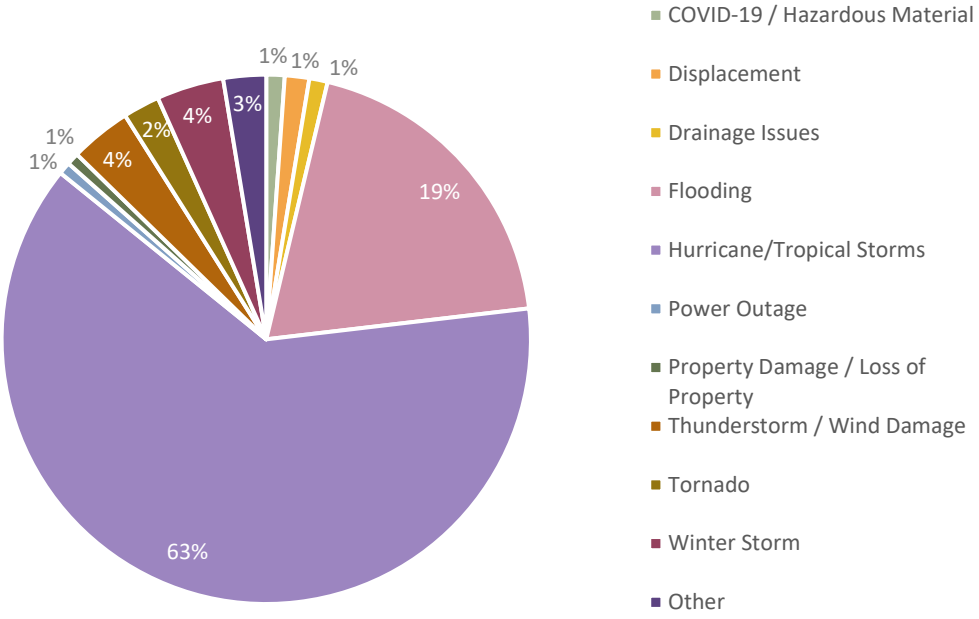


2. Have you ever experienced or been impacted by a disaster?

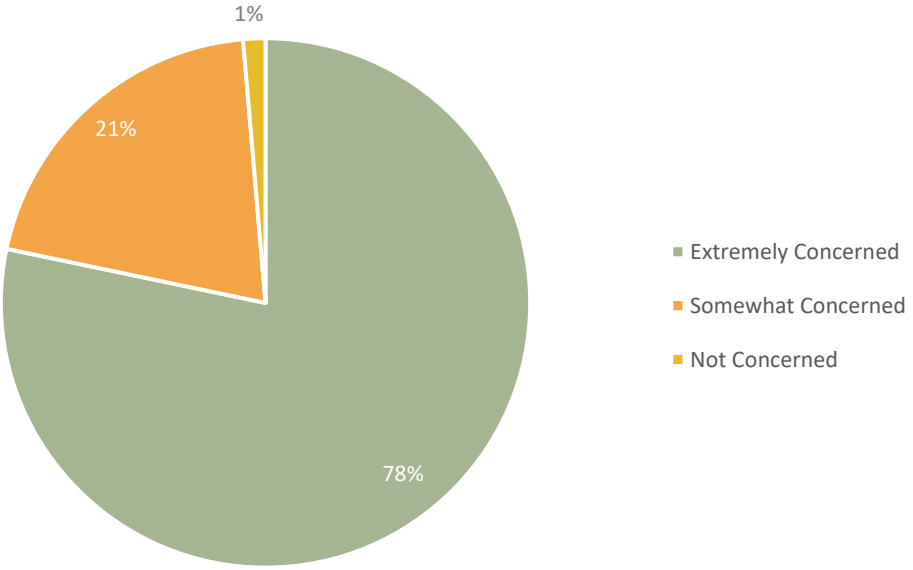


[1] Some respondents were in neighboring counties, however due to their proximity to Jefferson County, their responses were included in the survey results.

