CAMERON COUNTY
HAZARD MITIGATION ACTION PLAN

UPDATE 2021

April 10th, 2021 - April 9th, 2026

Maintaining a Safe, Secure, and Sustainable Community

H2O PARTNERS

For more information, visit our website at:

https://www.cameroncounty.us/emergency-management/

Written comments should be forwarded to:

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U.S. Department of Homeland Security
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 Cameron County, Texas Multi-Jurisdiction Hazard Mitigation Plan

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 April 10, 2021 and will expire on April 9, 2026.

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

Enclosures: Approved Participants

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)	Cameron County
2)	Harlingen city
3)	**Indian Lake town**
4)	**La Feria city**
5)	**Laguna Vista town**
6)	**Los Fresnos city**
7)	Palm Valley city
8)	**Port Isabel city**
9)	**Primera town**
10)	**Rancho Viejo town**
11)	**Rio Hondo city**
12)	**San Benito city**
13)	**Santa Rosa town**
14)	**South Padre Island town**

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SECTION 1: INTRODUCTION

BACKGROUND

Cameron County is the southernmost county of Texas located in the Rio Grande Plains region of South Texas. The county, named for the Mier Expedition member Captain Ewen Cameron, is bordered on the north by Willacy County, on the west by Hidalgo County, on the east by the Gulf of Mexico, and on the south by Mexico. The county's largest city and county seat is Brownsville.

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, Cameron County is susceptible to a wide range of natural hazards, including but not limited to drought, extreme heat, hail, and winter storms. 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 2008, Cameron County and the City of Harlingen participated in the multi-county, regional 'Cover the Border' Hazard Mitigation Action Plan. Then in 2015, Cameron County and the City of Harlingen developed a Hazard Mitigation Plan that was considered a new, stand-alone Plan.

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 originally approved the Cameron County Hazard Mitigation Plan in 2015, 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. In February 2022, additional participating jurisdictions began the planning process to be included in the Plan Update.

This Plan Update, hereinafter titled: "Cameron County Hazard Mitigation Action Plan Update 2021: Maintaining a Safe, Secure, and Sustainable Community" (Plan or Plan Update) was developed specifically for Cameron County, and is a multi-jurisdictional Plan. The participating jurisdictions include Cameron County, City of Harlingen, and City of Palm Valley. The additional

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

participating jurisdictions include Town of Indian Lake, City of La Feria, Town of Laguna Vista, City of Los Fresnos, City of Port Isabel, City of Primera, Town of Rancho Viejo, City of Rio Hondo, City of San Benito, City of Santa Rosa, and City of South Padre Island.

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 Cameron 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.

Throughout the amended Plan Update "additional participating jurisdictions" refers to the jurisdictions that went through the planning process at a later date than the original three participating jurisdictions, so that they may be included in the amended Cameron County Hazard Mitigation Plan Update. These additional participating jurisdictions include Town of Indian Lake, City of La Feria, Town of Laguna Vista, City of Los Fresnos, City of Port Isabel, City of Primera, Town of Rancho Viejo, City of Rio Hondo, City of San Benito, City of Santa Rosa, and City of South Padre Island.

PURPOSE

The Plan Update was prepared by Cameron 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 and property from known hazards by identifying and implementing cost-effective hazard mitigation actions. The planning process is an opportunity for participating jurisdictions within Cameron 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 Cameron 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 Cameron County, and planning participants identified twelve natural hazards to be addressed by the Plan Update. The specific goals of the Plan Update are to:

- Minimize disruption to participating jurisdictions within Cameron 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 Cameron County to take advantage of rapidly developing mitigation grant opportunities as they arise; and
- Ensure that participating jurisdictions within Cameron County maintain eligibility for the full range of future Federal disaster relief.

AUTHORITY

The Plan is tailored specifically for participating jurisdictions within Cameron 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 Cameron County's population and economy.

Sections 4 through 16 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 17 presents hazard mitigation goals and objectives. Section 18 gives an analysis for the previous actions and Section 19 presents hazard mitigation actions for Cameron County and the participating jurisdictions. Section 20 identifies Plan maintenance mechanisms.

The list of planning team members and stakeholders is located in Appendix A. Public survey results are analyzed and presented in Appendix B. Appendix C contains a detailed list of critical facilities for the area, and Appendix D is dam locations. Appendix E contains information regarding workshops and meeting documentation. Capability Assessment results for participating jurisdictions within Cameron County are in Appendix F. Appendix G includes a list of the Lower

Rio Grande Valley Development Council regional actions that have a direct impact on flood hazards in the Cameron County planning area. [3]

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

SECTION 2: PLANNING PROCESS

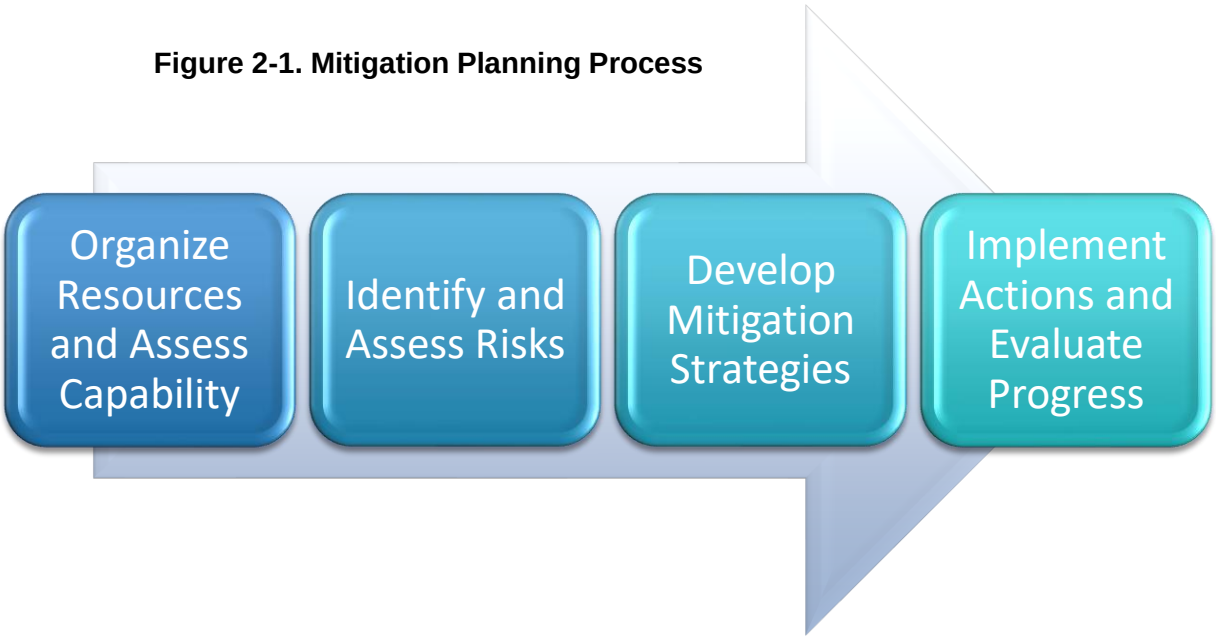
PLAN PREPARATION AND DEVELOPMENT

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

Cameron County hired H2O Partners, Inc. (Consultant Team), to provide technical support and oversee the development of the Cameron County Hazard Mitigation Action Plan Update 2021. 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.

Figure 2-1. Mitigation Planning Process



Cameron County, participating jurisdictions, and the Consultant Team met in February 2020 to begin organizing resources, identify Planning Team members, and conduct a Capability Assessment. The additional participating jurisdictions and the Consultant Team met in February 2022 to begin the planning process to amend the Plan Update.

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 and an Additional Participating Jurisdictions Executive Planning Team consisting of key personnel from each of the participating jurisdictions within Cameron County, shown in Table 2-1 and Table 2-1A, was formed to coordinate planning efforts and request input and participation in the planning process. Table 2-2 and Table 2-2A reflects the Advisory Planning Team and Additional Participating Jurisdictions Advisory Planning Team, consisting of additional representatives from area organizations and departments from the participating jurisdictions within Cameron County that participated throughout the planning process.

Table 2-1. Executive Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Cameron County	EMC
Cameron County	Fire Marshal
Cameron County	Planner

ORGANIZATION / DEPARTMENT	TITLE
City of Harlingen	Assistant City Manager
City of Palm Valley	Police Chief

Table 2-1A. Additional Participating Jurisdictions Executive Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Town of Indian Lake	Chief of Police
City of La Feria	Fire Chief
Town of Laguna Vista	Interim City Manager
City of Los Fresnos	Chief of Police / Emergency Management Coordinator
City of Port Isabel	Fire Marshal
City of Primera	Emergency Management Coordinator
Town of Rancho Viejo	Town Administrator
City of Rio Hondo	City Administrator
City of San Benito	Court Administrator
City of Santa Rosa	City Administrator
City of South Padre Island	Fire Chief

Table 2-2. Advisory Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Cameron County	Deputy Fire Marshal
Cameron County	Assistant Deputy Fire Marshal
Cameron County	County Judge
Cameron County	County Administrator
Cameron County	County Engineer
Cameron County	Assistant Engineer
Cameron County	Public Relations Officer
Cameron County	Administrative Assistant Pct. 2

ORGANIZATION / DEPARTMENT	TITLE
Cameron County	County Commissioner Pct. 4
Cameron County	Administrative Assistant Pct. 4
Cameron County	Building Official
Cameron County	Cartographer
Cameron County	Bridge Manager
Cameron County	Parks Director
Cameron County	Deputy Parks Director
Cameron County	Public Works Superintendent
Cameron County	Foreman Pct. 4
Cameron County	Planning Director
Cameron County	Natural Resources Coordinator
City of Harlingen	City Manager
City of Harlingen	Executive Administrative Assistant
City of Harlingen	City Engineer
City of Harlingen	Special Projects Director
City of Harlingen	Media Contact
City of Harlingen	Fire Chief
City of Harlingen	Chief of Police
City of Harlingen	Assistant Chief of Police
City of Harlingen	Police Commander
City of Harlingen	Police Commander
City of Harlingen	Deputy Chief of Police
City of Harlingen	Public Works Director
City of Harlingen	Water Works - System Engineer
City of Harlingen	Assistant City Manager
City of Harlingen	Assistant City Engineer
City of Harlingen	Accreditation

ORGANIZATION / DEPARTMENT	TITLE
City of Harlingen	Assistant Fire Chief
City of Harlingen	Planning Director
City of Palm Valley	Mayor
City of Palm Valley	Public Works Director
City of Palm Valley	City Secretary

Table 2-2A. Additional Participating Jurisdictions Advisory Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Town of Indian Lake	City Secretary
Town of Indian Lake	Mayor
City of La Feria	City Manager
Town of Laguna Vista	Chief of Police / Emergency Management Coordinator
Town of Laguna Vista	Mayor
City of Los Fresnos	City Manager
City of Port Isabel	City Manager / Emergency Management Coordinator
City of Primera	City Manager
City of Primera	Mayor
Town of Rancho Viejo	Chief of Police
City of Rio Hondo	Director of Public Safety
City of San Benito	Interim City Manager
City of South Padre Island	Assistant Director of Public Works
City of South Padre Island	Chief of Police
City of South Padre Island	City Manager
City of South Padre Island	City Secretary
City of South Padre Island	Director of Operations
City of South Padre Island	Director of Public Works
City of South Padre Island	Emergency Management Coordinator / Fire Marshal

ORGANIZATION / DEPARTMENT	TITLE
City of South Padre Island	Management Assistant
City of South Padre Island	Operations Captain
City of South Padre Island	Shoreline Director

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 A provides a complete listing of all participating Planning Team members and stakeholders from participating jurisdictions within Cameron County by organization and title.

Based on results of completed Capability Assessment, participating jurisdictions within Cameron County described methods for achieving future hazard mitigation measures by expanding existing capabilities. For example, the City of Palm Valley does not have a community wildfire protection plan in place. Additionally, the Town of Indian Lake, City of La Feria, Town of Laguna Vista, City of Los Fresnos, City of Port Isabel, City of Primera, Town of Rancho Viejo, City of Santa Rosa, and City of South Padre Island 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 Cameron 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 20. 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 Cameron County, agencies, and partners will participate in implementing the Plan Update.

KICKOFF WORKSHOP

The Kickoff Workshop was held on February 13, 2020. The Kickoff Workshop for the additional participating jurisdictions was held on February 23, 2022. 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 the Valley International Airport, drainage districts, Independent School Districts, and surrounding cities. 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.

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 twelve natural hazards which pose a significant threat to the planning area.

RISK ASSESSMENT

An initial risk assessment for participating jurisdictions within Cameron County was completed in May 2020 and results were presented to Planning Team members at the Risk Assessment Workshop held on May 18, 2020 via webinar. The risk assessment for the additional participating jurisdictions within Cameron County was completed in April 2022 and results were presented to Additional Participating Jurisdictions Planning Team members at the Risk Assessment Workshop

held on April 21, 2022, via webinar. 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 16.

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 June 9, 2020 via webinar. The Mitigation Workshop for the additional participating jurisdictions was held on April 21, 2022 via webinar in conjunction with the Risk Assessment Workshop. 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 19.

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 Cameron 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 City of Palm Valley has contracted to have studies done to discover where additional drainage is needed or where improvements can be made. The City of Los Fresnos has completed drainage projects. The City of Santa Rosa used funds from CDBF-DR to construct an expanded crossing to facilitate stormwater conveyance from the La Placiat neighborhood, which was completed in 2017.

Additionally, policies and ordinances were reviewed by several of the participating jurisdictions. These jurisdictions have included actions to develop and adopt higher building code standards. 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 Cameron County Hazard Mitigation Action Plan Update 2021.

INCORPORATION OF THE HMAP INTO OTHER PLANNING MECHANISMS

Planning Team members will integrate implementation of the Plan Update with other planning mechanisms for Cameron 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 Cameron 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 Cameron County will be responsible for implementing hazard mitigation actions contained in Section 19. Each hazard mitigation action has been assigned to a specific County and City and Town 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 Cameron 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. Cameron 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 amendments or updates in light of the approved Plan Update. Participating jurisdictions within Cameron 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, Cameron 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 Cameron County, along with additional participating jurisdictions, 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 Cameron County, along with additional participating jurisdictions, have a Capital Improvement Plan (CIP) in place. Prior to any revisions to the CIP, County and City 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	Cameron County and the City of Harlingen, along with additional participating jurisdictions, 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 5 of this Plan Update discussing the people and property at risk to flood will be reviewed and revised when participating jurisdictions within Cameron County, along with additional participating jurisdictions, update their management plans or develops new plans.
Grant Applications	The Plan will be evaluated by participating jurisdictions within Cameron County, along with additional participating jurisdictions, when grant

Planning Mechanism	Incorporation of Plan
	funding is sought for mitigation projects. If a project is not in the Plan Update, an amendment may be necessary to include the action in the Plan.
Regulatory Plans	Currently, participating jurisdictions within Cameron County, along with additional participating jurisdictions, 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 and City 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 independently by Cameron County, the City of Harlingen, and the City of Palm Valley are updated every 5 years and incorporates goals, objectives and actions identified in the mitigation plan. The Emergency Management Plans developed independently by the additional participating jurisdictions of Town of Indian Lake, Town of Laguna Vista, City of Los Fresnos, City of Port Isabel, City of Primera, Town of Rancho Viejo, City of Rio Hondo, City of Benito, City of Santa Rosa, and City of South Padre Island 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 Cameron 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 twice 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 A-1, Appendix A) and the Advisory Planning Team (Table A-2, Appendix A) will engage in discussions regarding a timeframe for how and when to implement each hazard mitigation action. The Additional Participating Jurisdictions Executive Planning Team (Table A-1A, Appendix A) and the Additional Participating Jurisdictions Advisory Planning Team (Table A-2A, Appendix A) will join 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 Cameron County.

Both the Executive and Advisory Planning Team will evaluate and prioritize the most suitable hazard mitigation actions for the community to implement. The Additional Participating Jurisdictions Executive Planning Team and the Additional Participating Jurisdictions 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 Cameron 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 Cameron County Hazard Mitigation Action Plan Update 2021 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 Cameron County and participating jurisdictions' websites upon approval from FEMA, and a copy will be kept at the Cameron County courthouse.

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 A-3 in Appendix A, 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 Cameron 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. A list of organizations that were invited to attend the additional participating jurisdictions stakeholder meetings via email is found in Table 2-4A.

Table 2-4. Stakeholder Working Group

AGENCY	TITLE	PARTICIPATED
Arroyo City – Volunteer Fire Department	Public Information Officer	X
Brownsville ISD	Superintendent	
Cameron County Drainage District #1	Chief of Operations	
Cameron County Drainage District #3 & Irrigation #2	Manager	
City of Brownsville	EMC	
City of Brownsville	EM Planner	X
East Rio Hondo Water Supply	President of the Board	
EPA	Border Office	
La Feria Irrigation District #3	District Manager	X
Los Fresnos ISD	Superintendent	
Rio Hondo ISD	Superintendent	
San Benito ISD	Superintendent	
San Benito ISD	Student Services	X
SWG Engineering	Project Engineer	X
TAMU	Planning Specialist, Texas Sea Grant	X
TAMU	County Extension Agent	X
Texas Legislators	Representative	
Texas Legislators	Representative	
Texas Legislators	Representative	
Texas Legislators	Senator	
Valley Baptist Medical Center	Nurse Director	

AGENCY	TITLE	PARTICIPATED
Valley International Airport	Police Chief	X
Valley International Airport	Assistant Airport Director	X

Table 2-4A. Additional Participating Jurisdictions Stakeholder Working Group

AGENCY	TITLE	PARTICIPATED
American Red Cross	Executive Director	
Brownsville Emergency Management	Emergency Management Coordinator	
Brownsville Emergency Management	Superintendents	
Cameron County Drainage District #1	Chief of Operations / General Manager	
Capital Area Council of Governments	Director of Regional Planning	
Capital Area Council of Governments	Regional Service Program Specialist	
Department of Homeland Security	General Representative	
Environmental Protection Agency, Region 6	Regional Administrator	
Government Capital Corporation	Vice President	
Hidalgo County	Deputy Emergency Management Coordinator	
La Feria Chamber of Commerce	President	
La Feria Economic Development Corporation (LFEC)	Executive Director	
La Feria Independent School District	Assistant Superintendent of Support Services	
La Feria Independent School District	Board President	
La Feria Independent School District	Board Secretary	
La Feria Independent School District	Board Vice President	
La Feria Independent School District	Principals of Elementary Schools	
La Feria Independent School District	Principal of High School	
La Feria Independent School District	Principal of Junior High School	
La Feria Independent School District	Principal of La Feria Academy	
La Feria Independent School District	School Board Members	

AGENCY	TITLE	PARTICIPATED
La Feria Independent School District	Superintendent	
La Feria Irrigation District #3	District Manager	
Local Ministries	Pastors	
Local Ministries	Reverend	
Los Fresnos ISD	ISD Representative	X
Lower Rio Grande Valley Development Council	District Coordinator	
NOAA	Chief of Policy, Planning, & Communications	
Rio Grande Valley	Director	
South Texas Collaborative for Housing Development, Inc (STCHD)	Director of Operations	
South Texas Collaborative for Housing Development, Inc (STCHD)	Executive Director	
South Texas Emerging Market Development Fund (STEMDF)	Administrative Assistant	
South Texas Emerging Market Development Fund (STEMDF)	Executive Director	
South Texas Emerging Market Development Fund (STEMDF)	Vice President	
SWG Engineering	Project Engineer	
SWG Engineering	Vice President	
Telemudo 40 News	Assignment Desk Editor	X
Texas A&M Agrilife Extension	District 12 Representative	
Texas Commission on Environmental Quality	Executive Assistant	
Texas Commission on Environmental Quality	Regional Director	
Texas Department of Transportation	District Engineer	
Texas Division of Emergency Management	District Coordinator	
Texas Forest Service	Regional Fire Coordinator	
Texas Legislator	District 35 Representative	
Texas Legislator	District 37 Representative	
Texas Legislator	District 38 Representative	

AGENCY	TITLE	PARTICIPATED
Texas Parks and Wildlife	Park Superintendent	
Texas Senate	District 27 Senator	
Texas Water Board	Outreach Specialist	
Texas Windstorm Associations	General Representative	
U.S. Army Corps of Engineers	Southwest Division Representative	
U.S. Fish and Wildlife	Regional Outreach Coordinator	
Valley International Airport	Assistant Airport Director	
Valley International Airport	Police Chief	
Willacy County	Emergency Management Coordinator	

Stakeholders and participants from neighboring communities that attended the Planning Team and public meetings played a key role in the planning process. For example, flood was one of the concerns to stakeholders, so participating jurisdictions included actions to improve drainage system by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.

PUBLIC MEETINGS

A series of public meetings were held throughout the Cameron County 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 Cameron 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:

- February 13, 2020, Harlingen City Hall
- May 18, 2020, Adobe Connect Webinar
- June 9, 2020, Adobe Connect Webinar
- February 23, 2022, Adobe Connect Webinar
- April 21, 2022, Adobe Connect Webinar

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 297 surveys were completed online. A total of 33 surveys were completed online during the additional participating jurisdictions planning process. The survey results are analyzed in Appendix B. Participating jurisdictions within Cameron 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 hurricane wind, and suggested drainage improvements and additional neighborhood meetings to allow for better communications. In response, several actions were added to the Plan to improve drainage within the participating jurisdictions; update the Drainage, Development, and Stormwater policy; construct a retention facility to reduce runoff and flooding; and to implement education and awareness programs to educate citizens of the hazards that can threaten the area and mitigation measures they can take to reduce injuries, fatalities, and property damage.

SECTION 3: COUNTY PROFILE

OVERVIEW

In early 1846 United State troops marched into the disputed territory between the Nueces River and the Rio Grande and constructed a defensive position across from Matamoros. The temporary fort was originally called Fort Texas but was renamed Fort Brown a short time later. On April 25, 1846, a skirmish occurred between United States and Mexican troops at Las Rucias, in southwest Cameron County, which became known as the spot where “American blood was shed on American soil”, the verbal spark that ignited the Mexican War. Two other Mexican War battles were fought in Cameron County: the battle of Palo Alto and the battle of Resaca de la Palma.

On February 12, 1848, the Texas legislature decreed the existence of Cameron County, and with the signing of the Treaty of Guadalupe Hidalgo on July 4 the area officially became part of the United States. The new county encompassed 3,308 square miles, including parts of the future Hidalgo, Willacy, Kenedy, and Brooks counties. An election of county officers was held on August 7, but organization was not completed until September 11. Santa Rita, five miles downstream from Fort Brown and believed to be the earliest English-speaking town in the area, was made the county seat. The same year Charles Stillman established Brownsville just west of Fort Brown. In December, another election was held, and after intense effort on Stillman’s part, Brownsville was chosen county seat.

Cameron County covers 1,276 square miles, of which 891 square miles is land and 385 square miles is water. The county’s largest city and county seat is Brownsville, which serves as the terminus of U.S. Highways 77, 83, and 281 and the Missouri Pacific and Southern Pacific railroads.

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

Figure 3-1. Location of Cameron County

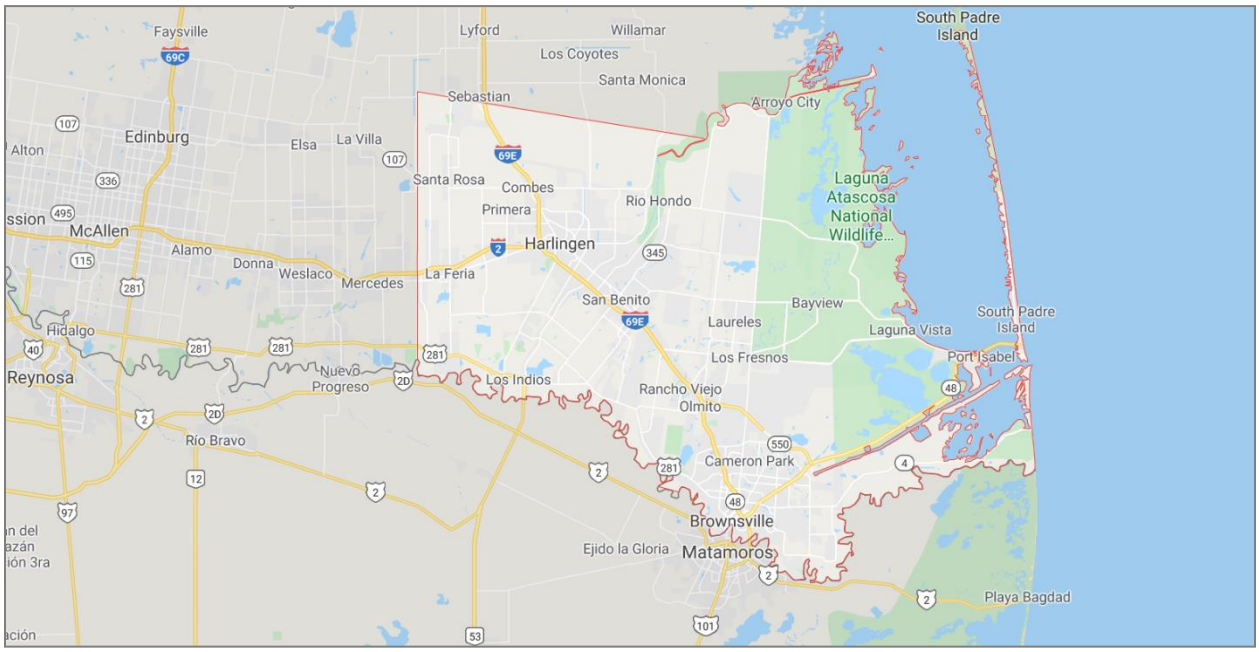


Figure 3-2 shows the participating jurisdictions within Cameron County that are covered in the risk assessment analysis of the Plan Update. Figure 3-2A shows the additional participating jurisdictions within Cameron County that are covered in the risk assessment analysis of the Plan Update.

Figure 3-2. Cameron County Planning Area

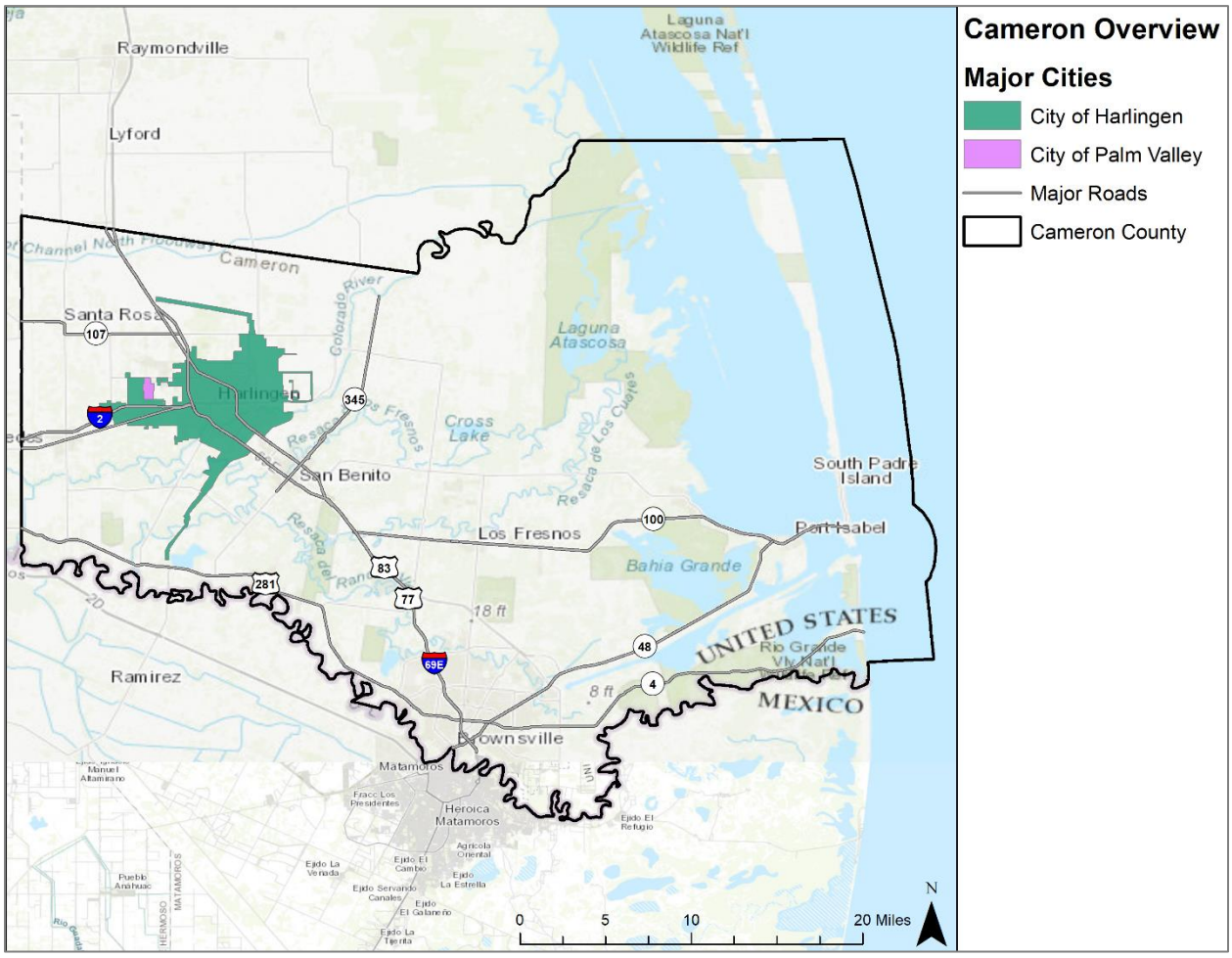
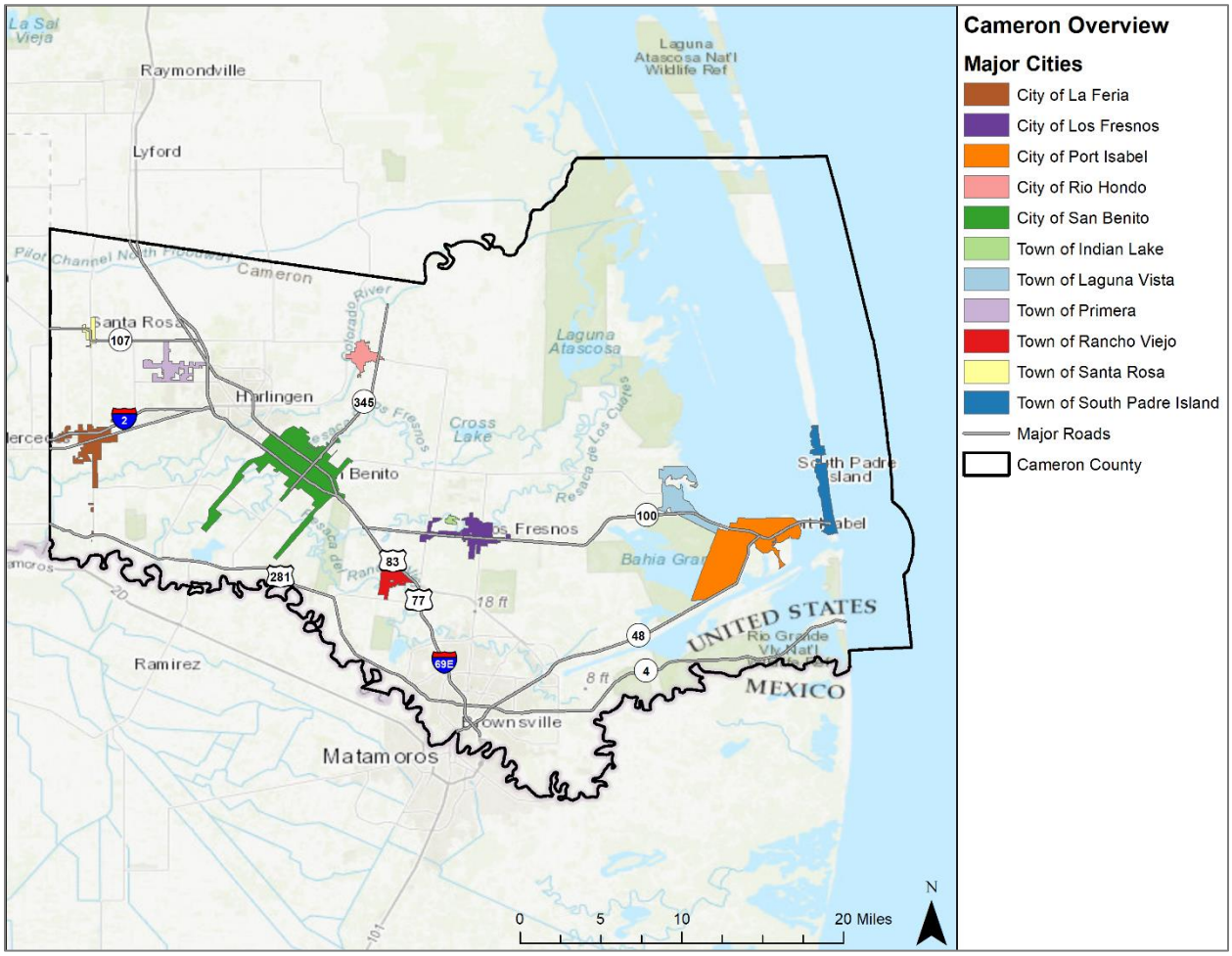


Figure 3-2A. Cameron County Planning Area including Additional Participating Jurisdictions



Provided in Table 3-1 below is a listing of the jurisdictions in Cameron County that participated in the Cameron County Hazard Mitigation Action Plan Update 2021. Provided in Table 3-1A below is a listing of the additional participating jurisdictions in Cameron County that participated in the amended Cameron County Hazard Mitigation Action Plan Update 2021.

Table 3-1. Participating Jurisdictions

PARTICIPATING JURISDICTIONS
Cameron County
City of Harlingen
City of Palm Valley

Table 3-1A. Additional Participating Jurisdictions

PARTICIPATING JURISDICTIONS	
Town of Indian Lake	Town of Rancho Viejo
City of La Feria	City of Rio Hondo
Town of Laguna Vista	City of San Benito
City of Los Fresnos	City of Santa Rosa
City of Port Isabel	City of South Padre Island
City of Primera	

POPULATION AND DEMOGRAPHICS

In the official Census population count, as of April 1, 2010, Cameron County has a population of 406,220 residents. By 2018, the number was estimated at 421,750. Table 3-2 provides the population distribution by jurisdiction within Cameron County based on the 2010 Census information.[1]

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)	2018 POPULATION ESTIMATE	ESTIMATED VULNERABLE OR SENSITIVE POPULATIONS[2]		
				Youth (Under 5)	Elderly (Over 65)	Below Poverty Level
City of Harlingen	64,849	16.0%	65,449	6,465	9,701	19,766
City of Palm Valley	1,304	0.3%	1,706	90	654	85
Unincorporated Cameron County	340,067	83.7%	354,595	29,097	43,826	109,205
Cameron County	**406,220**	**100%**	**421,750**	**35,652**	**54,181**	**129,056**

[1] Source: https://www.census.gov/quickfacts/fact/table/cameroncountytexas/PST120218 and https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml

[2] The Estimated Vulnerable or Sensitive Populations are based off the 2018 American Community Survey.

Table 3-2A. Population Distribution by Additional Participating Jurisdictions

JURISDICTION	TOTAL 2010 POPULATION	PERCENTAGE (based on 2010 Population)[3]	2020 POPULATION ESTIMATE	ESTIMATED VULNERABLE OR SENSITIVE POPULATIONS[4]		
				Youth (Under 5)	Elderly (Over 65)	Below Poverty Level
Town of Indian Lake	640	0.2%	960	152	126	248
City of La Feria	7,302	1.8%	7,276	560	1,495	1,819
Town of Laguna Vista	3,117	0.8%	3,172	203	1,112	632
City of Los Fresnos	5,542	1.4%	7,767	850	666	2,245
City of Port Isabel	5,006	1.2%	6,278	462	1,172	1,903
City of Primera	4,070	1.0%	5,025	604	415	1,407
Town of Rancho Viejo	2,437	0.6%	2,998	96	523	195
City of Rio Hondo	2,356	0.6%	2,644	172	555	812
City of San Benito	24,250	6.0%	24,259	1,665	4,041	7,860
City of Santa Rosa	2,873	0.7%	2,745	199	288	1,068
City of South Padre Island	2,816	0.7%	2,798	73	884	482

POPULATION GROWTH

The official 2010 Cameron County population is 406,220. Overall, Cameron County experienced an increase in population between 1980 and 2010 by 93.7%, or an increase by 196,493. The City of Harlingen and the City of Palm Valley both experienced an increase in population between 1980 and 2010. Between 2000 and 2010, the City of Harlingen, the City of Palm Valley, and Cameron County, as a whole, experienced a population growth. Between 1980 and 2020, all of the Additional Participating Jurisdictions experienced an increase in population, except for the Town of Indian Lake and the Town of Rancho Viejo as they were not founded in 1980. Between 2010 and 2020, City of La Feria, City of Santa Rosa, and City of South Padre Island experienced a decline in population, while the remaining Additional Participating Jurisdictions experienced a population growth. Table 3-3 provides historic growth rates in Cameron County. Table 3-3A provides historic growth rates for the Additional Participating Jurisdictions within Cameron County.

Table 3-3. Population for Cameron County, 1980-2010

JURISDICTIONS	1980	1990	2000	2010	POP CHANGE 1980-2010	PERCENT OF CHANGE	POP CHANGE 2000-2010	PERCENT OF CHANGE
City of Harlingen	43,543	48,746	57,564	64,849	21,306	48.9%	7,285	12.7%

[3] This is based off the Total Cameron County 2010 population.

[4] The Estimated Vulnerable or Sensitive Populations are based off the 2020 Census.

JURISDICTIONS	1980	1990	2000	2010	POP CHANGE 1980-2010	PERCENT OF CHANGE	POP CHANGE 2000-2010	PERCENT OF CHANGE
City of Palm Valley	-	1,199	1,298	1,304	-	-	6	0.5%
Unincorporated Cameron County	166,184	210,175	276,365	340,067	173,883	104.6%	63,702	23.0%
Cameron County	**209,727**	**260,120**	**335,227**	**406,220**	**196,493**	**93.7%**	**70,993**	**21.2%**

Table 3-3A. Population for Additional Participating Jurisdictions within Cameron County, 1980-2020

JURISDICTIONS	1980	1990	2000	2010	2020	POP CHANGE 1980-2020	PERCENT OF CHANGE	POP CHANGE 2010-2020	PERCENT OF CHANGE
Town of Indian Lake	-	390	541	640	960	-	-	320	50.00%
City of La Feria	3,495	4,360	6,115	7,302	7,276	3,781	108.18%	-26	-0.36%
Town of Laguna Vista	632	1,166	1,658	3,117	3,172	2,540	401.90%	55	1.76%
City of Los Fresnos	2,173	2,473	4,512	5,542	7,767	5,594	257.43%	2,225	40.15%
City of Port Isabel	3,769	4,467	4,865	5,006	6,278	2,509	66.57%	1,272	25.41%
City of Primera	1,380	2,030	2,723	4,070	5,025	3,645	264.13%	955	23.46%
Town of Rancho Viejo	-	885	1,754	2,437	2,998	-	-	561	23.02%
City of Rio Hondo	1,673	1,793	1,942	2,356	2,644	971	58.04%	288	12.22%
City of San Benito	17,988	20,125	23,444	24,250	24,259	6,271	34.86%	9	0.04%
City of Santa Rosa	1,889	2,223	2,883	2,873	2,745	856	45.31%	-128	-4.46%
City of South Padre Island	791	1,677	2,422	2,816	2,798	2,007	253.73%	-18	-0.64%

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 2040 are listed in Table 3-4, 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 3-4. Cameron County Population Projections

County	LAND AREA (SQ MI)	2010		2020		2030		2040	
		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)
Cameron	891	406,220	456	479,754	538	560,637	629	641,946	721

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 Cameron 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. Cameron County's strategic location on the Mexican border is served by four international bridges and one rail-only bridge, Brownsville's deep-water port, Harlingen's intracoastal waterway access, highway system, rail access, two commercial airports and one county general aviation airport all with long runways.

The Economic Development & Community Affairs function of Cameron County prides itself on the assistance that has been brought to the county's colonia developments located in the rural areas. Cameron County Self-Help Colonia Initiative provides residents in five colonias on-site technical assistance to low and very low-income individuals and families in a variety of ways including housing, and community development activities, infrastructure improvements, and outreach and education.

The Los Fresnos Community Development Corporation has been a catalyst for local economic development for over sixteen years. It is their mission to foster small business development and job creation throughout Los Fresnos.

The City of Primera Economic Development Corporation can offer businesses access to incentives for job creation and development in Primera. With the recent development of a privately owned industrial park that has all the infrastructure needs for any business, the City of Primera is poised to encourage economic development in the area.

The San Benito Economic Development Corporation (EDC) understands that business opportunities are not a one size fits all, therefore, they are open to strategically help small business owners, investors, developers, and entrepreneurs be successful and sustainable in the community. Their mission statement is to promote, support and foster economic development

within the San Benito community through new industry recruitment, business retention and expansion, business innovation, new business startups and entrepreneurship.

EXISTING AND FUTURE LAND USE AND DEVELOPMENT TRENDS

The following jurisdictions have a Master or Comprehensive Plan in place: Cameron County and the City of Harlingen. The following additional participating jurisdictions have a Master or Comprehensive Plan in place: Town of Indian Lake, City of La Feria, Town of Laguna Vista, City of Los Fresnos, City of Port Isabel, Town of Rancho Viejo, City of Rio Hondo, City of San Benito, City of Santa Rosa, and City of South Padre Island. 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.

Cameron county operates a system of parks that serve both the residents of the County as well as visitors to the area. The County's park system includes a series of coastal parks that are located along the Gulf of Mexico on South Padre Island, and these parks are among the most popular and heavily used in the entire system. With a view toward improving the park experience for all who visit, the Cameron County Commissioners Court ordered that a master plan for the system's coastal parks be developed. The Coastal Parks Master Plan (CPMP) prioritizes what improvements are needed in the near term to service the existing park user base and identifies areas within the coastal parks that present opportunities for improved recreation and related uses would be in the future.

The City of Harlingen's Community Development Division's mission is to assist in the creation and development of a viable community through suburb customer service, community outreach, partnerships in economic development, affordable housing and social service agencies. Through the use of CDBG and HOME Programs, the City is provided with an opportunity to develop viable communities by funding activities that provide a suitable living environment, create decent affordable housing, and provide economic opportunities to/for low and moderate-income households.

The City of La Feria's Comprehensive Plan (2007-2025) provides a guide for the physical development of the community by identifying characteristics and features, which influence the community growth patterns. The Comprehensive Plan provides a foundation upon which sound decisions can be made regarding La Feria's future growth and development.

SECTION 4: RISK OVERVIEW

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 16, 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 Cameron County identified twelve natural hazards that are addressed in the Hazard Mitigation Plan Update. Of the hazards identified, eleven natural hazards and one quasi-technological[1] hazard (dam failure) 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 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," in Table 4-1 for purposes of description.

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

[1] While dam failure is generally considered a quasi-technological hazard, it is profiled in the Plan Update as a natural hazard, i.e. a breach caused by extensive rainfall or flooding.

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.
TECHNOLOGICAL	
Dam Failure	Dam failure is the collapse, breach, or other failure of a dam structure resulting in downstream flooding. In the event of a dam failure, the energy of the water stored behind even a small dam is capable of causing loss of life and severe property damage if development exists downstream of the dam.

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
Earthquake	According to the State Plan, an earthquake occurrence for the planning area is considered exceedingly rare. Earthquake events are not considered to pose a risk to the planning area. There is no history of impact to critical structures, systems, populations or other community assets or vital services as a result of earthquakes and impact is not 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 Cameron 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 Cameron 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.

To better understand how future growth and development in the Cameron 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 Cameron County was reviewed based on recent development changes that occurred throughout the planning area. Cameron County has increased slightly between 2010 and 2018 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.

SECTION 5: FLOOD

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 Cameron County and the City of Harlingen, along with the additional participating jurisdictions, 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 AO: Areas subject to inundation by the 1-percent-annual-chance shallow flooding, usually sheet flow on sloping terrain, where average depths are between 1 and 3 feet. Average flood depths derived from detailed hydraulic analyses are shown in this zone. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone VE: Coastal areas with a 1-percent-annual-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. BFEs are provided.
- 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.

It is noted that the City of Palm Valley currently has No Special Flood Hazard Locations (NSFHA's). Locations of flood zones in Cameron County and all participating jurisdictions are based on the Digital Flood Insurance Rate Map (DFIRM) from FEMA are detailed below (Figure 5-1 through 5-3). Location of flood zones for the additional participating jurisdictions in Cameron County that participated in the amended Cameron County Hazard Mitigation Action Plan Update 2021 are detailed below within Figure 5-4 through 5-14.