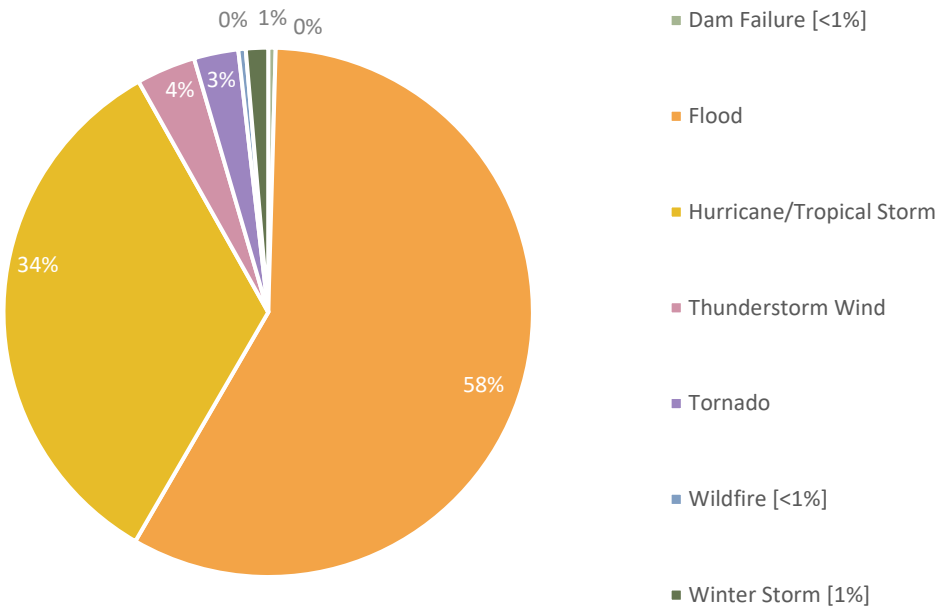
3. If you answered “Yes” to Question #2, please explain.



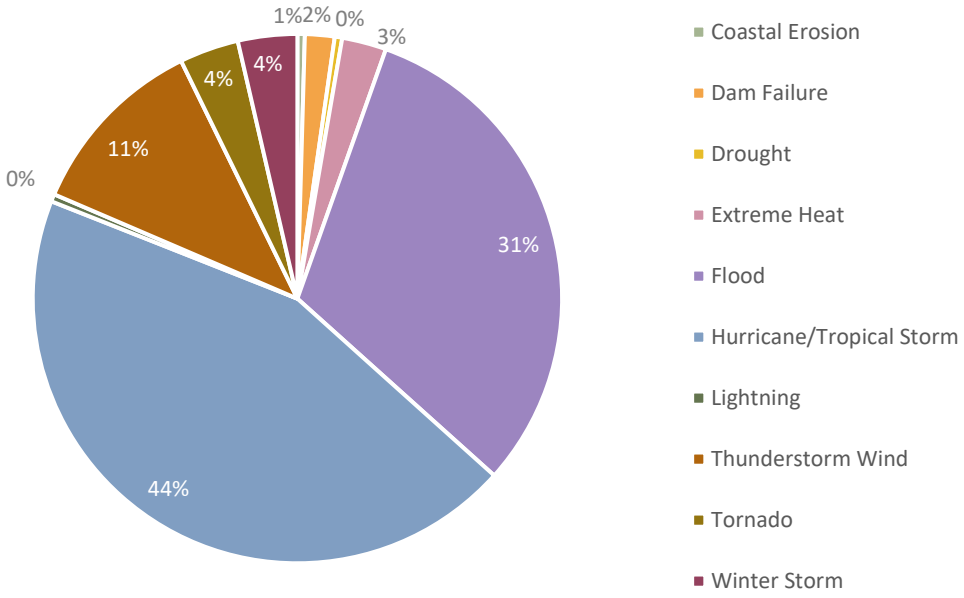
4. How concerned are you about the possibility of your community being impacted by a disaster?