Figure 5-1. Estimated Flood Zones in the Cameron County

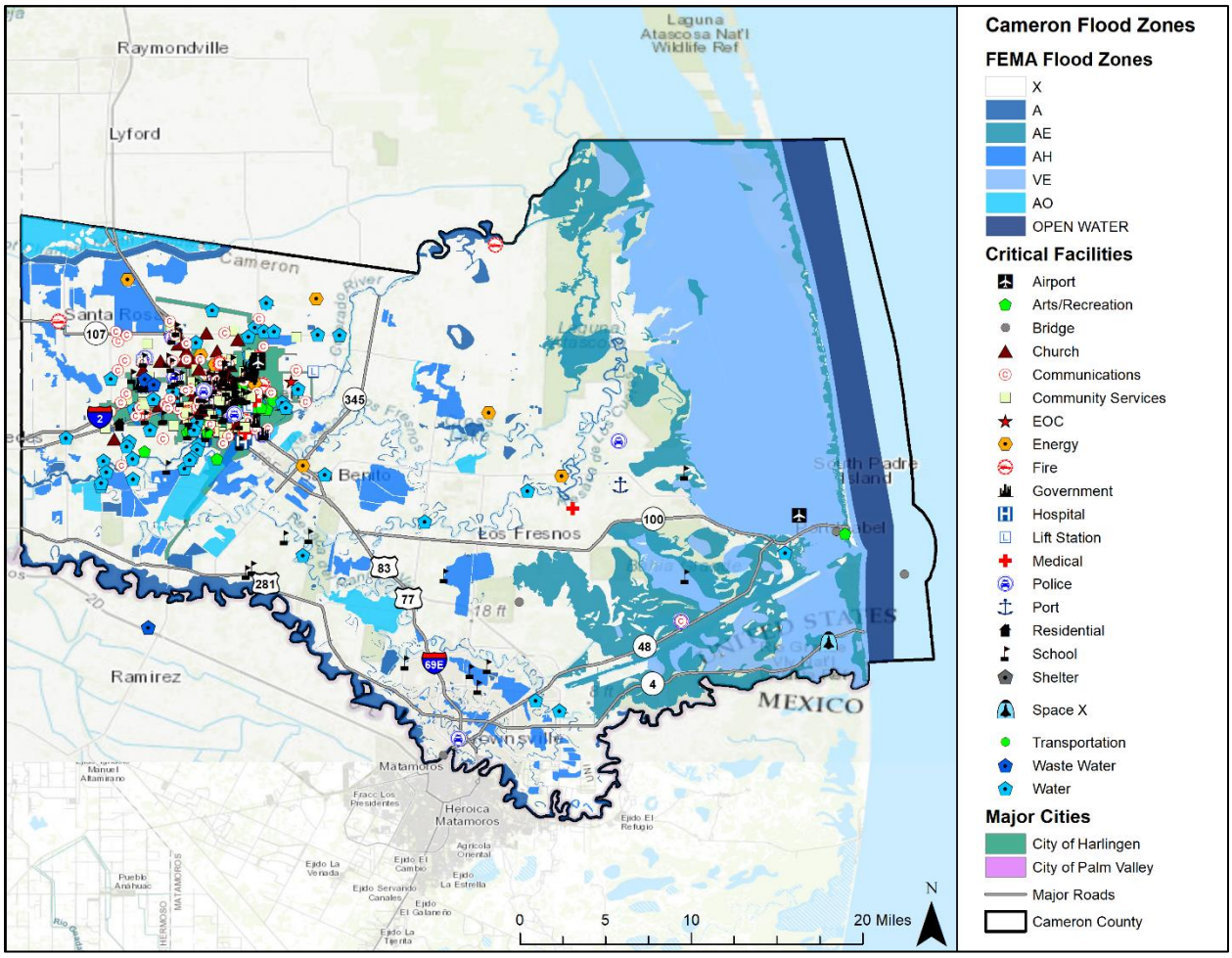


Figure 5-2. Estimated Flood Zones in the City of Harlingen

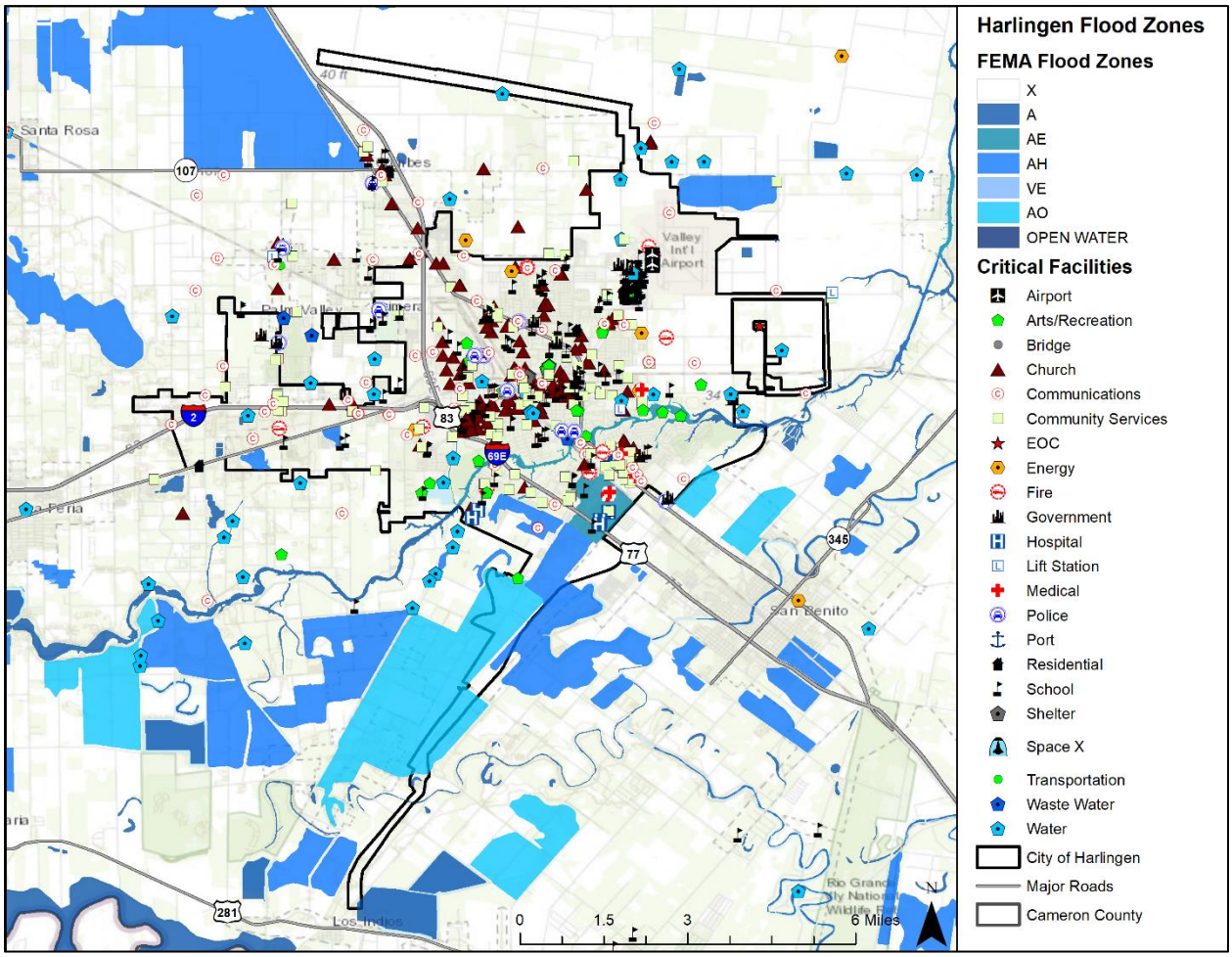


Figure 5-3. Estimated Flood Zones in the City of Palm Valley

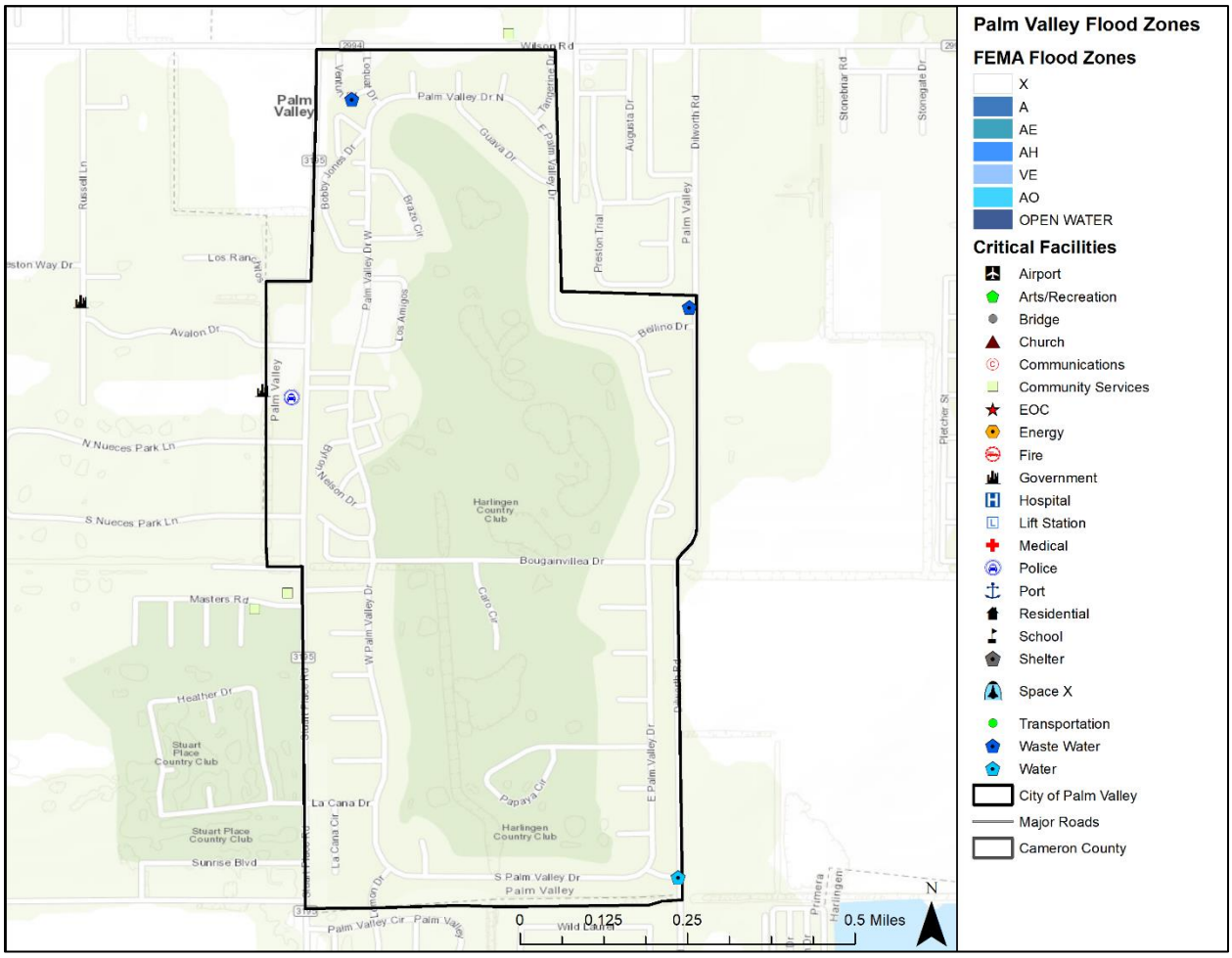


Figure 5-4. Estimated Flood Zones in the Town of Indian Lake

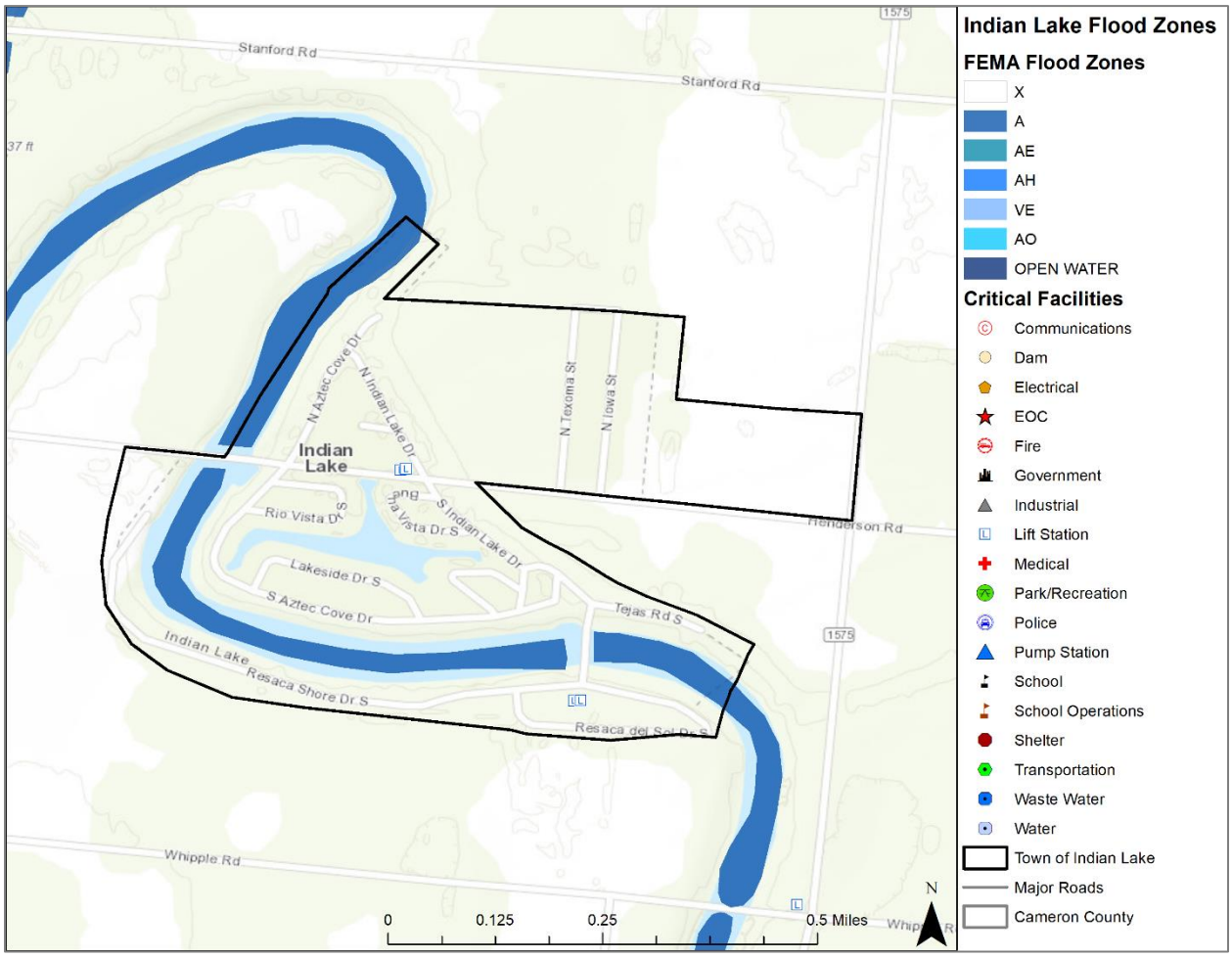


Figure 5-5. Estimated Flood Zones in the City of La Feria

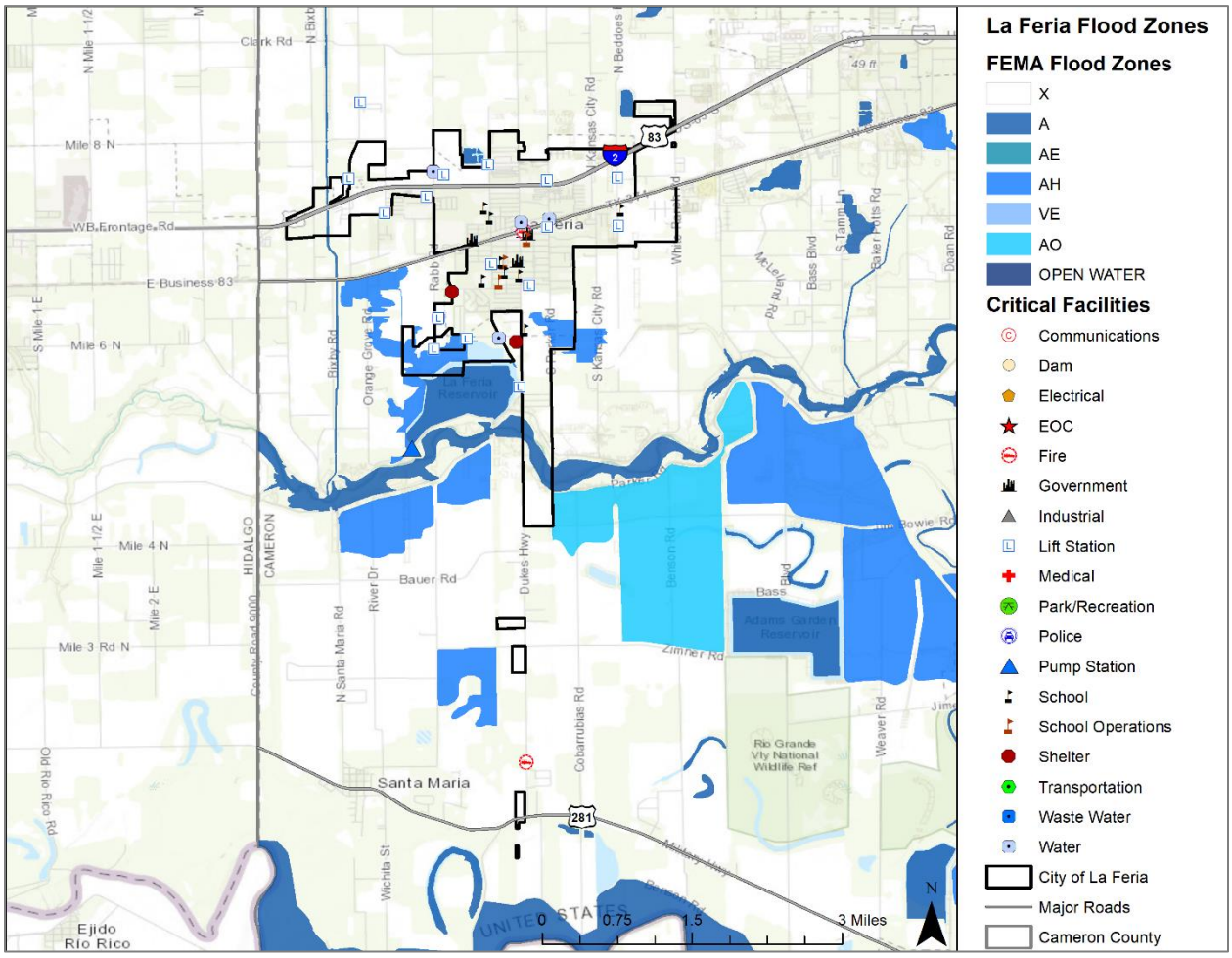


Figure 5-6. Estimated Flood Zones in the Town of Laguna Vista

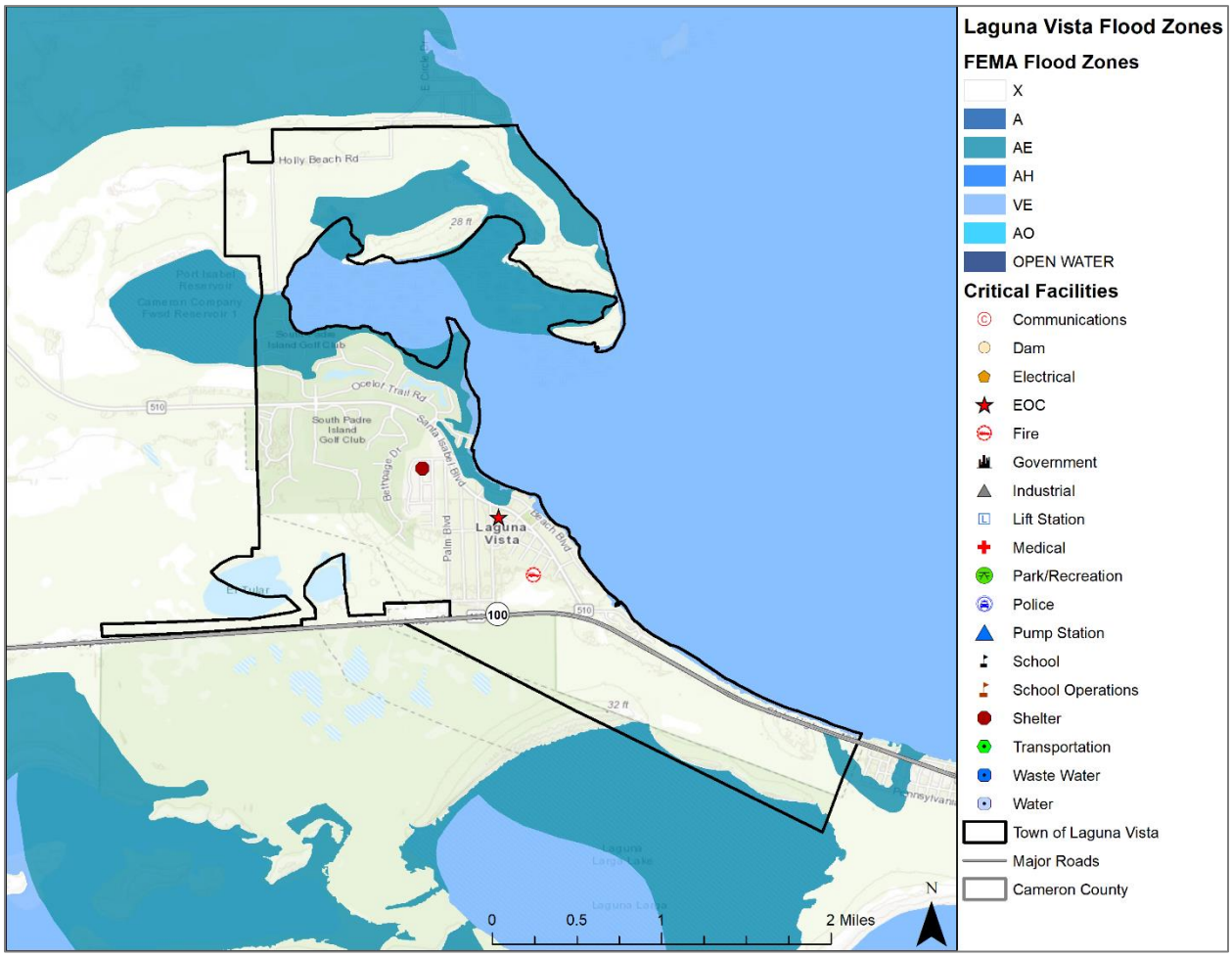


Figure 5-7. Estimated Flood Zones in the City of Los Fresnos

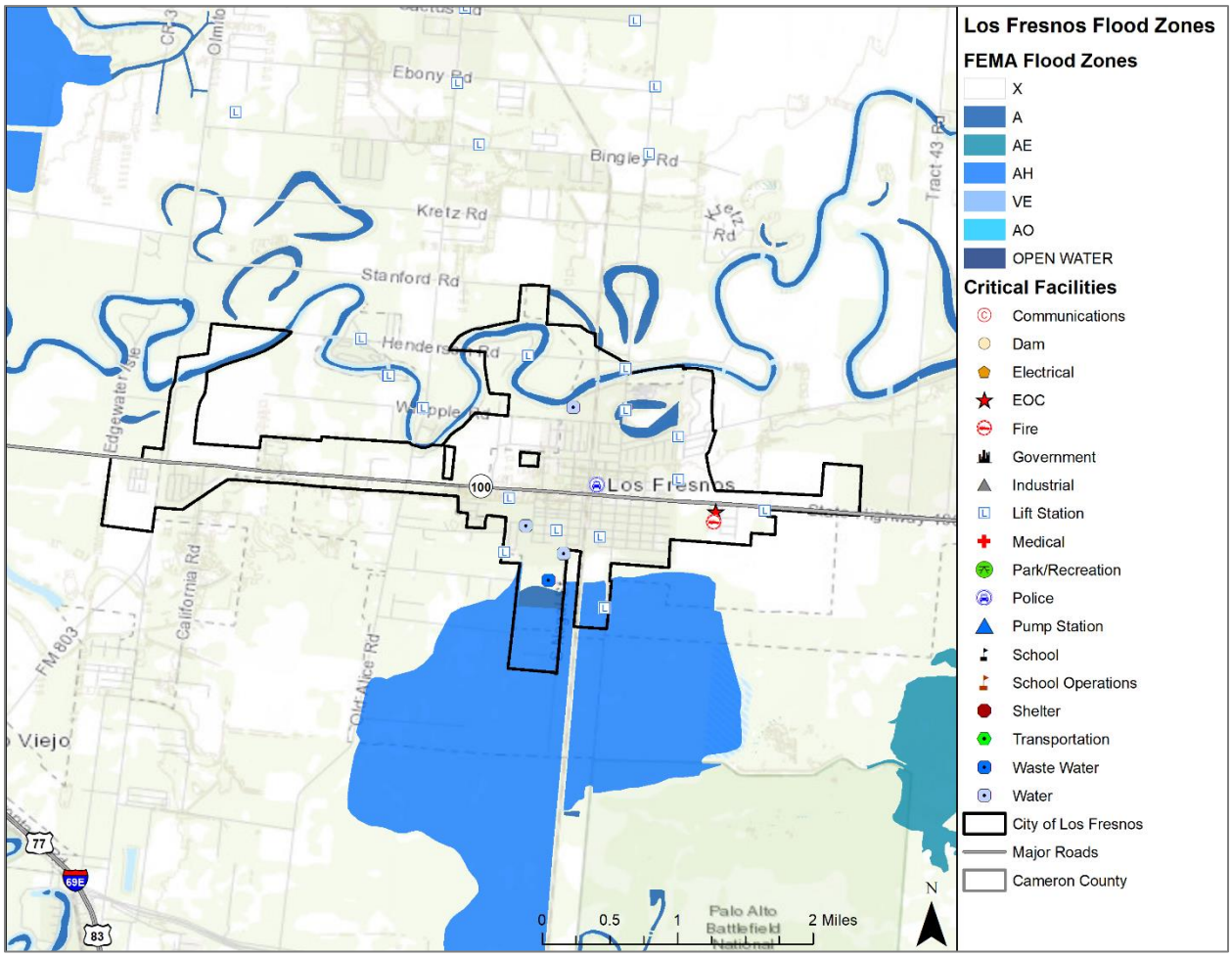


Figure 5-8. Estimated Flood Zones in the City of Port Isabel

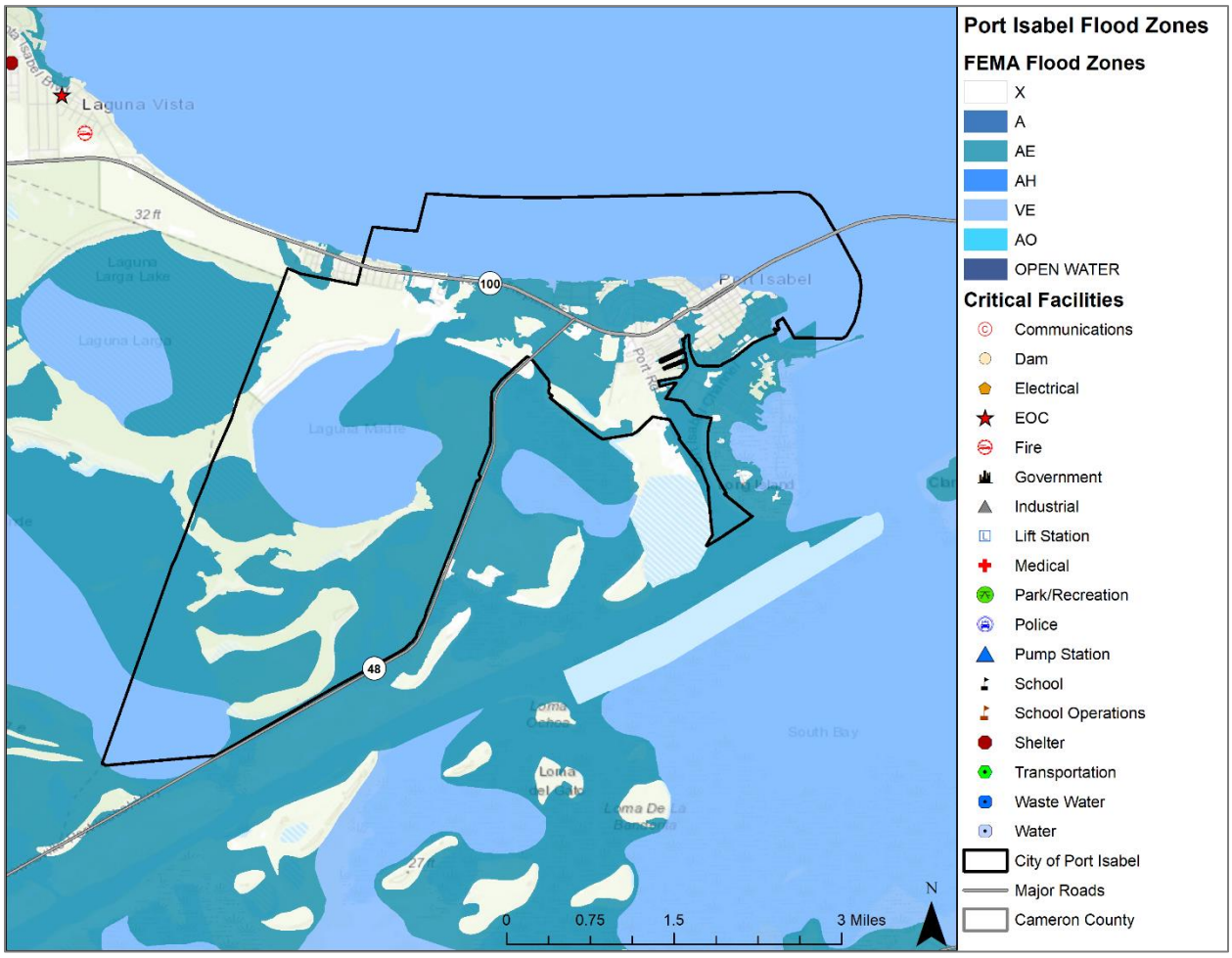


Figure 5-9. Estimated Flood Zones in the City of Primera

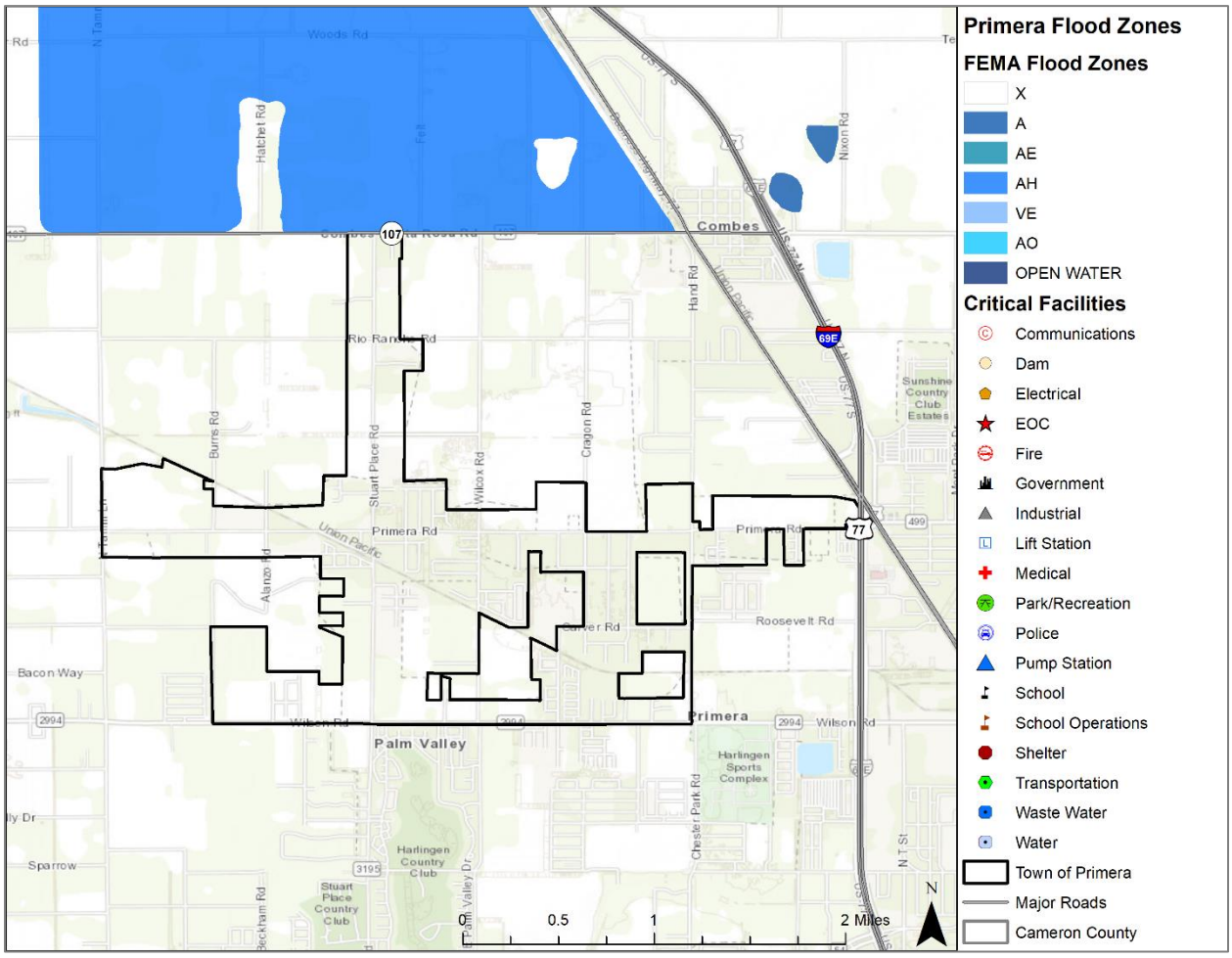


Figure 5-10. Estimated Flood Zones in the Town of Rancho Viejo

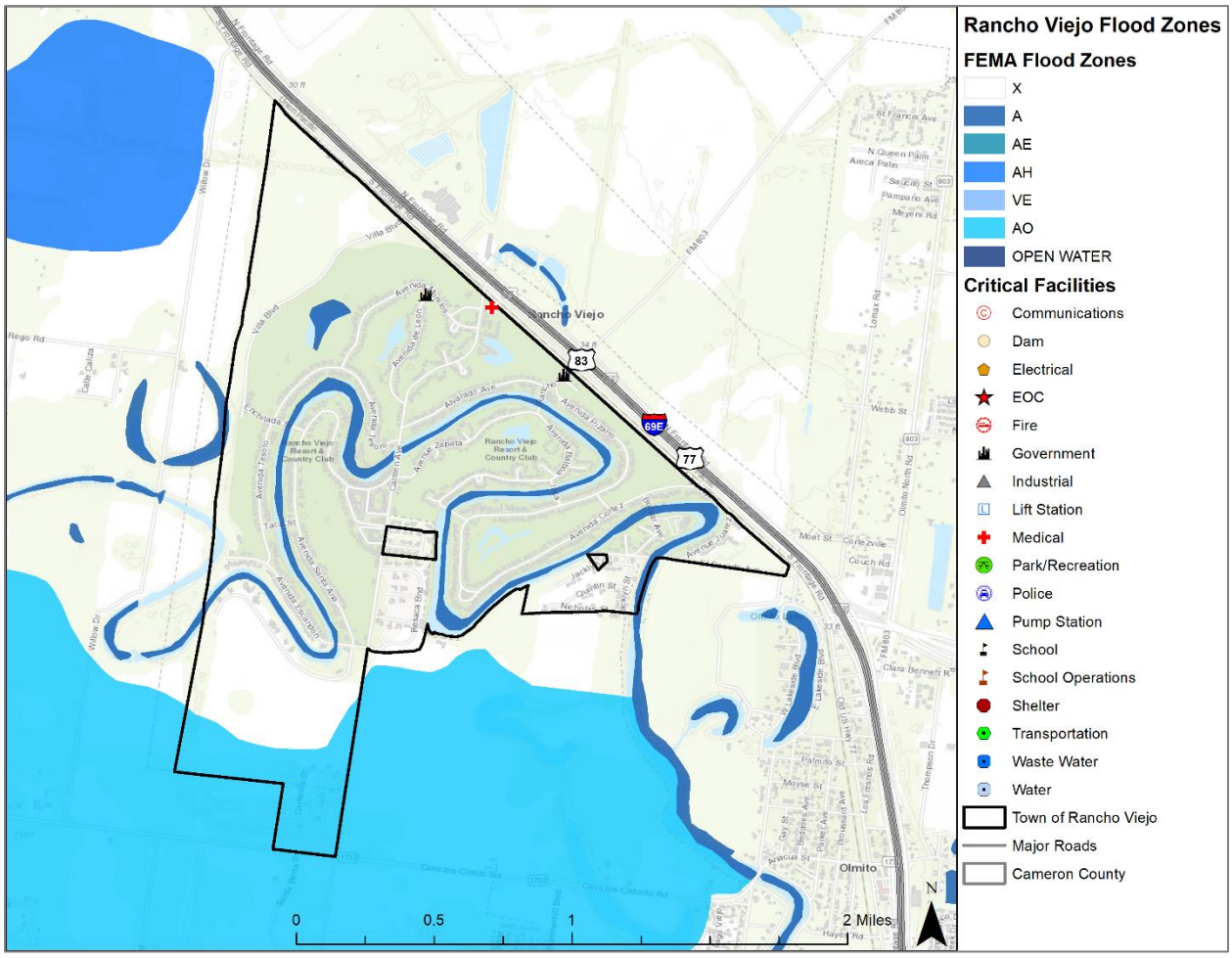


Figure 5-11. Estimated Flood Zones in the City of Rio Hondo

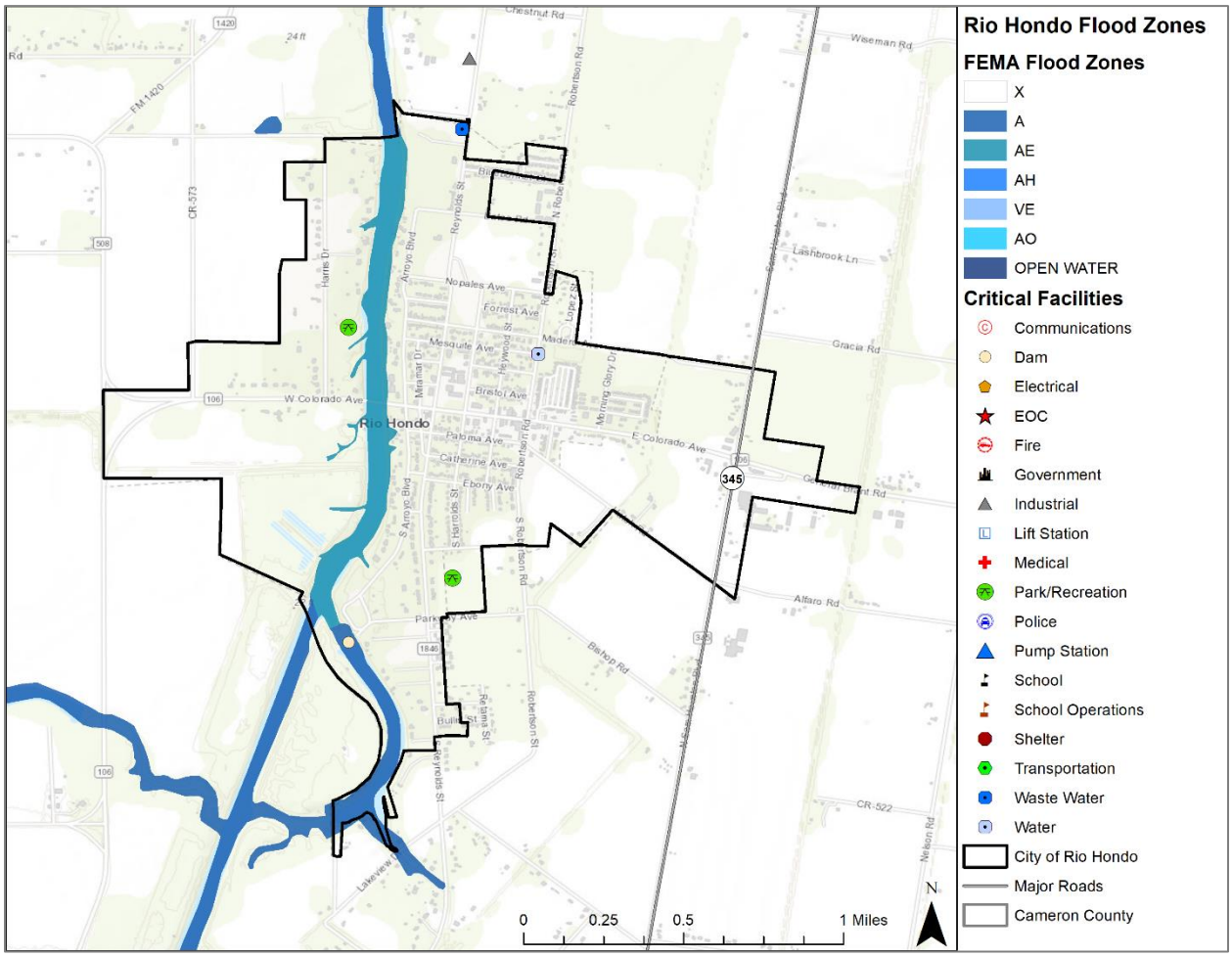


Figure 5-12. Estimated Flood Zones in the City San Benito

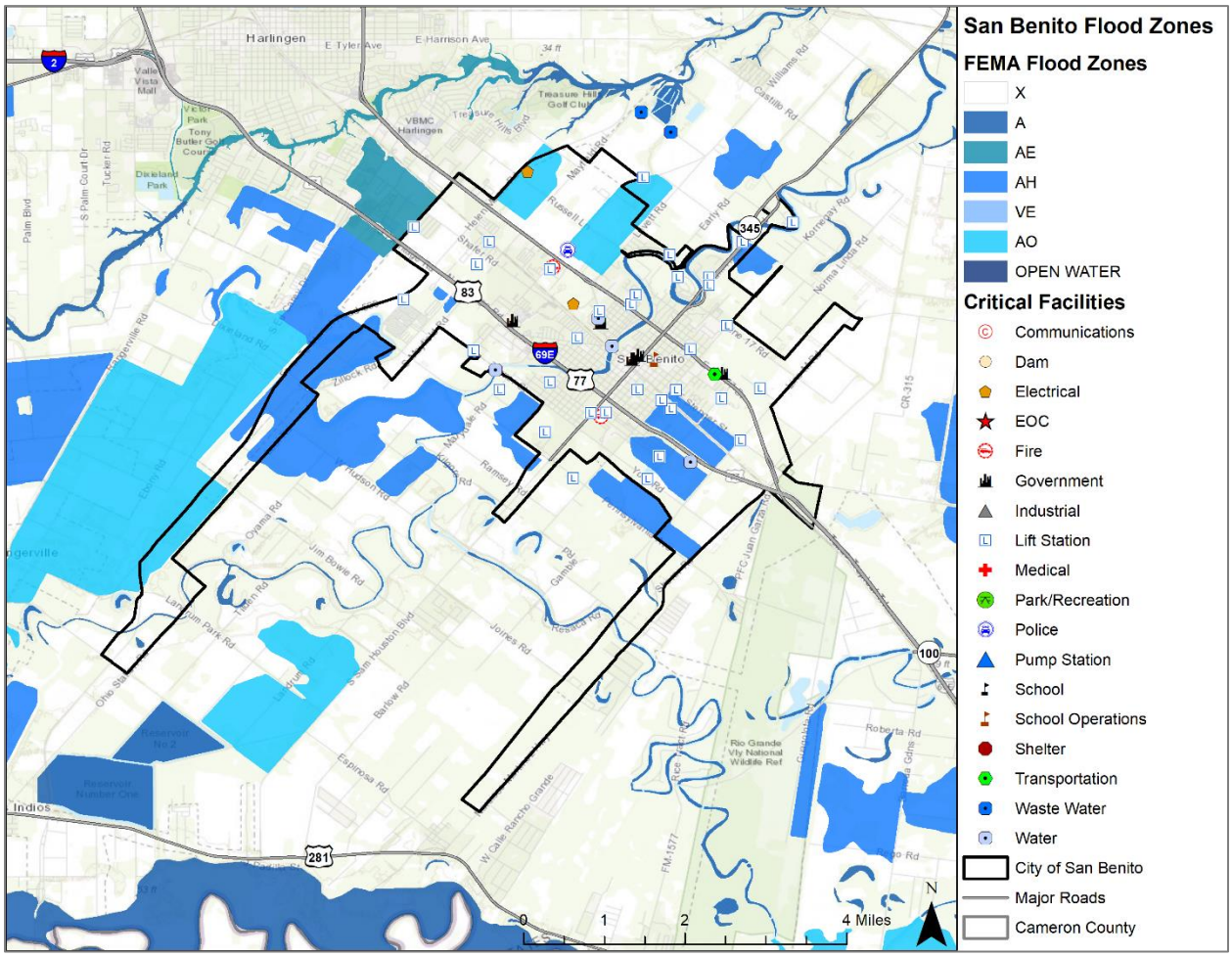


Figure 5-13. Estimated Flood Zones in the City of Santa Rosa

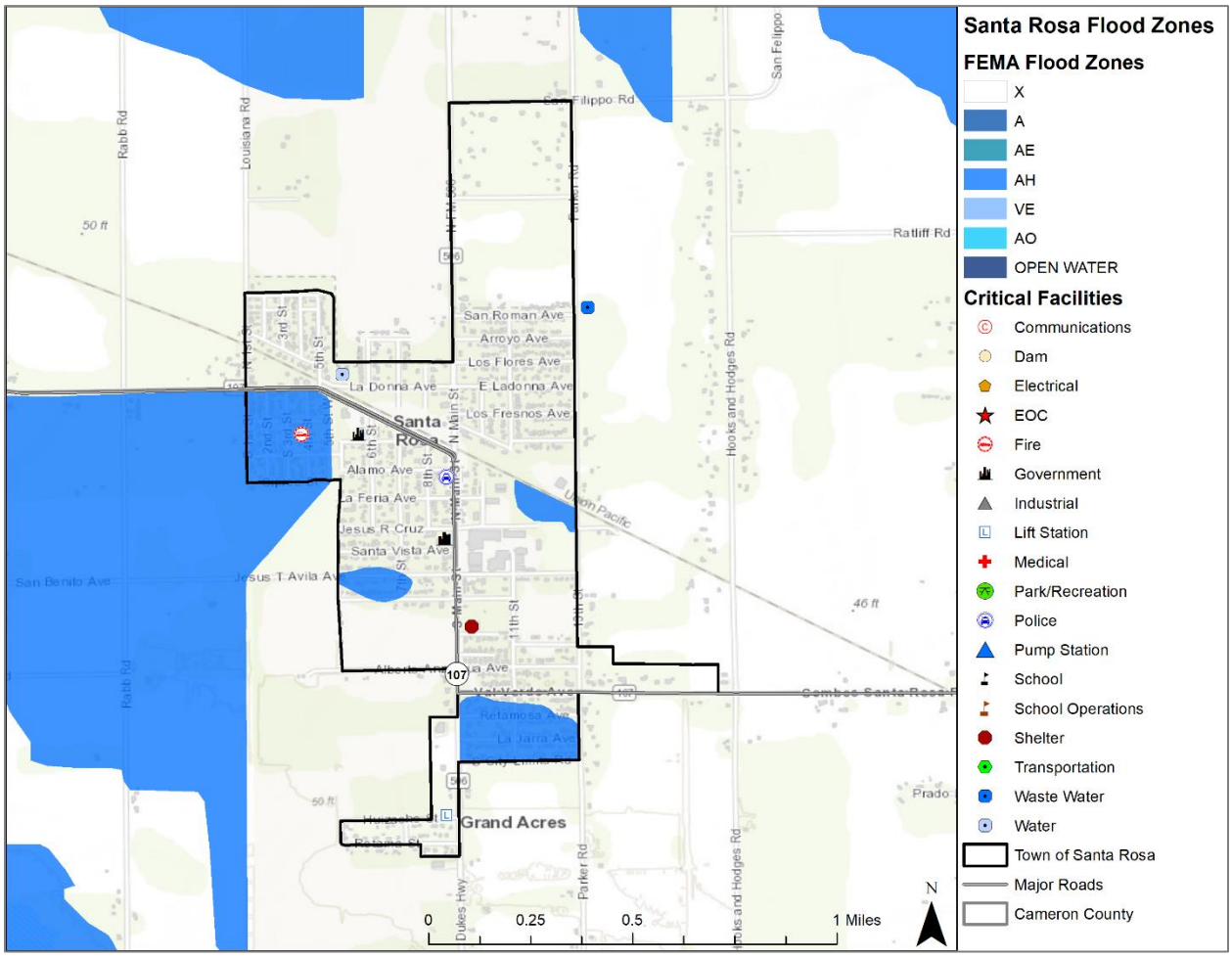
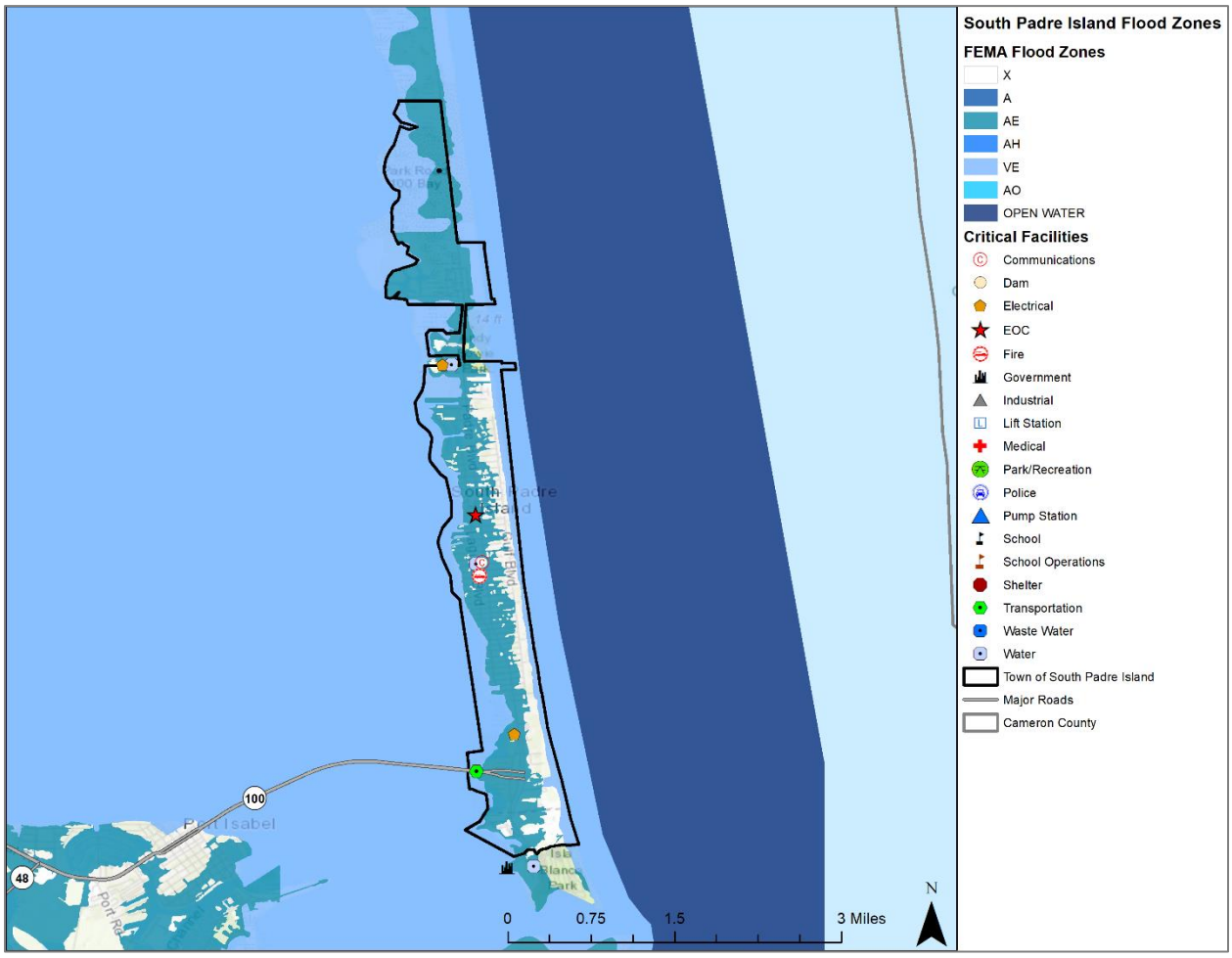


Figure 5-14. Estimated Flood Zones in the City of South Padre Island



In addition to the estimated flood zones (Figures 5-1 through 5-3), there are two dams of concern that are outside of the planning area that could create substantial flooding for the planning area along the Rio Grande River. The Anzalduas Dam is located in Hidalgo County approximately 25 miles away from the Cameron County line. The Falcon reservoir is an international reservoir approximately 40 miles south of Laredo and approximately 90 miles west of the Cameron County line. The planning area lies well outside of the estimated inundation zones for either of these dams. However, in the event of a breach the Rio Grande River, downstream of the breach, could experience extensive flooding that may exceed the boundaries of the Special Flood Hazard Area (SFHA).

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 5-1 provides a description of FEMA flood zones and the flood impact in terms of severity or potential harm. Flood Zones A, AE, VE and X are the only hazard areas mapped in the region. Figures 5-1 through 5-3, in addition to Figures 5-4 through 5-14, should be read in conjunction with the extent for flooding in Tables 5-1 and 5-2 to determine the intensity of a potential flood event.

Table 5-1. 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.
	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.

INTENSITY	ZONE	DESCRIPTION
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 5-2 describes the stream gauge data provided by the United States Geological Survey (USGS).

Table 5-2. Extent for Cameron County[1]

JURISDICTION[2]	PEAK FLOOD EVENT
Cameron County	The Rio Grande River near San Benito, Texas reached an overflow elevation of 61.05 feet in September 1967. The average peak flow for the Rio Grande is 50.59 feet at this site.
Cameron County	The Rio Grande River near Brownsville, Texas reached an overflow elevation of 33.2 feet in September 1942. The average peak flow for the Rio Grande is 25.7 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 all participating jurisdictions could expect to experience up to 7.8 inches of rainfall within a 17-hour period, resulting in flash flooding.

[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.

The data described in Tables 5-1 and 5-2, together with Figures 5-1 through 5-3, in addition to Figure 5-4 through 5-14, and historical occurrences for the area, provides an estimated potential magnitude and severity for the planning area. For example, the City of Harlingen, as shown in Figure 5-2, has areas designated as Zone A. Reading this figure in conjunction with Table 5-1 means the area is an area of high risk for flood.

HISTORICAL OCCURRENCES

Historical evidence indicates that areas within the planning area, including 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 5-3 identifies historical flood events within the Cameron County planning area, including all participating jurisdictions. Table 5-3A identifies historical flood events within the additional participating jurisdictions with the amended Cameron County Hazard Mitigation Plan Update 2021. Table 5-4 provides the historical flood event summary by jurisdiction. Table 5-4A provides the historical flood event summary for each additional participating jurisdictions with the amended Plan Update. Historical data is provided by team members and the Storm Prediction Center (NOAA), NCEI database for Cameron County.

Table 5-3. Historical Flood Events, 1996-2019[3]

JURISDICTION	DATE	TIME	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	10/11/1997	3:30 PM	0	0	$6,385	$0
Cameron County	10/13/1997	10:00 AM	0	0	$59,704	$0
Cameron County	9/19/2003	10:20 AM	0	0	$34,823	$0
Cameron County	9/19/2003	6:00 PM	0	0	$1,950,105	$0
City of Harlingen	10/7/2003	3:10 PM	0	0	$69,722	$0
Cameron County	10/13/2003	9:00 AM	0	0	$6,274,970	$0
Cameron County	3/15/2004	5:30 AM	0	0	$34,414	$0
Cameron County	5/8/2004	2:00 PM	0	0	$2,728,408	$0
City of Harlingen	5/25/2007	2:00 PM	0	0	$24,811	$0
City of Harlingen	5/25/2007	3:03 PM	0	0	$124,055	$0

[3] Only recorded events with fatalities, injuries, and/or damages are listed, values are in 2020 dollars. Historical events are listed from January 1996 through November 2019.

JURISDICTION	DATE	TIME	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	7/23/2008	10:45 AM	0	0	$50,137	$43,979,526
Cameron County	7/24/2008	4:01 AM	0	0	$50,137	$43,979,526
Cameron County	8/23/2008	3:00 PM	0	0	$5,887	$0
Cameron County	8/27/2008	2:17 PM	0	0	$1,177	$0
City of Harlingen	4/16/2010	5:00 PM	0	0	$2,367	$0
Cameron County	6/30/2010	12:00 PM	0	0	$11,835	$0
Cameron County	6/30/2010	3:00 PM	0	0	$177,531	$0
Cameron County	7/1/2010	12:00 AM	0	0	$592	$0
Cameron County	7/13/2010	6:30 AM	0	0	$118,329	$118,329
Cameron County	9/6/2010	11:30 PM	0	0	$0	$11,810
Cameron County	9/19/2010	5:00 AM	0	0	$5,904,875	$0
Cameron County	6/30/2012	3:45 PM	0	0	$84,312	$0
Cameron County	11/6/2013	9:20 PM	0	0	$11,068	$0
Cameron County	8/31/2015	1:00 PM	0	0	$216,495	$0
Cameron County	10/30/2015	11:00 AM	0	0	$108,465	$0
Cameron County	6/19/2018	5:30 PM	0	0	$5,118,696	$0
Cameron County	6/20/2018	4:00 AM	0	0	$35,830,870	$0
Cameron County	6/20/2018	4:00 PM	0	0	$20,474,783	$0
Cameron County	9/12/2018	7:00 PM	0	0	$102,191	$0
Cameron County	6/24/2019	7:30 PM	0	0	$30,214,099	$5,035,683
City of Palm Valley	6/24/2019	8:30 PM	0	0	$54,000,000	$0
TOTALS			**0**	**0**	**$163,791,245**	**$93,124,875**

Table 5-3A. Additional Participating Jurisdictions Historical Flood Events, 1996-2019[4]

JURISDICTION	DATE	TIME	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of San Benito	5/8/2004	2:00 PM	0	0	$3,000,698	$0
City of Port Isabel	7/23/2008	10:45 AM	0	0	$55,140	$48,368,597
City of Port Isabel	7/24/2008	4:01 AM	0	0	$55,140	$48,368,597
City of La Feria	8/23/2008	3:00 PM	0	0	$6,475	$0
City of La Feria	8/27/2008	2:17 PM	0	0	$1,295	$0
City of Port Isabel	6/30/2010	12:00 PM	0	0	$13,017	$0
Town of Rancho Viejo	6/30/2010	3:00 PM	0	0	$195,249	$0
Town of Rancho Viejo	7/1/2010	12:00 AM	0	0	$651	$0
City of Santa Rosa	7/13/2010	6:30 AM	0	0	$130,138	$130,138
City of Los Fresnos	8/31/2015	1:00 PM	0	0	$238,101	$0
City of Santa Rosa	6/20/2018	4:00 AM	0	0	$39,406,720	$0
City of Primera	9/12/2018	7:00 PM	0	0	$112,390	$0
City of Santa Rosa	6/24/2019	7:30 PM	0	0	$33,229,407	$5,538,235
TOTALS			**0**	**0**	**$76,444,421**	**$102,405,567**

Table 5-4. Summary of Historical Flood Events, January 1996-2019

JURISDICTION	NUMBER OF EVENTS	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	74	0	0	$109,570,291	$93,124,875
City of Harlingen	9	0	0	$220,954	$0
City of Palm Valley	1	0	0	$54,000,000	$0
TOTAL LOSSES	**84**	**0**	**0**	**$256,916,120**	

[4] Only recorded events with fatalities, injuries, and/or damages are listed, values are in 2020 dollars. Historical events are listed from January 1996 through November 2019.

Table 5-4A. Summary of Historical Flood Events for Additional Participating Jurisdictions, January 1996-2019

JURISDICTION	NUMBER OF EVENTS	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Town of Indian Lake	0	0	0	$0	$0
City of La Feria	3	0	0	$7,770	$0
Town of Laguna Vista	3	0	0	$0	$0
City of Los Fresnos	4	0	0	$238,101	$0
City of Port Isabel	5	0	0	$123,297	$96,737,194
City of Primera	1	0	0	$112,390	$0
Town of Rancho Viejo	3	0	0	$195,900	$0
City of Rio Hondo	0	0	0	$0	$0
City of San Benito	6	0	0	$3,000,698	$0
City of Santa Rosa	6	0	0	$72,766,265	$5,668,373
City of South Padre Island	0	0	0	$0	$0
TOTAL LOSSES	**31**	**0**	**0**	**$178,849,988**	

Based on the list of historical flood events for the Cameron County planning area (listed above), including all participating jurisdictions, 16 of the events have occurred since the 2015 Plan. Based on the list of historical flood events for the additional participating jurisdictions within the Cameron County planning area (listed above), 5 events have occurred since the 2015 Plan.

SIGNIFICANT EVENTS

Flash Flood on June 24, 2019 (Great June Flood II)

Just 367 days after the last of the Great June Flood of 2018 had left its memorable mark on nearly all of the populated Rio Grande Valley, a confluence of atmospheric events came together during the late afternoon and evening of June 24th, 2019, to produce another memorable, and unfortunate situation for parts of the Rio Grande Valley. This time, the impacted area was smaller and less populated but the results the same. For most of Willacy County's population, the western third of Cameron, and a corner of eastern Hidalgo, significant impacts were noted. These included: Over a foot of rain fell in about six hours, including a peak total of more than 15 inches near Santa Rosa (Cameron/Hidalgo line); hundreds of streets flooded, including 30 Texas-managed highways; 1,188 homes were considered destroyed or incurring major damage requiring significant repairs, with an additional 182 homes sustaining minor damage or mildly affected. FEMA Individual Assistance costs were estimated at $27.6 million. FEMA Public Assistance costs were over $5 million. Total damage estimates ranged from $50 to $100 million or more. More than 100 persons were evacuated to safe high ground from dozens of homes threatened by 2 or more feet of water in several locations in each county. At least 45,000 private

and public utility power customers were without power at the peak of the storm and estimated 65 to 75 mph winds caused at least five poorly built mobile homes to be rolled or demolished in eastern Hidalgo County. New daily rainfall records were set at most available Rio Grande Valley climate recording locations. These totals ranged from 2.06 inches in Brownsville to 15.20 inches in Santa Rosa.

Flash Flood on June 18-22, 2018 (Great June Flood of 2018)
Multiple cells and clusters of thunderstorms in western Cameron County caused widespread flooding between La Feria, Harlingen, San Benito, and other locations. The first serious flooding event developed during the late night and early morning hours of June 19th across the South Texas Brush Country of Duval, Jim Wells, and Brooks County. Torrential rains of more than 12 inches by midday west of Falfurrias, and flooding of at least 1 to 2 feet of water covered the streets of the city, closing many of them. Soon after, Palo Blanco Creek over-spilled its banks and contributed additional water flows, and Los Olmos Creek spiked quickly and by evening reached flood stage by late afternoon and would crest just over moderate stage, the third highest crest in the modern record and highest since 1971.