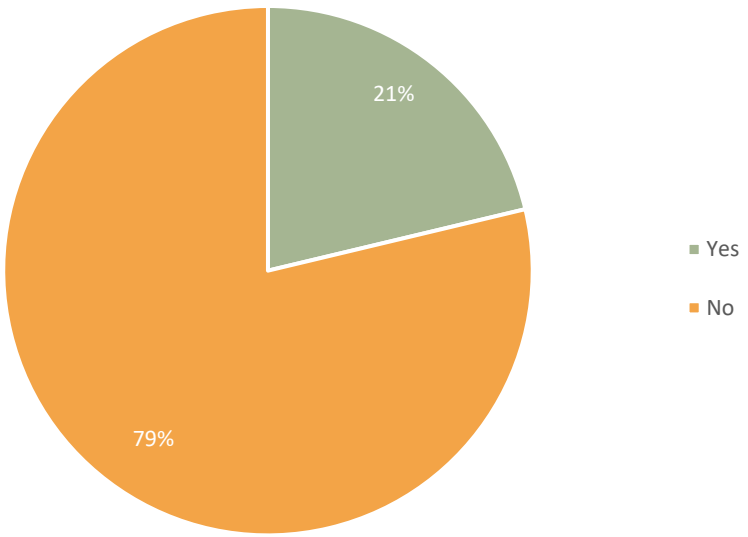
5. Please select the one hazard you think is the highest threat to your neighborhood:



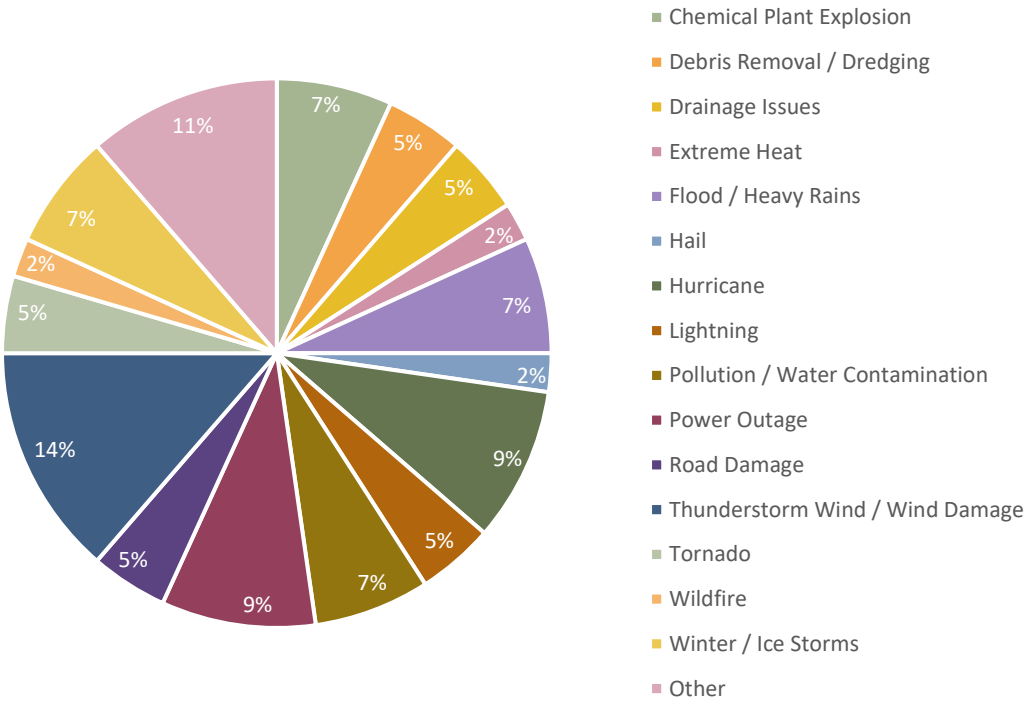
6. Please select the one hazard you think is the second highest threat to your neighborhood:



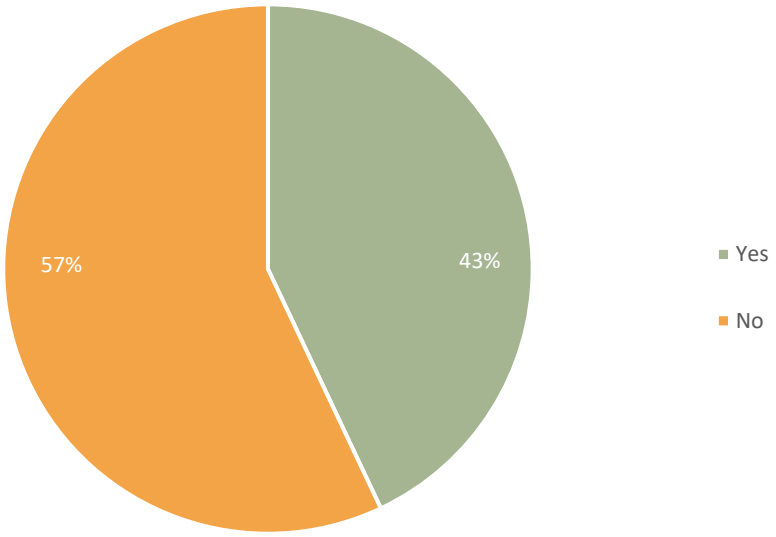
7. Is there another hazard not listed above that you this is a wide-scale threat to your neighborhood?