The second flooding rain event struck Cameron County from Brownsville to Los Fresnos, when a slow moving line of thunderstorms from west to east intersected the sea breeze and stalled, dumping 3 to 5 inches of rain over a 2 to 3 hour period and caused significant street flooding and some road closures in the area. The "big one" followed just 12 hours later, when the peak of the tropical moisture plume was lifted by an embedded upper level disturbance parked between the central Rio Grande Valley and the South Texas Brush Country. Incredible rainfall rates of up to 5 or more inches per hour struck the highly populated mid Valley between the east side of the McAllen Metro region to Harlingen, with peak rainfall just north of Weslaco and Mercedes. 11 to 13 inches fell in just a few hours at and near the Mid Valley Airport in Weslaco, though amounts may have been a couple inches higher in the heaviest rain core several miles northeast of this location. The cooperative observing station on the Mid Valley Airport grounds reported 11.36 inches in 3 hours. Drainage was unable to handle the deluge, and widespread flooding with photo and video evidence of at least 3 to 5 feet of water depth in many streets of each town ensued. The number of homes, businesses, and vehicles impacted by the floodwaters exceeded that from the October 22-24 Atmospheric River Event. Weslaco City estimates were more than 2500 homes, 100+ businesses, and at least 2500 vehicles with various degrees of damage. The homes and businesses had a minimum of 18 inches of floodwater depth inside portions of each.

The third event struck Cameron County again, in nearly the same locations between Brownsville and northeast of Los Fresnos that same afternoon. This time, 4 to 6 inches fell, making for two day totals of 6 to 10 inches in the area and triggering additional flooding, especially in and northeast of Los Fresnos where several neighborhoods were inundated by a foot or more of water, with estimates of 3 feet or more of standing water in poor drainage locations as well as open fields. Parts of Harlingen were dealt a "triple" blow with rain during the afternoon of the 19th, morning of the 20th, and afternoon of the 20th. 10 inches fell there as well. Additional rainfall impacted Cameron County as short-liced but heavy rainfall events proceeded throughout the afternoon of the 21st. Detailed damage for this particular event was not known, though total damage through multiple agencies along with standard doubling for uninsured properties, as well as significant damage to drainage canals, suggested event totals in Cameron County were over $60 million.

There were an unknown number of properties and vehicles damaged in this particular flood, though the numbers are likely above 1,000 for each case.

Flash Flood on June 30, 2012
A weak upper level disturbance, which had produced a few days of healthy thunderstorms in the western Gulf of Mexico during the final week of June, crossed the coast on June 30th and produced local downpours that flooded small portions of Cameron and Zapata/western Starr County. The disturbance combined with sea breeze influences and boundaries from activity across the Coastal Bend to enhance initial thunderstorms along the coast of eastern Willacy and Cameron County around noon. Heavy rain fell during the afternoon hours across Brownsville. Western and downtown portions of Brownsville were especially hard hit with rainfall totals over 5 inches reported. Flash floods closed several roads, overtopped resaca's, and reached into properties near and in downtown. A trained spotter reported water in the streets and resaca's out of their banks and over walls; this spotter also reported five inches of rain. A NWS employee reported that Price Road was impassible with at least a foot of water over it in western Brownsville. The Emergency Manager reported water in a few homes in downtown Brownsville and resaca's getting high. The Emergency Manager also reported that Price Road was mostly closed, Boca Chica Blvd was closed in a few spots, and a few other streets were closed as well.

PROBABILITY OF FUTURE EVENTS

Based on 83 recorded historical occurrences within a 24-year reporting period within the Cameron County planning area, including all participating jurisdictions, with an additional 31 recorded historical occurrences within the additional participating jurisdictions of Cameron County, 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 "Minor" as facilities and services would be shut down for one week or more, more than 10 percent of property destroyed or with major damage, and injuries or illness that does not result in permanent disability depending on the scale of the storm.

Table 5-5 includes the critical facilities identified in Appendix C that were determined to be located within the SFHA by FIRM mapping and further by each participating jurisdiction. Table 5-5A includes the critical facilities for the additional participating jurisdictions of Cameron County that were determined to be located within the SFHA by FIRM mapping.

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

JURISDICTION	CRITICAL FACILITIES
Cameron County	1 Airport, 2 Bridges, 3 Schools, 1 Park, 1 Police Dispatch Facility, 1 Police Station, 1 Water District Facility, 1 Fire Station, 1 Space-X Port
City of Harlingen	1 Communications Center, 2 Fire Stations, 1 Communication Tower, 1 Church, 1 School, 3 Hospitals/Medical Facilities, 5

JURISDICTION	CRITICAL FACILITIES
	Nursing Home Facilities, 2 Pump Stations, 1 Lift Station, 1 Water Tower, 1 Daycare
City of Palm Valley	None

Table 5-5A. Additional Participating Jurisdictions Critical Facilities in the Floodplain by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Town of Indian Lake	None
City of La Feria	1 Lift Station
Town of Laguna Vista	None
City of Los Fresnos	2 Lift Stations
City of Port Isabel	None
City of Primera	None
Town of Rancho Viejo	None
City of Rio Hondo	1 Dam
City of San Benito	1 Police Station, 3 Lift Stations, 1 Substation
City of Santa Rosa	1 Fire Station
City of South Padre Island	1 Emergency Operations Center, 1 Fire Station, 1 Government Building, 1 Communication Facility, 2 Substations, 3 Water Facilities (including 2 water towers)

Historic loss estimates due to flood are presented in Table 5-6 below. Considering 83 flood events over a 24-year period, frequency is approximately three to four events every year. Historic loss estimates for the additional participating jurisdictions within the amended Plan Update due to flood are presented in Table 5-6A below.

Table 5-6. Potential Annualized Losses by Jurisdiction

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Cameron County	$202,695,166	$8,445,632
City of Harlingen	$220,954	$9,206
City of Palm Valley	$54,000,000	$2,250,000
Planning Area	**$256,916,120**	**$81,704,838**

Table 5-6A. Additional Participating Jurisdictions Potential Annualized Losses by Jurisdiction

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Town of Indian Lake	$0	$0
City of La Feria	$7,770	$304.71
Town of Laguna Vista	$0	$0
City of Los Fresnos	$238,101	$9,337.29
City of Port Isabel	$96,860,491	$3,798,450.63
City of Primera	$112,390	$4,407.45
Town of Rancho Viejo	$195,990	$7,682.35
City of Rio Hondo	$0	$0
City of San Benito	$3,000,698	$117,674.43
City of Santa Rosa	$78,434,638	$3,075,868.16
City of South Padre Island	$0	$0
Additional Participating Jurisdictions	**$178,849,988**	**$7,013,725.02**

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 30.6% of the planning area population live below the poverty level (Table 5-7). Table 5-7A reflects the total population of the additional participating jurisdictions of Cameron County that live below the poverty level.

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

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Cameron County	129,056
City of Harlingen	16,624
City of Palm Valley	85

[5] US Census Bureau 2018 data for Cameron County.

Table 5-7A. Additional Participating Jurisdictions Populations at Greatest Risk by Jurisdiction[6]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Town of Indian Lake	248
City of La Feria	1,819
Town of Laguna Vista	631
City of Los Fresnos	2,245
City of Port Isabel	1,902
City of Primera	1,407
Town of Rancho Viejo	195
City of Rio Hondo	812
City of San Benito	7,860
City of Santa Rosa	1,067
City of South Padre Island	481

The severity of a flooding event varies depending on the relative risk to citizens and structures located within each city. Table 5-8 depicts the level of impact for Cameron County and each participating jurisdiction. Table 5-8A depicts the level of impact for the additional participating jurisdictions within Cameron County participating within the amended Plan Update 2021.

Table 5-8. Impact by Jurisdiction

JURISDICTION	IMPACT	DESCRIPTION
Cameron County	Limited	It is anticipated that Cameron County could anticipate an impact of "minor" with critical facilities would be shut down for one week or more and more than 10 percent of property would be destroyed or damaged.
City of Harlingen	Limited	It is anticipated that the City of Harlingen could anticipate an impact of "limited" with critical facilities would be shut down for 24 hours or less and less than 10 percent of property would be destroyed or damaged.
City of Palm Valley	Limited	It is anticipated that the City of Palm Valley could anticipate an impact of "limited" with critical facilities would be shut down for 24 hours or less and less than 10 percent of property would be destroyed or damaged. Palm Valley currently has a FEMA finding of NSFHA.

[6] US Census Bureau 2020 data for the additional Participating Jurisdictions of Cameron County.

Table 5-8A. Additional Participating Jurisdictions Impact by Jurisdiction

JURISDICTION	IMPACT	DESCRIPTION
Town of Indian Lake	Limited	It is anticipated that the Town of Indian Lake could anticipate an impact of "limited" with critical facilities would be shut down for 24 hours or less and less than 10 percent of property would be destroyed or damaged.
City of La Feria	Minor	It is anticipated that the City of La Feria could anticipate an impact of "minor" with critical facilities would be shut down for more than one week and more than 10 percent of property would be destroyed or damaged.
Town of Laguna Vista	Minor	It is anticipated that the Town of Laguna Vista could anticipate an impact of "minor" with critical facilities would be shut down for more than one week and more than 10 percent of property would be destroyed or damaged.
City of Los Fresnos	Minor	It is anticipated that the City of Los Fresnos could anticipate an impact of "minor" with critical facilities would be shut down for more than one week and more than 10 percent of property would be destroyed or damaged.
City of Port Isabel	Minor	It is anticipated that the City of Port Isabel could anticipate an impact of "minor" with critical facilities would be shut down for more than one week and more than 10 percent of property would be destroyed or damaged.
City of Primera	Limited	It is anticipated that the City of Primera could anticipate an impact of "limited" with critical facilities would be shut down for 24 hours or less and less than 10 percent of property would be destroyed or damaged.
Town of Rancho Viejo	Minor	It is anticipated that Town of Rancho Viejo could anticipate an impact of "minor" with critical facilities would be shut down for more than one week and more than 10 percent of property would be destroyed or damaged.
City of Rio Hondo	Limited	It is anticipated that the City of Rio Hondo could anticipate an impact of "limited" with critical facilities would be shut down for 24 hours or less and less than 10 percent of property would be destroyed or damaged.
City of San Benito	Major	It is anticipated that the City of San Benito could anticipate an impact of "major" with critical facilities would be shut down for at least two weeks and less than 25 percent of property would be destroyed or damaged.
City of Santa Rosa	Major	It is anticipated that the City of Santa Rosa could anticipate an impact of "major" with critical facilities would be shut down for at least two

JURISDICTION	IMPACT	DESCRIPTION
		weeks and less than 25 percent of property would be destroyed or damaged.
City of South Padre Island	Limited	It is anticipated that the City of South Padre Island could anticipate an impact of "limited" with critical facilities would be shut down for 24 hours or less and less than 10 percent of property would be destroyed or damaged.

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 Cameron 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.
- Recreation activities such as fishing, boating, and camping activities at Laguna Atascosa National Wildlife Preserve, Rio Grande River, Bahia Grande Tidal Basin, may be unavailable and tourism can be unappealing for years following a large flood event, devastating directly related local businesses and negatively impacting economic recovery.
- 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.

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. Cameron County and all participating jurisdictions are currently participating in the NFIP and are in good standing.

Cameron County and all participating jurisdictions currently have in place minimum NFIP standards for new construction and substantial improvements of structures. All 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 Cameron 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 jurisdiction in the Plan is 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, Cameron 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, Cameron County and all participating jurisdictions has developed mitigation actions that relate to either NFIP maintenance or compliance. Compliance and maintenance actions can be found in Section 19.

Flooding was identified by all 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 by placing NFIP brochures and flyers in public libraries or public meeting places in participating jurisdictions.

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.[7] It is noted that the City of Palm Valley does not currently have any repetitive loss properties. Table 5-9 shows repetitive loss and severe repetitive loss properties for the Cameron County planning area. Table 5-9A shows repetitive loss and severe repetitive loss properties for the additional participating jurisdictions.

Table 5-9. Repetitive Loss and Severe Repetitive Loss Properties

JURISDICTION	BUILDING TYPE	NUMBER OF STRUCTURES	NUMBER OF LOSSES
Cameron County	2-4 Family	4	10
	Assumed Condo	5	20
	Non-Residential	11	42
	Other Residential	4	12
	Single Family	91	237
City of Harlingen	Non-Residential	16	41
	Other Residential	3	6
	Single Family	45	113

Table 5-9A. Additional Participating Jurisdictions Repetitive Loss and Severe Repetitive Loss Properties

JURISDICTION		NUMBER OF STRUCTURES	NUMBER OF LOSSES	TOTAL PAID LOSSES
Town of Indian Lake	N/A	0	0	$0
City of La Feria	Non-Residential	1	2	$3,396.99
	Single Family	8	21	$305,137
Town of Laguna Vista	N/A	0	0	$0
City of Los Fresnos	Single Family	1	2	$54,962.02
City of Port Isabel	Single Family	5	12	$96,575

[7] Source: Texas Water Development Board

JURISDICTION		NUMBER OF STRUCTURES	NUMBER OF LOSSES	TOTAL PAID LOSSES
City of Primera	N/A	0	0	$0
Town of Rancho Viejo	Single Family	1	2	$9,540.21
City of Rio Hondo	Single Family	2	4	$24,907
City of San Benito	Single Family	24	67	$1,097,195
City of Santa Rosa	Single Family	4	8	$70,058
City of South Padre Island	2-4 Family	4	10	$120,759
	Assumed Condo	2	4	$334,094
	Non-Residential	5	24	$486,166
	Other Residential	1	3	$33,073
	Single Family	6	16	$145,525

SECTION 6: HURRICANE WIND

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

As a coastal community, Cameron County, including all participating jurisdictions, is vulnerable to threats directly and indirectly related to a hurricane event, such as high-force winds, storm surge, flooding, and coastal erosion. Hurricanes and/or tropical storms can impact Cameron County from June to November, the official Atlantic U.S. hurricane season. Cameron County is in a moderate to high risk area for hurricane wind speeds of 110 to more than 155 miles per hour (mph). In Figure 6-1 and Figure 6-1A below, hurricane tracks are reflective of their strength in the Cameron County planning area.

Figure 6-1. Location of Historic Storm Tracks

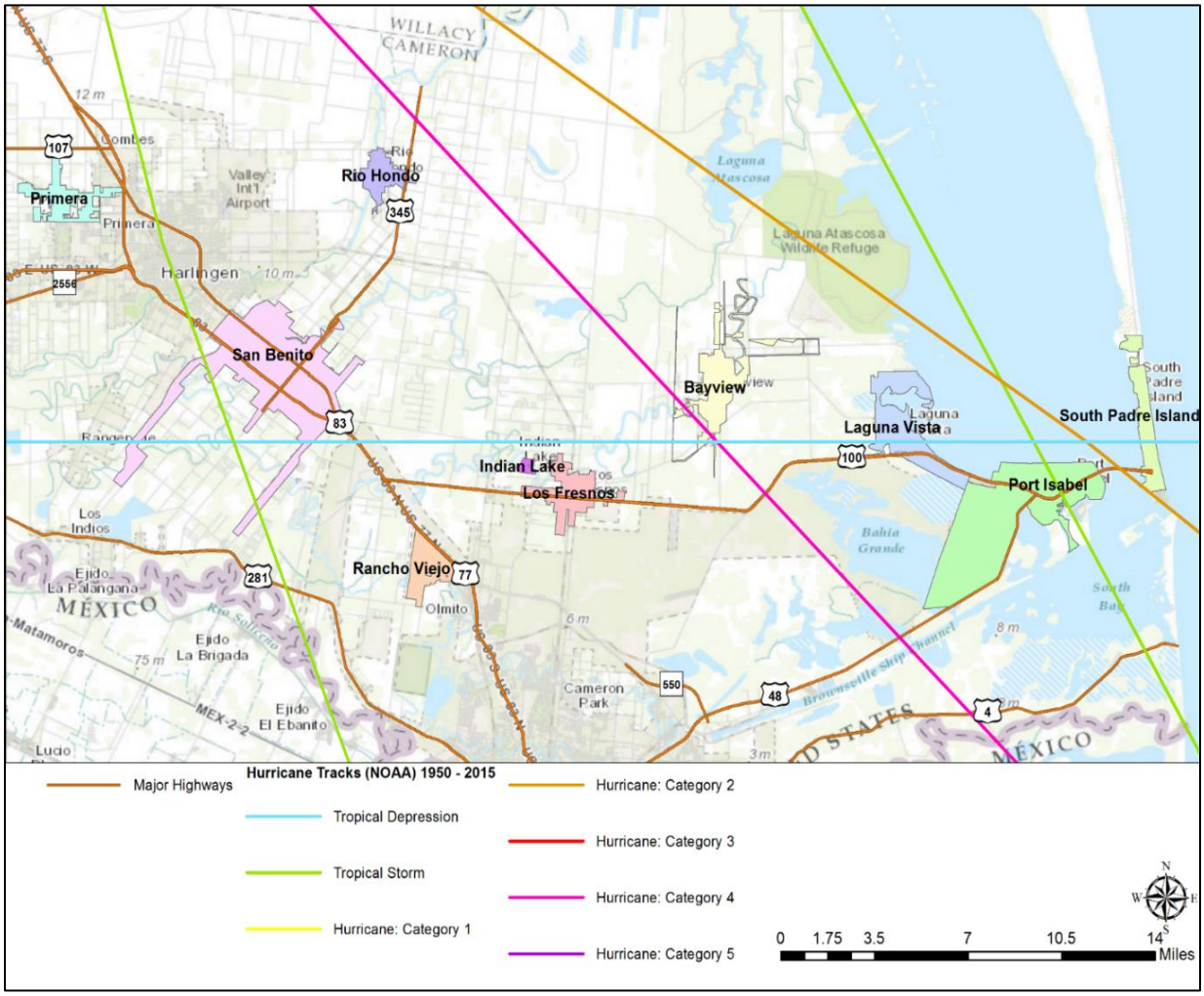
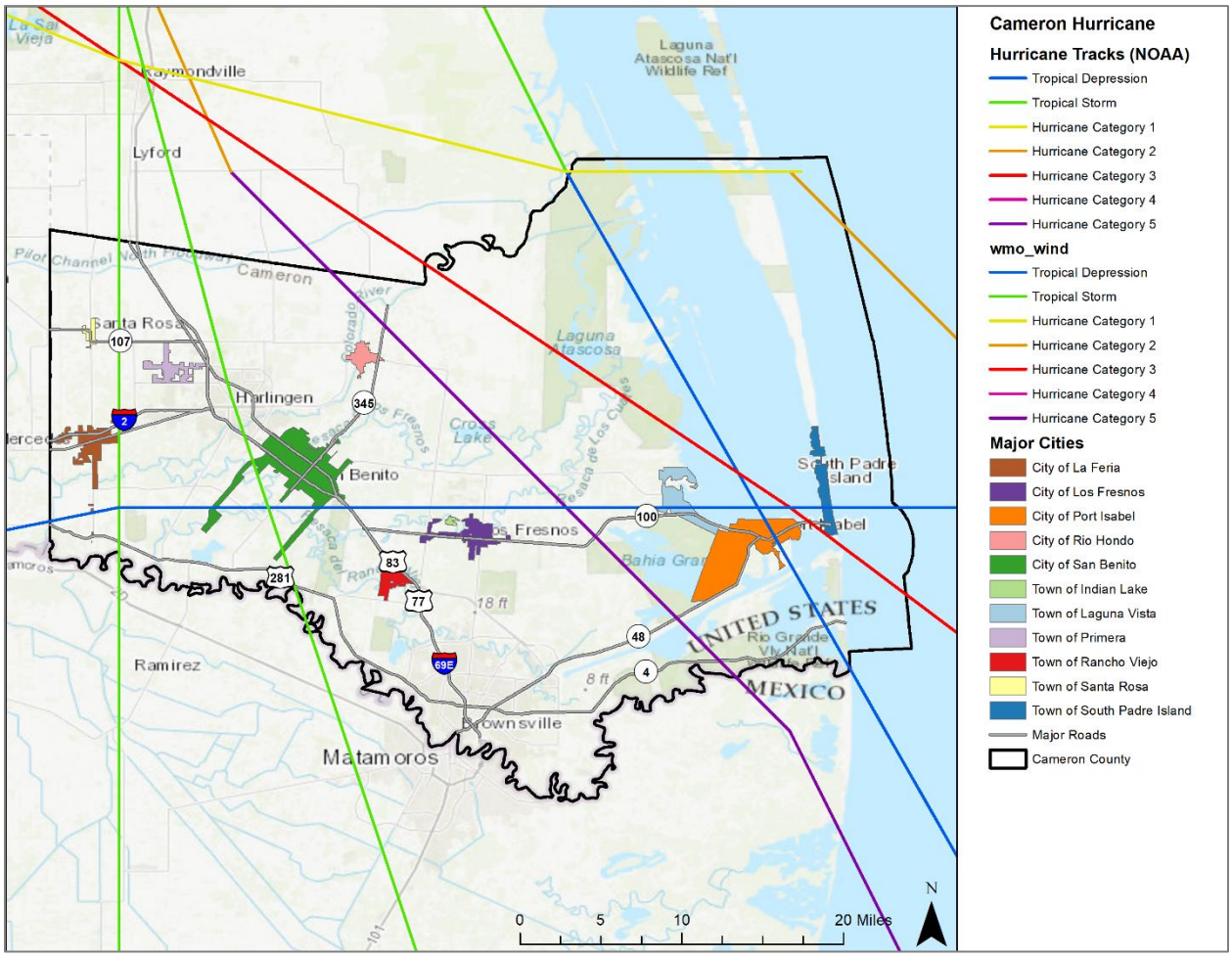


Figure 6-1A. Location of Historic Storm Tracks



EXTENT

Hurricanes are categorized according to the strength and intensity of their winds using the Saffir-Simpson Hurricane Scale (See Table 6-1). 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.

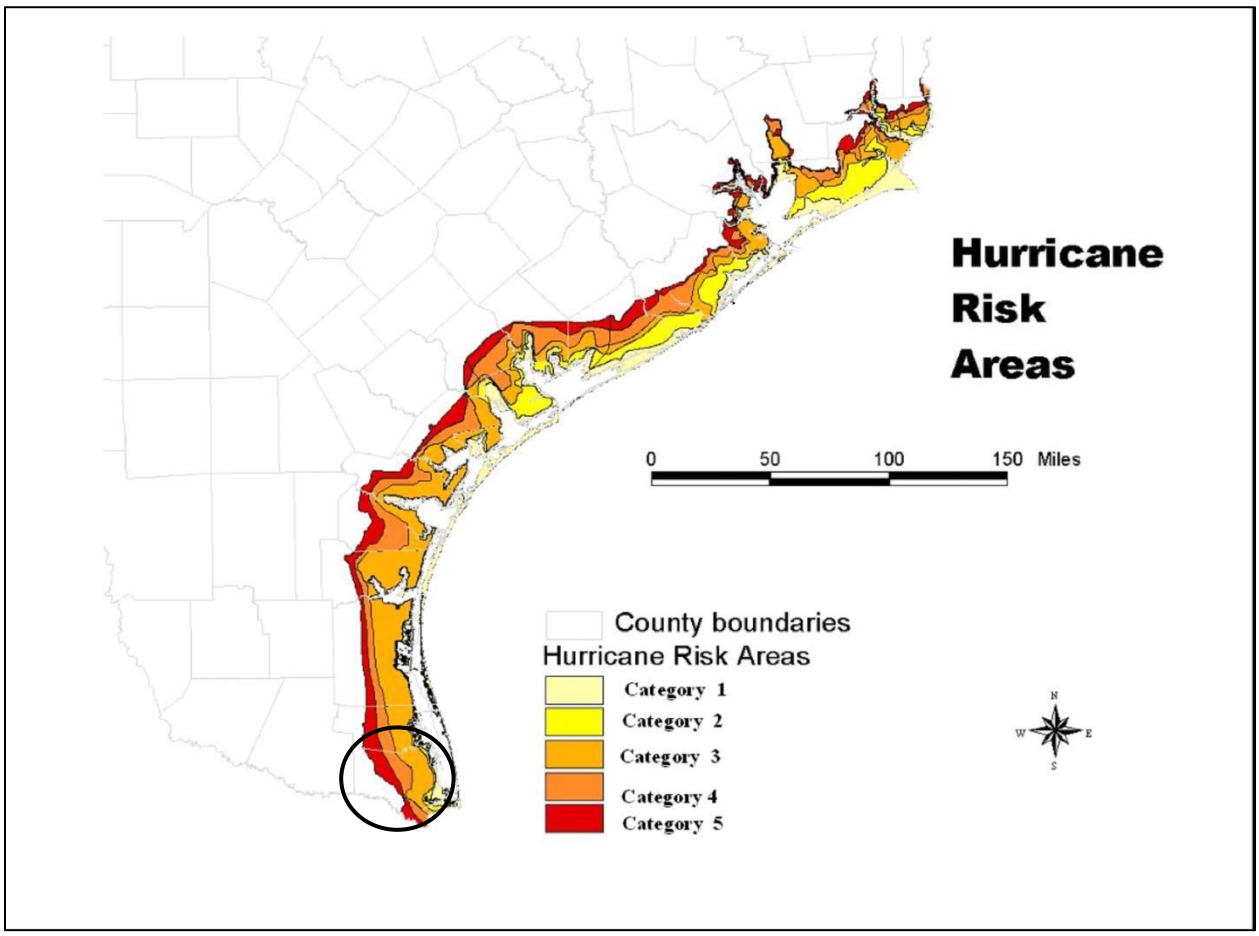
Table 6-1. Extent Scale for Hurricanes

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

CATEGORY	MAXIMUM SUSTAINED WIND SPEED (Mph)	MINIMUM SURFACE PRESSURE (Millibars)	STORM SURGE (Feet)
5	155 +	Less than 920	19 +

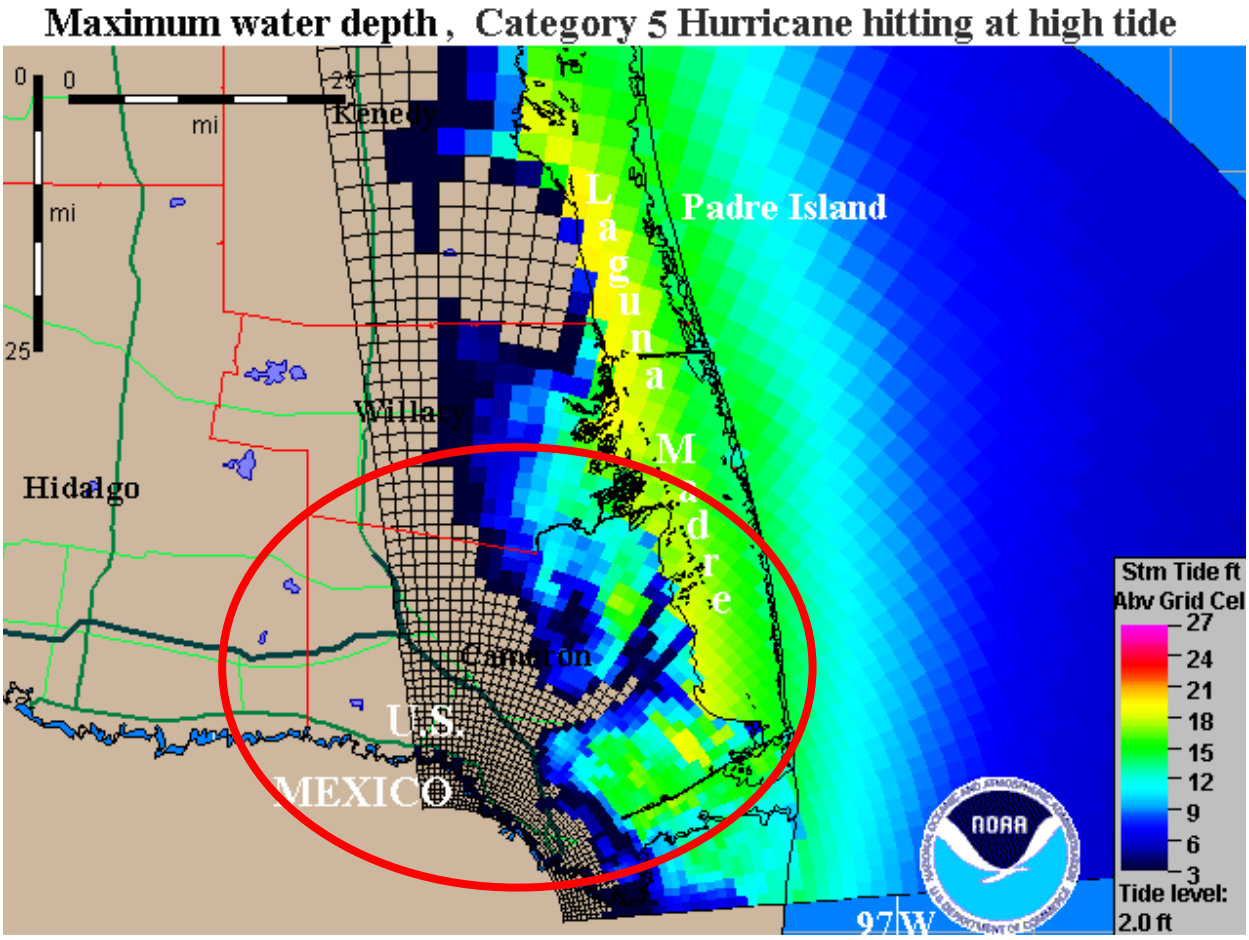
Based on the historical storm tracks for hurricanes and tropical storms, as well as the coastal location of Cameron County, the average extent to be mitigated for is a Category 3 storm. The Cameron County planning area is located in the 110-155 wind zone in terms of average wind speeds that should be mitigated in the event of a hurricane. This data is based on the design wind speeds for a 100-year event. The strongest hurricane to have impacted the Cameron County planning area, including all participating jurisdictions, is a category 4 in 1967. Figure 6-2 displays the location of hurricane risk by storm category along the Gulf Coast.