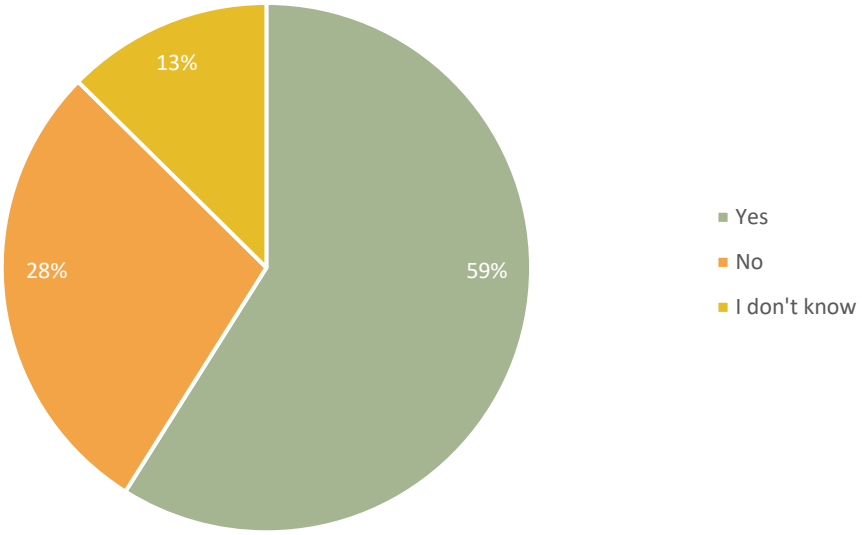
8. If you answered "Yes" to Question #7, please explain.



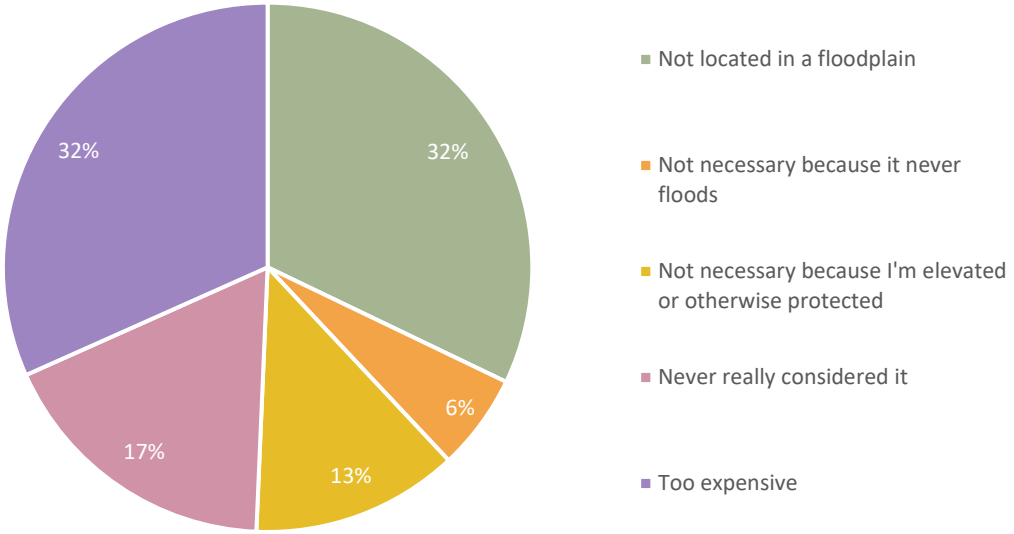
9. Is your home located in a floodplain?



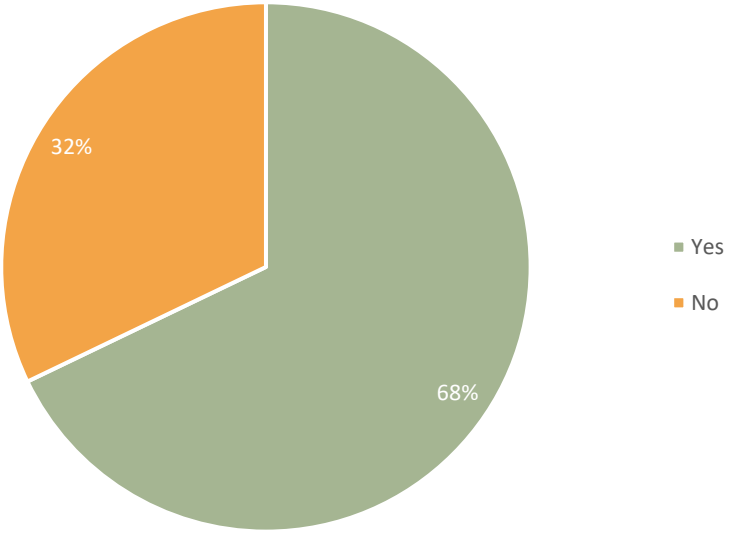
10. Do you have flood insurance?



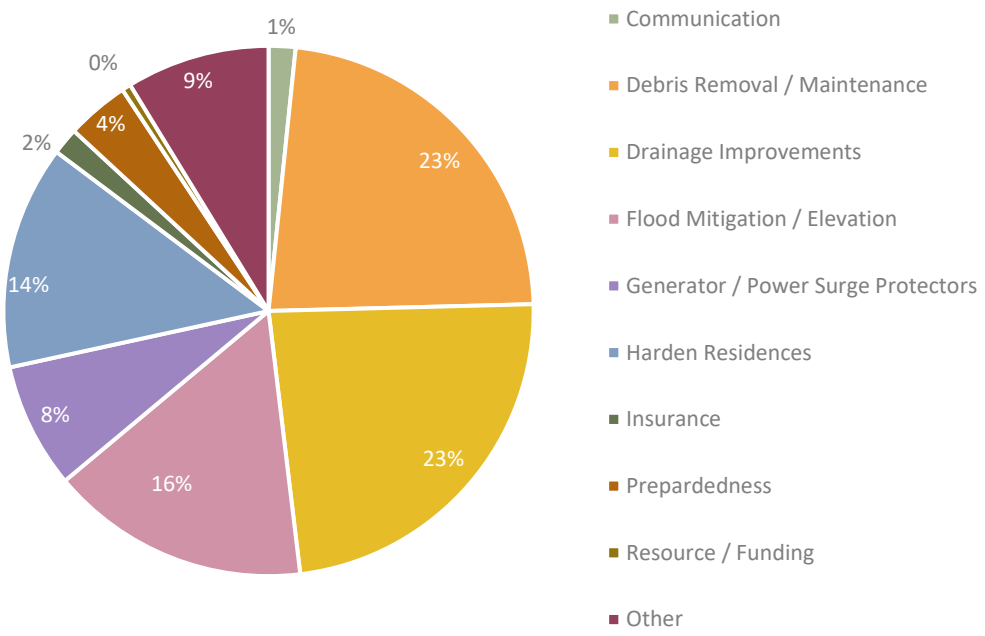
11. If you do not have flood insurance, why not?



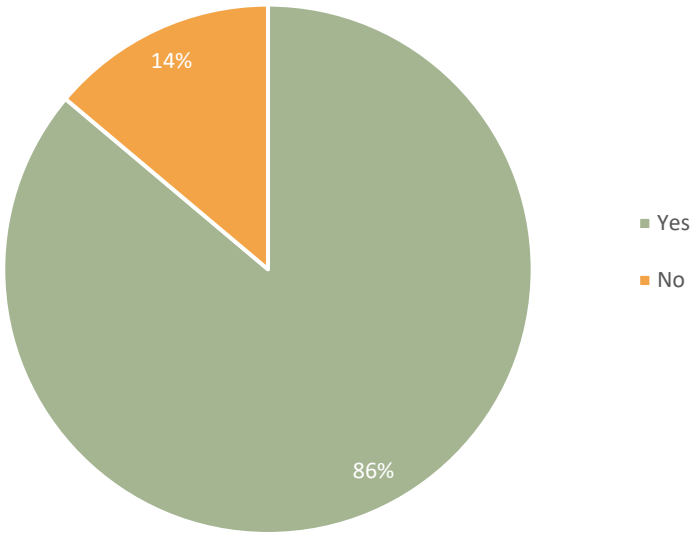
12. Have you taken any actions to make your home or neighborhood more resistant to hazards?