Figure 6-2. Location of Hurricane Risk along the Texas Coast



The worst-case scenarios of potential extent of a Category 5 hurricane of storm surge in the Cameron County planning area is displayed in Figure 6-3; the Cameron County study area is indicated by the red circle. The map reflects a general geographic analysis that does not consider specific factors such as levee system.

Figure 6-3. Maximum Storm Surge Water Depths, Category 5 Hurricane[1]



The planning area is located along the coast, and therefore all participating jurisdictions have a greater risk, with all land and buildings being vulnerable to all storms, category 1 through 5.

HISTORICAL OCCURRENCES

Previous occurrences include storms that had a direct path through the Cameron County planning area, including the participating jurisdictions, and the additional participating jurisdictions. Table 6-2 below lists the storms that have impacted the Cameron County planning area during the years of 1960-2019.

Table 6-2. Historical Hurricane Events for the Cameron County Planning Area, 1960-2019[2]

JURISDICTION	DATE	NAME	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Countywide	9/8/1961	Hurricane Carla	0	4	$4,340,746	$4,340,746

[1] Source: NOAA SLOSH (Sea, Lake, and Overland Surge from Hurricanes).
[2] Values are reported in 2020 dollars.

JURISDICTION	DATE	NAME	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Countywide	9/16/1963	Hurricane Cindy	0	0	$1,049,758	$104,976
Countywide	9/5/1967	Hurricane Beulah	0	1	$265,103,550	$0
Countywide	6/23/1968	Tropical Storm Candy	0	0	$335,663	$335,663
Countywide	7/31/1970	Hurricane Celia	0	6	$4,357,378	$447,517
Countywide	9/9/1971	Hurricane Fern	0	0	$520,097	$520,097
Countywide	9/14/1971	Hurricane Edith	0	0	$5,565	$5,565
Countywide	9/4/1973	Tropical Storm	0	0	$241,163	$24,116,049
Countywide	7/31/1980	Hurricane Allen	0	0	$16,588,815	$1,658,881
Countywide	11/12/1980	Tropical Storm Jeanne	0	0	$9,746	$0
Countywide	9/16/1988	Hurricane Gilbert	0	0	$278,456	$2,785
Countywide	7/23/2008	Hurricane Dolly	0	2	$923,570,050	$0
Countywide	9/12/2008	Storm Surge/Tide	0	0	$23,871	$0
Countywide	6/30/2010	Storm Surge/Tide	0	0	$176,1775	$0
Countywide	9/6/2010	Tropical Storm Hermine	0	0	$14,142,088	$0
TOTALS				**13**	**$1,262,276,000**	

SIGNIFICANT EVENTS

Tropical Storm Hermine on September 6, 2010

Hermine arrived with frequent gusty feeder band showers followed by relatively calm conditions through the day and early evening of September 6th. Between 9:30 and 10 PM CDT, the action got underway as the central core of Hermine brought a rapid increase in sustained winds and gusts, along with increasingly heavy rainfall. Between 11 PM and 12 AM CDT, the northern doughnut crossed the Rio Grande over lower populated southwest Cameron County. Meanwhile, intense feeder bands east of the center, where some of the strongest winds were sampled, pounded Brownsville with sustained winds of 40 to 55 mph and gusts as high as 69 mph at the Brownsville/SPI International Airport. Between 1 and 1:30 AM, a very intense band would reform around the center, curling from just south of Harlingen to north of Brownsville. This band would cross Harlingen just prior to 2 AM, and produced near hurricane force gusts (72.5 mph) along with brief sustained winds of 59 mph, which damaged a number of roofs, knocked down limbs and

uprooted trees, and wiped out power to more than 14,000 residents, many in the Harlingen/San Benito area. In all, between 46,000 and 50,000 customers in Cameron County were without power during the peak of the storm, including those in the AEP Texas, Brownsville PUB, and Magic Valley Electric Co-op service areas.

After the inner core of Hermine sliced through, winds quickly diminished below tropical storm force from south to north across the county, between 1:30 AM CDT near the river and 2:30 CDT near the Willacy County line. Significant damage included the roof collapsing at two apartment complexes, displacing at least two families. A large part of an industrial building roof collapsed in north Harlingen, and other poorly constructed lightweight roofs were blown off in Brownsville and the Port of Brownsville. Hundreds of medium to large tree limbs fell along the Highway 77 corridor from Brownsville through San Benito and the central and east side of Harlingen. Boaters, particularly Mexican shrimping vessels, did their best to seek refuge in the Port of Brownsville prior to the arrival of the storm. The sharp increase in waves broke as high as the windows of the Harbormaster office. Sixty-four vessels reached the Port, but 5 others became stranded at the coast, including three running aground in Texas and two in Mexico when buoys floated toward the beach and guided the boats toward the rocks. Each boat was able to beach safely, with no human casualties.

Hurricane Dolly on July 23, 2008

The approach of Hurricane Dolly to the barrier shoreline of South Padre Island early on the morning of July 23rd brought sustained tropical storm force winds inland to the east side of Brownsville, including the Port, just before 7:30 AM on the 23rd. Prior rain bands had produced frequent gusts to 40 mph, but the arrival of sustained tropical storm winds was soon followed by wind damage and power outages, particularly during the afternoon. Prior to Dolly's landfall along the Cameron/Willacy County line, the western and southern eyewall intensified. The core of the eyewall traversed northern Cameron County, where impacts were more substantial than in southern Cameron County.

Northern Cameron (Harlingen, San Benito, Rio Hondo): A period of estimated and measured sustained winds between 60 and 70 mph, with frequent gusts to hurricane force (at least 78 mph measured at 2.25 meters), developed around 1 PM and continue through around 5 PM, beginning in northeast Cameron County near Arroyo City and extending west through Las Yescas, Rio Hondo, Harlingen, San Benito, Palm Valley, and La Feria, not only created widespread freshwater flooding, but created notable damage to poorly fastened roofs and some walls, particularly at industrial parks, strip centers, and farm buildings, especially from Harlingen to points east. Otherwise, numerous large limbs, power lines and power poles, highway signs and billboards, were blown down across the area during this time period. As Dolly's center eased slowly from southern Willacy into northern Hidalgo County, the last of the sustained tropical storm force winds began to exit Cameron County from Palm Valley to Santa Rosa and La Feria, just after midnight on the 24th.

Southern Cameron: Along and just north of the Rio Grande, from the Kellers Corner/Brownsville Airport area through Brownsville and to points west, roughly along federal highway 281 through Los Indios out toward the Hidalgo/Cameron County line, conditions were a bit more benign, as the core of the southern and western eyewall generally missed the area. Here, sustained tropical storm force winds persisted from around 8:30 AM until 6 PM, though gusts above 40 mph persisted until near midnight. In this area, sustained wind generally peaked between 45 and 55

mph, with peak gusts just below hurricane force between 11:30 AM and 2 PM. Here, damage was primarily to thousands of tree limbs, hundreds of power lines, and many elevated highway signs and billboards, but structural damage was primarily to unfastened shingles of roofs of moderate to well-constructed buildings, and occasional failures of more poorly constructed roofs at industrial parks and farm buildings.

At the peak of the storm, power was out to just about all of Cameron County, with an estimated 115,000 customers down during the middle of the afternoon. Across northern Cameron County, power recovery took days to more than a week, while many locations in southern Cameron County returned to power within a few days after Dolly's passage.

PROBABILITY OF FUTURE EVENTS

Due to the location on the Gulf Coast, and the previous history of 15 events over a 60 year reporting period for the area, the likelihood or future probability of a tropical storm or hurricane in the Cameron County planning area is likely, meaning an event is probable in the next five 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 Cameron County planning area features multiple mobile or manufactured home parks throughout the planning area, including the City of Harlingen. 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 and unincorporated areas of the county which would also be more vulnerable. The US Census data indicates a total of 17,923 manufactured homes located in the Cameron County planning area (12%), including all the City of Harlingen (Table 6-3). It should be noted that the City of Palm Valley currently does not feature any manufactured homes. Table 6-3A reflects mobile or manufactured home parks throughout the additional participating jurisdictions in Cameron County, as well as single family residential (SFR) within these jurisdictions. In addition, 33.9% (approximately 50,767 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 tornado events.

Table 6-3. Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Cameron County[3]	17,923	50,767
City of Harlingen	2,657	10,939
City of Palm Valley	0	476

Table 6-3A. Additional Participating Jurisdictions Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Town of Indian Lake	374	101
City of La Feria	680	1,081
Town of Laguna Vista	3	258
City of Los Fresnos	211	889
City of Port Isabel	611	1,118
City of Primera	104	507
Town of Rancho Viejo	0	515
City of Rio Hondo	127	419
City of San Benito	1,206	4,265
City of Santa Rosa	27	507
City of South Padre Island	0	1,866

The following critical facilities would be vulnerable to hurricane wind events in each participating jurisdiction, respectively. Table 6-4A represents critical facilities that would be vulnerable to hurricane wind events in each additional participating jurisdiction within the amended Cameron County Hazard Mitigation Plan Update 2021.

Table 6-4. Critical Facilities by Jurisdiction

Jurisdiction	Critical Facilities
Cameron County	1 Airport, 6 Bridges, 2 Detention Centers, 1 EOC, 2 Fire Stations, 2 Heliports, 2 Hospitals, 11 Park, 2 Police Dispatch Facilities, 1 Police Station, 15 Schools, 2 Seaports, 1

[3] County totals includes all incorporated jurisdictions and unincorporated areas.

	Shelter/Government Facility, 1 Space-X Port, 1 Utility Facility, 9 Water District Facilities, 2 Wind Farms
City of Harlingen	2 EOCs/Government Facilities, 4 Police Station, 1 Communications Center, 1 Public Works Facility, 8 Fire Stations, 3 Communication Towers, 5 Evacuation Centers, 1 Helipad, 18 Banks, 133 Churches, 1 School, 11 Parks, 5 Medical Facilities Hospital, 9 Nursing Home, 1 Communication Tower, 1 Communication Switch Box, 1 Constable Office, 1 DPS Station, 1 EMS, 27 Pump Stations, 2 Lift Stations, 5 Government Facilities, 1 Power Company, 1 Power Plant, 1 Power Utility Station, 62 School Facilities (buildings, teaching facilities, warehouses, offices), 1 Sheriff's Office, 1 College Campus, 1 Water Plant, 1 Airport
City of Palm Valley	1 Government Facility, 1 Wastewater Treatment Facility, 2 Lift Stations, 1 Pump Station, 1 Business

Table 6-4A. Additional Participating Jurisdictions Critical Facilities by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Town of Indian Lake	1 City Hall, 2 Lift Stations 1 Police Station
City of La Feria	1 City Hall, 2 Shelter Domes, 1 Fire Station, 1 Fire Substation, 1 Irrigation District, 1 Government Building, 1 Library, 2 Utility Pumps, 16 Lift Stations, 1 Police Station, 2 Public Works Facilities, 9 Schools, 1 Bus Barn, 1 Sewer Plant, 1 Solar Panel Infrastructure, 1 Wastewater Treatment Plant, 1 Water Treatment Facility, 2 Water Towers
Town of Laguna Vista	1 Emergency Operations Center, 1 Fire Station, 1 Library
City of Los Fresnos	1 City Hall, 1 Fire Station, 1 Police Station, 1 VFD, 24 Lift Stations, 2 Water Treatment Plants, 1 Water Treatment Tower
City of Port Isabel	1 City Hall, 1 Emergency Operations Center, 1 EMS Station, 1 Fire Station, 1 Police Station, 1 School, 1 Navigation District, 1 Public Works Department, 1 Substation, 1 Water District, 1 Water Treatment Plant, 1 Boat Basin, 1 Ship Channel, 1 Swing Bridge, 1 Causeway
City of Primera	1 City Hall, 1 Communication Center, 11 Lift Stations, 1 Water Tower
Town of Rancho Viejo	1 Town Hall, 1 EMS Station, 1 Police Station, 1 Utilities Department
City of Rio Hondo	1 City Hall, 1 VFD, 1 Fertilizer/Gas Facility, 8 Lift Stations, 1 Sewer Plant, 1 Water Plant, 1 Park, 1 Dam, 1 Boat Ramp
City of San Benito	1 City Hall, 6 Government Buildings, 2 Fire Stations, 1 Police Station,1 AEP Service Center, 3 Schools, 31 Lift Stations, 3 Substations, 1 Public Works Facility, 6 Utility Facilities, 1 Wastewater Treatment Plant, 1 Wastewater Wetlands, 2 Water Plants, 2 Water Towers

JURISDICTION	CRITICAL FACILITIES
City of Santa Rosa	2 City Halls, 1 Fire Station, 1 Police Station, 1 Lift Station, 1 Public Works Facility, 1 Youth / Respite Center, 1 Wastewater Treatment Plant, 1 Water Treatment Plant
City of South Padre Island	1 Emergency Operations Center, 1 Convention Center, 1 Community Center, 1 Fire Station, 1 Police Station, 2 Government Buildings, 1 Communication Facility, 2 Substations, 1 Transportation Facility, 2 Water Facilities, 1 Water Tower

Storm track data was available for the past 150 years; however, property and crop loss data is only available from 1960 through November 2019. Table 6-5 shows impact or loss estimation for storms impacting the county. Damages are reported on a countywide basis and are not available for each participating jurisdiction. Annual loss estimates were based on the 60 year reporting period for such damages (Table 6-5). The average annual loss estimate for the Cameron County planning area is estimated to be approximately $18,032,514.

Table 6-5. Potential Annualized Losses Cameron County, 1960-2019

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Cameron County	$1,262,276,000	$18,032,514

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 30.6% of the planning area population live below the poverty level (Table 6-6). Table 6-6A reflects the population living below poverty level within the additional participating jurisdictions in Cameron County.

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

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Cameron County	129,056
City of Harlingen	16,624
City of Palm Valley	85

Table 6-6A. Additional Participating Jurisdictions Populations at Greatest Risk by Jurisdiction[5]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Town of Indian Lake	248

[4] US Census Bureau 2018 data for Cameron County
[5] US Census Bureau 2020 data for the additional Participating Jurisdictions of Cameron County.

JURISDICTION	POPULATION BELOW POVERTY LEVEL
City of La Feria	1,819
Town of Laguna Vista	631
City of Los Fresnos	2,245
City of Port Isabel	1,902
City of Primera	1,407
Town of Rancho Viejo	195
City of Rio Hondo	812
City of San Benito	7,860
City of Santa Rosa	1,067
City of South Padre Island	481

The potential severity of impact from a hurricane for the Cameron County planning area, including all participating jurisdictions, is classified as “major”; injuries or illness resulting in permanent disability, complete shutdown of critical facilities and services for two weeks, and more than 25 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.
- Coastal communities may suffer substantial damage, requiring immediate shelter and long term displacement assistance.
- Damaged bridges in and out of Bayview and South Padre Island (Causeway) could prevent or delay emergency response, strand or prevent entry of tourists, commuters, supply delivery, or goods and services for extended periods.
- 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.
- Additional resources may be required for emergency preparedness and response during the summer months due to increases in populations along the coast.

- Significant coastal erosion could be expected with a hurricane for South Padre Island, Laguna Vista and Bayview, potentially contributing to structural damages and damaged infrastructure.
- 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.
- 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.

SECTION 6: HURRICANE WIND

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 7: EXTREME HEAT

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 Cameron County is no exception. The entire planning area, including all participating jurisdictions, 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

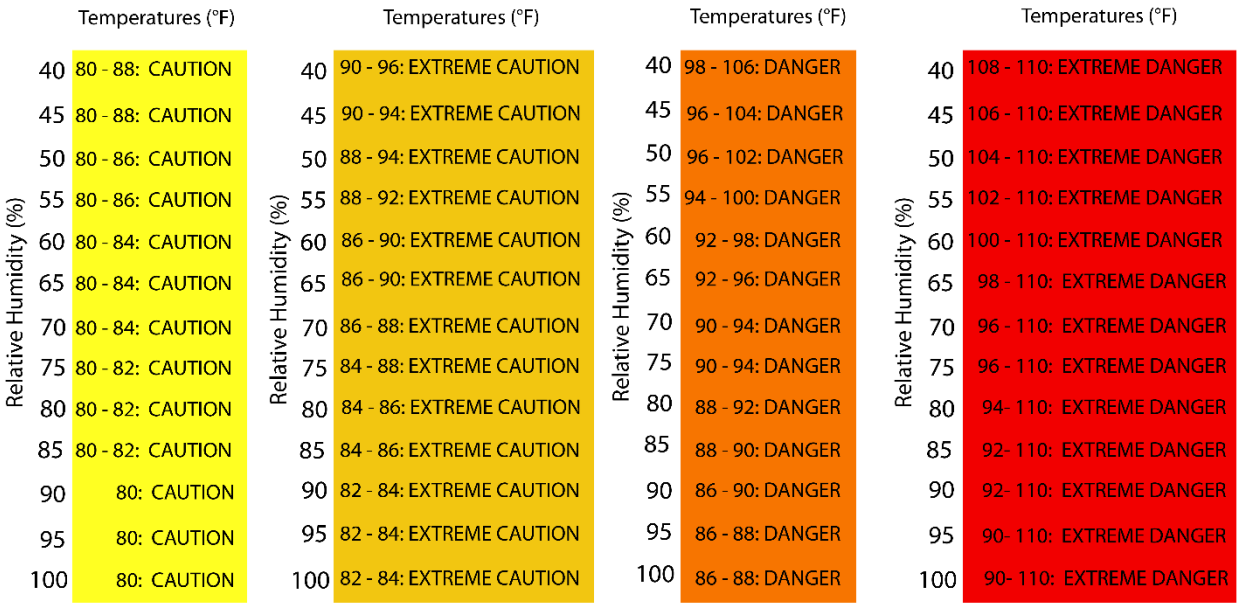
Though a death from extreme heat has not been recorded at a specific location in the County, there is no specific geographic scope to the extreme heat hazard. Extreme heat could occur anywhere within the Cameron County planning area, including all participating jurisdictions.

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 7-1. This index measures how hot it feels outside when humidity is combined with high temperatures.

SECTION 7: EXTREME HEAT

Figure 7-1. Extent Scale for Extreme Summer Heat[1]



Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

The Extent Scale in Figure 7-1 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 7-1.

Table 7-1. Heat Index and Warnings

CATEGORY	HEAT INDEX	POSSIBLE HEAT DISORDERS	WARNING TYPE
Extreme Danger	125°F and higher	Heat stroke or sun stroke likely.	A heat advisory will be issued to warn that the Heat Index may exceed 105°F.
Danger	103 – 124°F	Sunstroke, muscle cramps, and/or heat exhaustion are likely. Heatstroke possible with prolonged exposure and/or physical activity.	
Extreme Caution	90 – 103°F	Sunstroke, muscle cramps, and/or heat exhaustion possible	An Excessive Heat Warning is issued if the Heat Index

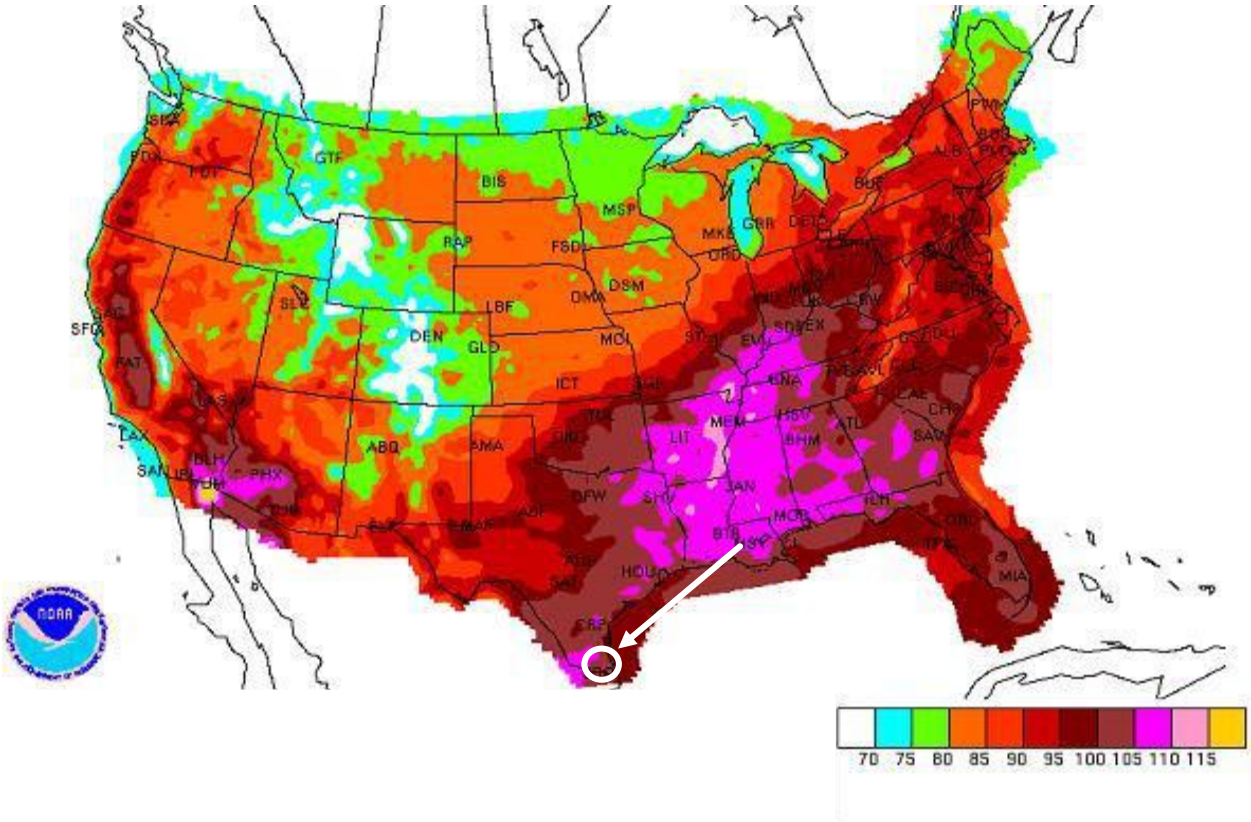
[1] Source: NOAA

CATEGORY	HEAT INDEX	POSSIBLE HEAT DISORDERS	WARNING TYPE
		with prolonged exposure and/or physical activity.	rises above 105°F at least 3 hours during the day or above 80°F at night.
Caution	80 – 90°F	Fatigue is possible with prolonged exposure and/or physical activity.	