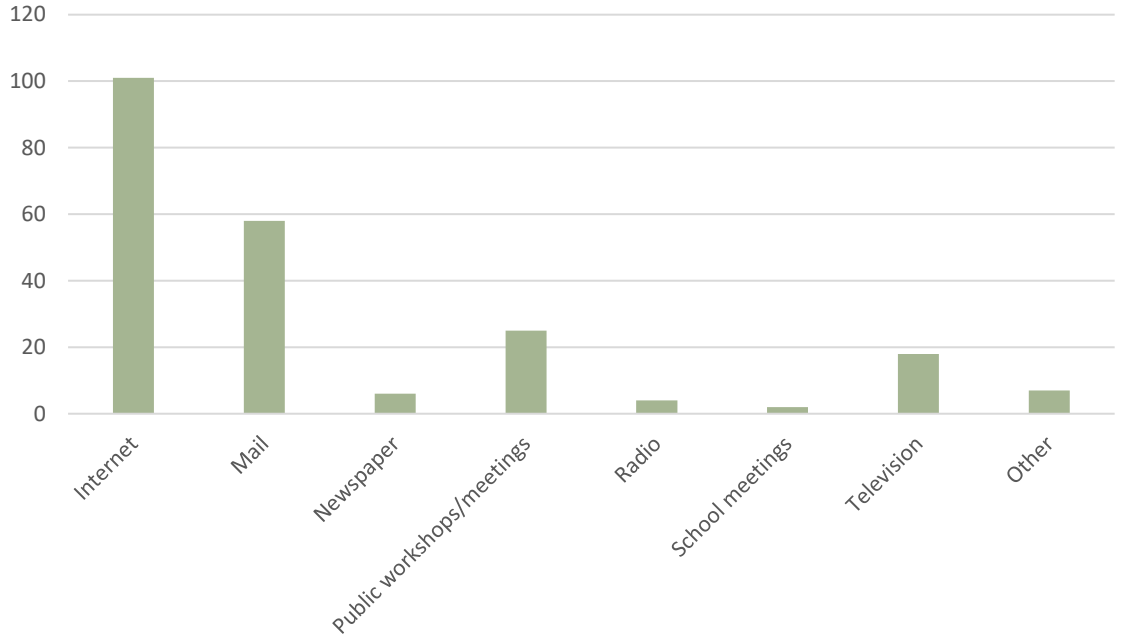
13. If you answered “Yes” to Question #12, please explain.



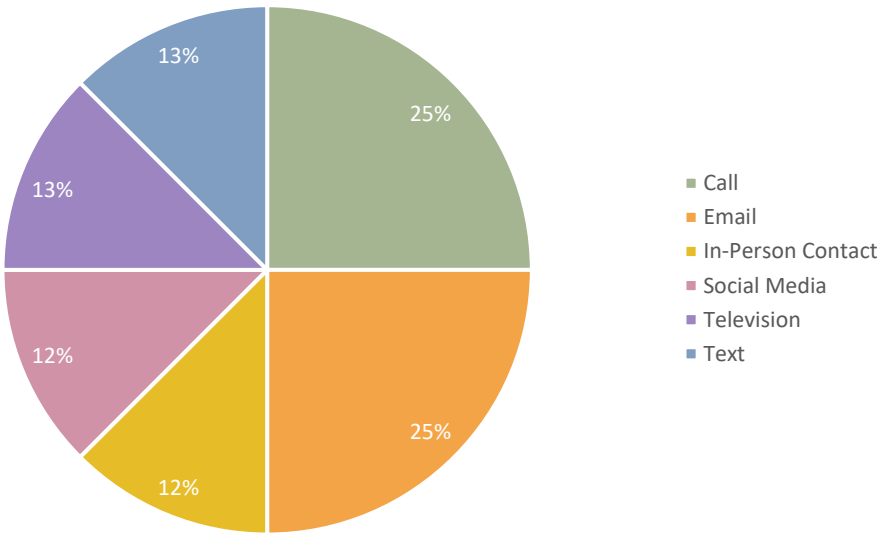
14. Are you interested in making your home or neighborhood more resistant to hazards?



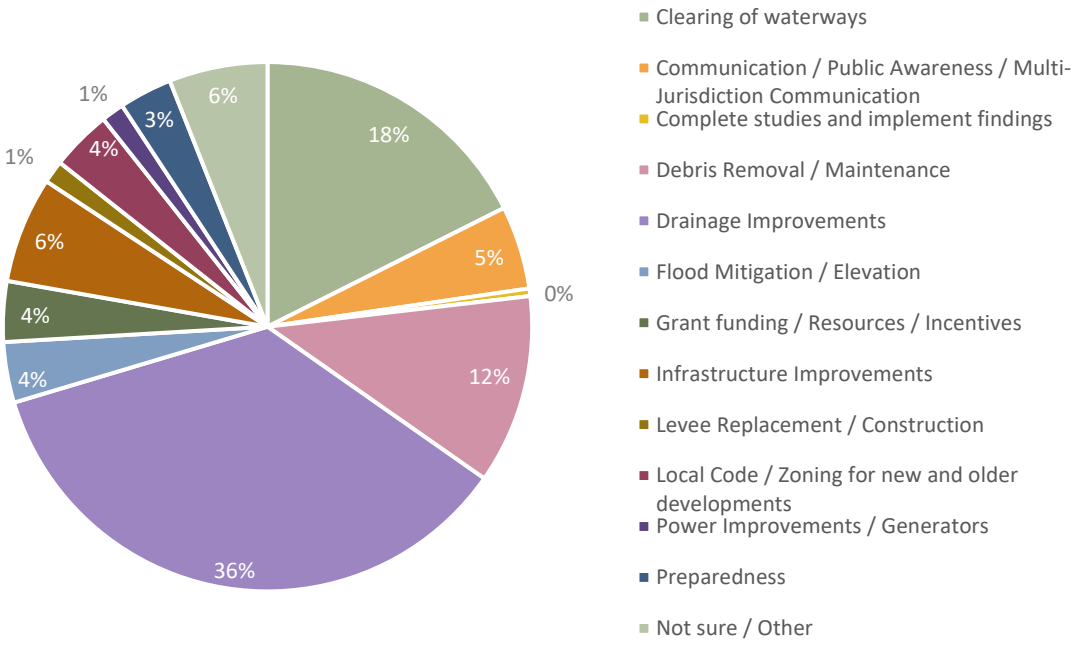
15. What is the most effective way for you to receive information about how to make your home and neighborhood more resistant to hazards?



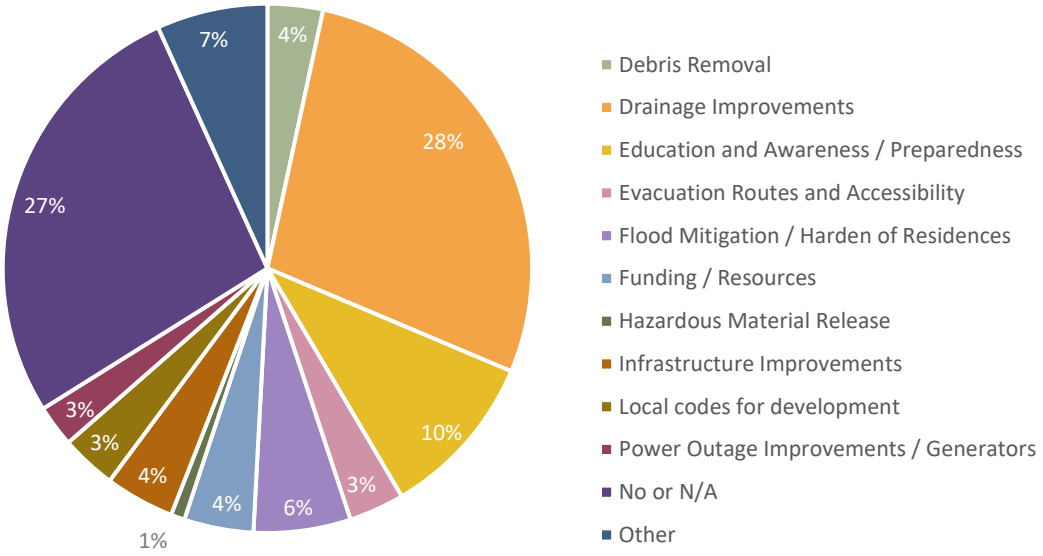
16. If you answered “Other” to Question #15, please explain.



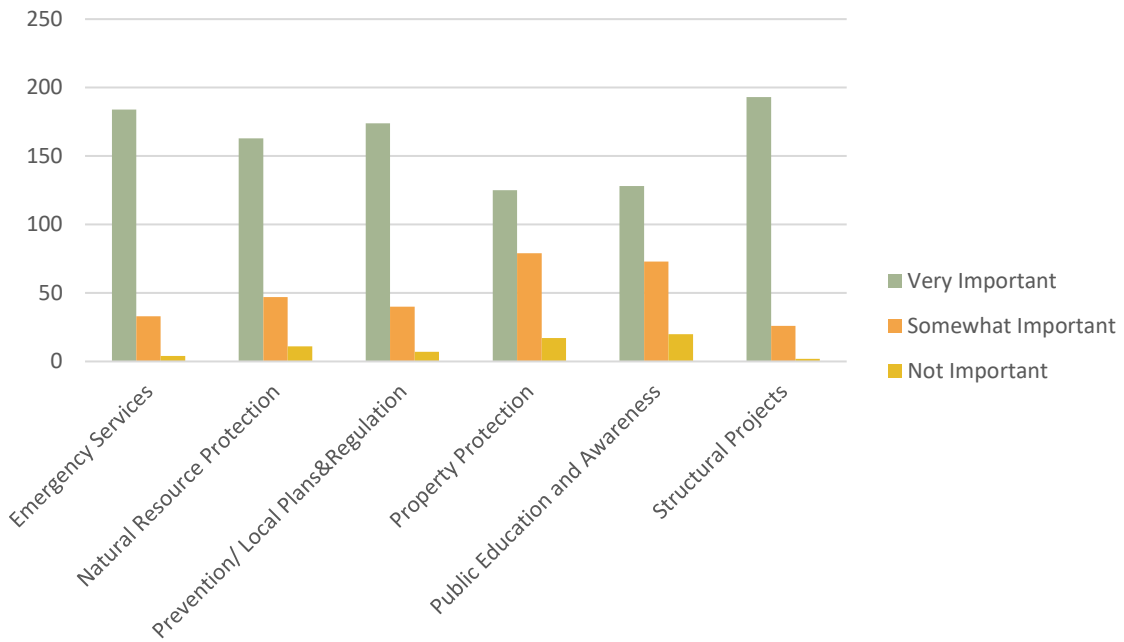
17. In your opinion, what are some steps your local government could take to reduce or eliminate the risk of future hazard damages in your neighborhood?



18. Are there any other issues regarding the reduction of risk and loss associated with hazards or disaster in the community that you think are important?



19. A number of community-wide activities can reduce our risk from hazards. In general, these activities fall into one of the following six broad categories. Please tell us how important you think each one is for your community to consider pursuing.



Emergency Services - Actions that protect people and property during and immediately after a hazard event. Examples include warning systems, evacuation planning, emergency response training, and protection of critical facilities or systems.

Natural Resource Protection - Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. Examples include floodplain protection, habitat preservation, slope stabilization, riparian buffers, and forest management.

Prevention / Local Plans & Regulations - Administrative or regulatory actions that influence the way land is developed and buildings are built. Examples include planning and zoning, building codes, open space preservation, and floodplain regulations.

Property Protection - Actions that involve the modification of existing buildings to protect them from a hazard or removal from the hazard area. Examples include acquisition, relocation, elevation, structural retrofits, and storm shutters.

Public Education and Awareness - Actions to inform citizens about hazards and techniques they can use to protect themselves and their property. Examples include outreach projects, school education programs, library materials, and demonstration events.

Structural Projects - Actions intended to lessen the impact of a hazard by modifying the natural progression of the hazard. Examples include dams, levees, seawalls detention / retention basins, channel modification, retaining walls, and storm sewers.

APPENDIX D: CRITICAL FACILITIES

Appendix D is For **Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).

APPENDIX E: MEETING DOCUMENTATION

Appendix E is **For Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).

APPENDIX F: CAPABILITY ASSESSMENT

Appendix F is **For Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).