Cameron County covers 1,276 square miles, with an elevation range from sea level to sixty feet. Vegetation along the eastern edge of the county is typical of the Gulf Prairie and Marsh vegetation areas, with marsh grasses, bluestems, and grama grasses predominating. The vegetation of the rest of the county is like that of the South Texas Plains area, with small trees, brush, weeds, and grasses found in abundance. Mesquite, live oak, post oak, and shrubs also grow densely in some areas. Between 41 and 50 percent of the county is considered prime farmland. Cameron County's climate is subtropical and sub-humid, with hot summers and mild winters. Temperatures range from an average low of 50° F to 69° in January and from an average high of 75° F to 94° in July. Rainfall averages twenty-six inches per year. Snowfall is exceedingly rare. The growing season lasts 320 days, with the first freeze in mid-December and the last in late January.

Figure 7-2 displays the daily maximum heat index as derived from NOAA based on data compiled from 1838 to 2015. The white circle shows the Cameron County planning area. The pink and brown colors indicate a daily maximum heat index of 100° to 110°F. Cameron County, including all participating jurisdictions could experience extreme heat from 90° to 110°F in the future. The record high temperature for the Cameron County planning area was 117°F in 2018. This is the highest temperature (danger category) the planning area can expect.

Figure 7-2. 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 7-2 depicts historical occurrences of mortality from heat from 1994 to 2004 from the Texas Department of State Health Services and 2005 through November 2019 from the NCEI database.

Table 7-2. 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 Cameron 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

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 Cameron County, there is only five heat waves[3] on record for the Cameron County planning area (Table 7-3). 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

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

data for all participating jurisdictions, including the additional 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 7-3. Historical Extreme Heat Events, 1997-2018

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	5/22/2008	0	0	$0	$0
Cameron County	6/12/2009	1	0	$0	$0
Cameron County	7/6/2009	0	0	$0	$0
Cameron County	7/30/2009	0	0	$0	$0
Cameron County	8/20/2009	0	0	$0	$0
TOTALS		**1**	**0**	**$0**	**$0**

SIGNIFICANT EVENTS

June 12, 2009 – Cameron County/City of Harlingen

A man was found dead in a parking lot near a restaurant in downtown Harlingen during the afternoon of June 12th. Residents believed the man to be homeless, and the suspected cause of death was heat stroke. The man was pronounced dead at 5:50 PM CDT but may have died a few hours earlier during the peak of the heat. Heat index values at the Harlingen/Valley International Airport peaked at 107° during the afternoon, and at 112° at McAllen/Miller Airport in Hidalgo County. It is quite possible that where the fatality occurred, in a more urban setting, heat index values could have been at or very near local advisory criteria, which is 111° during the afternoon.

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.

VULNERABILITY AND IMPACT

There is no defined geographic boundary for extreme heat events. While the entire Cameron County planning area, including all participating jurisdictions, 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 Cameron County planning area is estimated at 12.0% of the total population and children under the age of 5 are estimated at 12.8%, or an estimated total of 89,833[4] potentially vulnerable residents in the planning area based on age. In addition, an estimated 30.6% of the planning area population live below the poverty level (Table 7-4). Table 7-4A reflects the respective information for the additional participating jurisdictions within the amended Cameron County Hazard Mitigation Plan Update 2021.

Table 7-4. Populations at Greater Risk by Jurisdiction

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5	POPULATION BELOW POVERTY LEVEL
Cameron County[5]	54,181	35,652	129,056
City of Harlingen	9,701	6,465	16,624
City of Palm Valley	654	90	85

Table 7-4A. Additional Participating Jurisdictions Populations at Greater Risk by Jurisdiction[6]

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5	POPULATION BELOW POVERTY LEVEL
Town of Indian Lake	126	152	248
City of La Feria	1,495	560	1,819
Town of Laguna Vista	1,112	203	631
City of Los Fresnos	666	850	2,245
City of Port Isabel	1,172	462	1,902
City of Primera	415	604	1,407
Town of Rancho Viejo	523	96	195

[4] U.S. Census Bureau 2018 data for Cameron County

[5] County totals includes all incorporated jurisdictions and unincorporated areas.

[6] US Census Bureau 2020 data for the additional Participating Jurisdictions of Cameron County.

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5	POPULATION BELOW POVERTY LEVEL
City of Rio Hondo	555	172	812
City of San Benito	4,041	1,665	7,860
City of Santa Rosa	288	199	1,067
City of South Padre Island	884	73	481

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. In terms of vulnerability to structures, the impact from extreme heat would be negligible. 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. However, based on the historical fatality in the planning area, the potential impact of extreme heat for the entire Cameron County planning area can be considered “Substantial,” with multiple deaths possible depending on the length and degree of the heat wave. Based on historical records over a 24-year period, annualized property and crop losses for the Cameron County planning area are 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.
- Outdoor activities such as fishing, boating, and camping activities at Laguna Atascosa National Wildlife Preserve, Rio Grande River, and Bahia Grande Tidal Basin may see an increase in injury or illness during extreme heat events.

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 8: THUNDERSTORM WIND

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 Cameron County's planning area, including all participating jurisdictions, as these storms develop randomly and are not confined to any geographic area within the County. It is assumed that the Cameron County planning area is uniformly exposed to the threat of thunderstorms winds.

EXTENT

The extent or magnitude of a thunderstorm wind event is measured by the Beaufort Wind Scale. Table 8-1 describes the different intensities of wind in terms of speed and effects, from calm to violent and destructive.

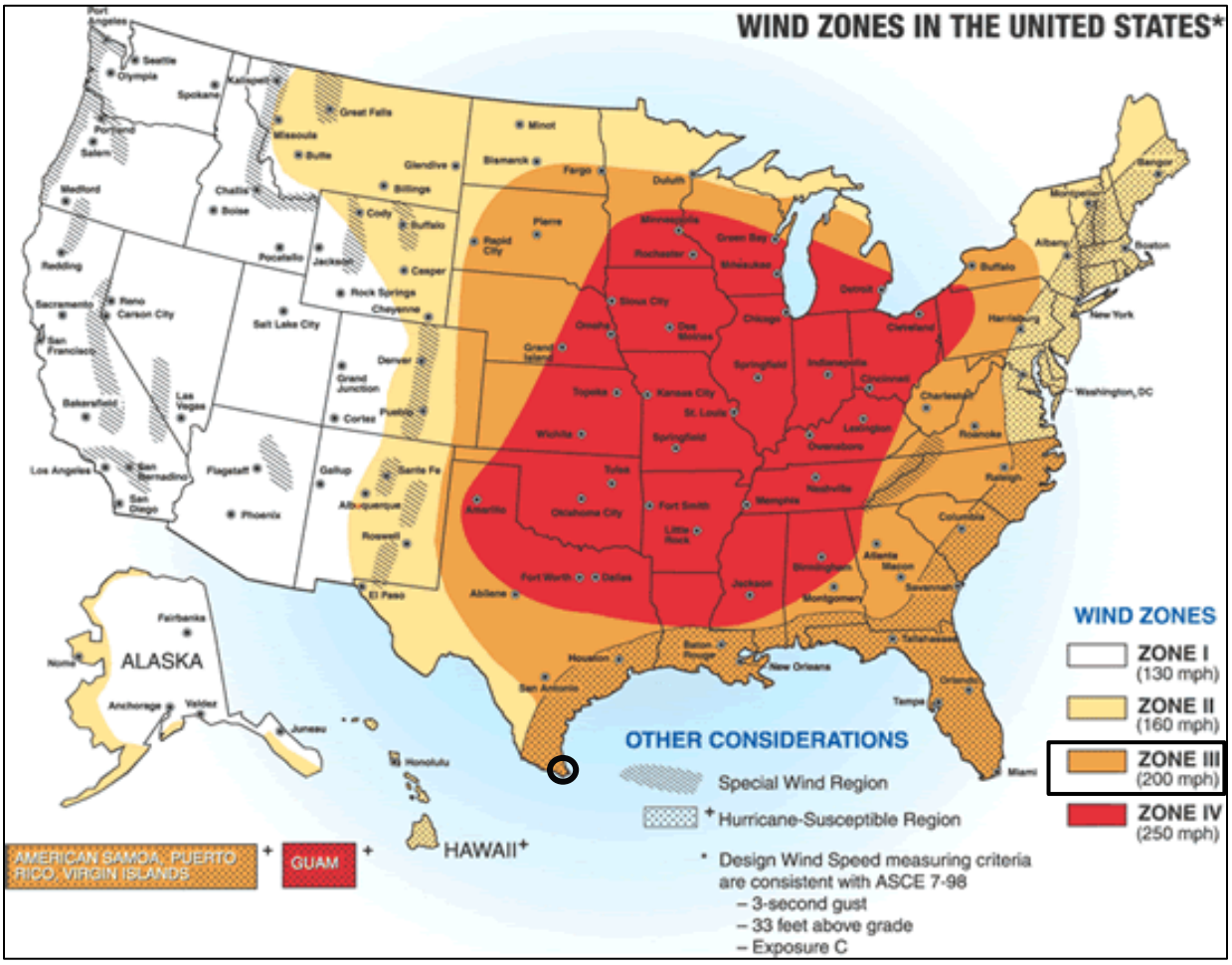
Table 8-1. Beaufort Wind Scale[1]

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 8-1 displays the wind zones as derived from NOAA.

[1] Source: World Meteorological Organization

Figure 8-1. Wind Zones in the United States[2]



On average, the planning area experiences two to three thunderstorm wind events every year. The County is located in Zone III, meaning they can experience winds up to 200 mph. Cameron 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 83 mph. This is the most significant event that can be expected in the future for all participating jurisdictions.

HISTORICAL OCCURRENCES

Tables 8-2, 8-3, and 8-4 depict historical occurrences of thunderstorm wind events for the Cameron County planning area according to the National Centers for Environmental Information (NCEI) data. Since January 1961, 155 thunderstorm wind events are known to have impacted the Cameron County planning area, including all participating jurisdictions, based upon NCEI records. Table 8-3 presents information on known historical events impacting the Cameron County planning area with resulting damages, injuries or fatalities. Table 8-3A presents information on known historical events impacting the additional participating jurisdictions within Cameron County with resulting damages, injuries or fatalities, while Table 8-4A represents a summary of the historical events for these additional participating jurisdictions. It is important to note that high

[2] Cameron County is indicated by the circle.

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 1961 through November 2019 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 2020 dollars.

Historical thunderstorm wind data for the all participating jurisdictions are provided on a County-wide basis per the NCEI database.

Table 8-2. Historical Thunderstorm Wind Events with Reported Damages, 1961-2019

MAXIMUM WIND SPEED RECORDED (MPH)	NUMBER OF REPORTED EVENTS
0-30	38
31-40	5
41-50	28
51-60	54
61-70	19
71-80	6
81-90	0
91-100	1
Unknown	4

Table 8-3. Historical Thunderstorm Wind Events, 1961-2019[3]

JURISDICTION	DATE	TIME	MAGNITUDE (MPH)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	5/14/1992	4:40 PM	0	0	1	$0	$0
Cameron County	3/12/1993	6:05 AM	0	0	0	$89,823	$898
Cameron County	6/13/1994	11:30 AM	0	0	0	$8,715	$872
Cameron County	2/28/1995	3:30 PM	0	0	0	$1,710	$0

[3] Only recorded events with fatalities, injuries or damages are listed. Magnitude is listed when available. Damage values are in 2020 dollars.

SECTION 8: THUNDERSTORM WIND

JURISDICTION	DATE	TIME	MAGNITUDE (MPH)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Harlingen	2/28/1995	3:40 PM	0	0	0	$10,257	$0
Cameron County	4/4/1995	8:30 PM	0	0	0	$8,491	$0
Cameron County	4/4/1995	8:30 PM	0	0	0	$8,491	$0
City of Harlingen	2/1/1998	4:22 PM	Unknown	0	0	$7,967	$0
Cameron County	11/4/1998	3:15 AM	Unknown	0	0	$119,548	$0
Cameron County	5/18/1999	5:15 AM	Unknown	0	0	$3,104	$0
Cameron County	5/2/2000	7:20 PM	100	0	0	$7,521,020	$0
Cameron County	8/19/2003	2:00 AM	50	0	0	$13,975	$0
Cameron County	2/25/2004	1:30 PM	40	0	0	$41,564	$0
Cameron County	7/20/2005	6:00 AM	55	0	0	$99,017	$0
Cameron County	10/31/2005	9:23 PM	60	0	0	$12,950	$0
Cameron County	4/29/2006	12:01 AM	60	0	0	$64,013	$0
Cameron County	12/23/2006	5:30 PM	52	0	0	$12,783	$0
Cameron County	12/23/2006	5:45 PM	52	0	0	$6,392	$0
Cameron County	3/2/2008	12:00 PM	42	0	0	$604	$0
Cameron County	3/17/2008	11:00 AM	41	0	0	$604	$0
Cameron County	5/16/2008	2:50 AM	70	0	0	$59,541	$0
City of Harlingen	5/16/2008	3:00 AM	75	0	0	$238,165	$0
Cameron County	6/24/2008	11:08 AM	50	0	0	$589	$0
Cameron County	5/24/2009	5:00 AM	46	0	0	$12,063	$0
Cameron County	5/27/2009	4:25 PM	52	0	0	$2,413	$0
Cameron County	6/1/2009	2:16 PM	53	0	0	$1,196	$0
Cameron County	10/26/2009	1:50 PM	49	0	0	$1,193	$0
Cameron County	12/24/2009	4:25 AM	42	0	0	$1,195	$0

SECTION 8: THUNDERSTORM WIND

JURISDICTION	DATE	TIME	MAGNITUDE (MPH)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	5/18/2010	8:20 AM	52	0	0	$5,912	$0
Cameron County	5/18/2010	9:05 AM	50	0	0	$11,824	$0
Cameron County	5/18/2010	9:25 AM	56	0	0	$29,560	$0
Cameron County	2/9/2011	1:00 PM	42	0	0	$1,166	$0
Cameron County	11/26/2011	10:00 PM	36	0	0	$2,281	$0
Cameron County	5/15/2012	8:49 PM	48	0	0	$3,368	$0
Cameron County	1/29/2013	12:17 PM	42	0	0	$1,120	$0
Cameron County	4/28/2013	12:19 PM	52	0	0	$2,219	$0
Cameron County	4/28/2013	12:23 PM	56	0	0	$55,470	$0
Cameron County	4/28/2013	12:25 PM	52	0	0	$2,219	$0
Cameron County	11/22/2013	2:40 PM	34	0	0	$3,321	$0
Cameron County	11/22/2013	4:00 PM	33	0	0	$5,534	$0
Cameron County	12/21/2013	5:34 AM	42	0	0	$1,107	$0
Cameron County	12/21/2013	10:58 AM	42	0	0	$5,535	$0
Cameron County	1/24/2014	3:54 AM	42	0	0	$5,514	$0
Cameron County	4/14/2014	2:00 PM	44	0	0	$1,088	$0
Cameron County	4/24/2015	10:20 PM	52	0	0	$2,181	$0
Cameron County	4/24/2015	10:25 PM	52	0	0	$10,903	$0
Cameron County	4/24/2015	10:25 PM	52	0	0	$5,452	$0
Cameron County	5/12/2015	12:25 AM	52	0	0	$1,085	$0
Cameron County	8/17/2015	5:05 PM	52	0	0	$16,237	$0
Cameron County	8/17/2015	5:17 PM	56	0	0	$32,474	$0
Cameron County	1/16/2016	1:00 PM	43	0	0	$5,444	$0
Cameron County	4/18/2016	9:26 PM	43	0	0	$5,391	$0

JURISDICTION	DATE	TIME	MAGNITUDE (MPH)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	4/19/2016	12:35 AM	47	0	0	$216	$0
Cameron County	6/2/2016	6:15 PM	44	0	0	$5,352	$0
Cameron County	6/4/2016	9:33 AM	52	0	0	$2,141	$0
Cameron County	6/5/2017	4:48 PM	52	0	0	$10,531	$0
Cameron County	1/11/2018	7:30 PM	47	0	0	$15,611	$0
Cameron County	8/12/2018	2:17 PM	40	0	0	$511,551	$0
Cameron County	8/12/2018	2:32 PM	45	0	0	$511,551	$0
Cameron County	1/23/2019	4:51 AM	45	0	0	$5,124	$0
Cameron County	4/7/2019	8:15 AM	64	0	0	$10,095	$0
Cameron County	4/7/2019	8:15 AM	64	0	0	$10,095	$0
City of Harlingen	9/10/2019	11:26 AM	47	0	0	$2,009	$0
Cameron County	10/21/2019	1:06 AM	65	0	0	$25,060	$0
Cameron County	10/21/2019	1:24 AM	61	0	0	$2,004,834	$0
TOTALS			**(Max Extent)**	**0**	**1**	**$11,677,957**	**$1,770**

Table 8-3A. Additional Participating Jurisdictions Historical Thunderstorm Wind Events, 1961-2019[4]

JURISDICTION	DATE	TIME	MAGNITUDE (MPH)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of La Feria	6/13/1994	11:30 AM	0	0	0	$9,585	$959
City of Santa Rosa	2/28/1995	3:30 PM	0	0	0	$1,880	$0
City of South Padre Island	4/4/1995	8:30 PM	0	0	0	$9,339	$0
City of Los Fresnos	5/18/1999	5:15 AM	N/A	0	0	$3,414	$0
Town of Laguna Vista	5/2/2000	7:20 PM	100	0	0	$8,271,603	$0

[4] Only recorded events with fatalities, injuries or damages are listed. Magnitude is listed when available. Damage values are in 2021 dollars.

JURISDICTION	DATE	TIME	MAGNITUDE (MPH)	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Port Isabel	10/31/2005	9:23 PM	60	0	0	$14,243	$0
City of San Benito	12/23/2006	5:45 PM	52	0	0	$7,030	$0
City of Santa Rosa	5/16/2008	2:50 AM	70	0	0	$65,483	$0
City of Port Isabel	5/24/2009	5:00 AM	46	0	0	$13,267	$0
City of Santa Rosa	6/1/2009	2:16 PM	53	0	0	$1,315	$0
City of Los Fresnos	10/26/2009	1:50 PM	49	0	0	$1,312	$0
City of Santa Rosa	5/18/2010	8:20 AM	52	0	0	$6,502	$0
City of Port Isabel	5/18/2010	9:25 AM	56	0	0	$32,510	$0
City of San Benito	5/15/2012	8:49 PM	48	0	0	$3,704	$0
Town of Rancho Viejo	4/28/2013	12:19 PM	52	0	0	$2,440	$0
City of San Benito	4/24/2015	10:25 PM	52	0	0	$5,996	$0
City of La Feria	5/12/2015	12:25 AM	52	0	0	$1,193	$0
City of Port Isabel	6/2/2016	6:15 PM	44	0	0	$5,886	$0
Town of Rancho Viejo	6/4/2016	9:33 AM	52	0	0	$2,354	$0
City of Los Fresnos	8/12/2018	2:32 PM	45	0	0	$562,603	$0
City of Santa Rosa	4/7/2019	8:15 AM	64	0	0	$11,102	$0
City of Los Fresnos	10/21/2019	1:06 AM	65	0	0	$27,561	$0
TOTALS			**(Max Extent)**	**0**	**0**	**$9,069,660**	**$959**

Table 8-4. Summary of Historical Thunderstorm Wind Events, 1961-2019

JURISDICTION	NUMBER OF EVENTS	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	146	100	0	1	$11,419,558	$1,770
City of Harlingen	9	75	0	0	$258,399	$0
City of Palm Valley	0	N/A	N/A	N/A	$0	$0
TOTAL LOSSES	**155**	**(Max Extent)**	**0**	**1**	**$11,679,727**	

Table 8-4A. Additional Participating Jurisdictions Summary of Historical Thunderstorm Wind Events, 1961-2019

JURISDICTION	NUMBER OF EVENTS	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Town of Indian Lake	0	N/A	0	0	$0	$0
City of La Feria	5	65	0	0	$10,778	$959
Town of Laguna Vista	2	100	0	0	$8,271,603	$0
City of Los Fresnos	6	65	0	0	$594,890	$0
City of Port Isabel	13	80	0	0	$2,280,156	$0
City of Primera	0	N/A	0	0	$0	$0
Town of Rancho Viejo	2	52	0	0	$4,794	$0
City of Rio Hondo	4	60	0	0	$0	$0
City of San Benito	4	75	0	0	$16,730	$0
City of Santa Rosa	5	70	0	0	$86,282	$0
City of South Padre Island	1	0	0	0	$9,339	$0
TOTAL LOSSES	**42**	**(Max Extent)**	**0**	**0**	**$11,275,531**	

Based on the list of historical thunderstorm wind events for the Cameron County planning area (listed above), including all participating jurisdictions, 26 of the events have occurred since the 2015 Plan. Based on the list of historical thunderstorm wind events for the additional participating jurisdictions within the Cameron County planning area (listed above), 7 events have occurred since the 2015 Plan Update.

SIGNIFICANT EVENTS

October 21, 2019

A cluster of potent thunderstorms developed in northeastern Mexico and moved north into Cameron County early Sunday morning. Within this cluster of storms, a strong linear downburst crossed South Padre Island from 1:24 AM CST to 1:40 AM CST. The South Padre Island Police Department reported downed power lines in between the paralleling Padre Blvd and Laguna Blvd on South Padre Island, and at one point all of South Padre Island had lost power due to 31 transmission poles that were taken down by the wind.

August 12, 2018

Thunderstorm winds of between 45 and 52 mph knocked down several palm fronds and blew unfastened lawn furniture around portions of the City of Los Fresnos to Harlingen. Harlingen/Valley International Airport recorded a wind gust of 52 mph at 2:46 PM CST.

April 28, 2013
A small but potent line of strong to severe thunderstorms dumped torrential rains, produced frequent lightning strikes, and slammed heavy winds across much of the Rio Grande Valley during the afternoon of April 28th. A microburst powered up when it reached Cameron County, and ultimately caused significant damage to two poorly built mobile trailers in northern Los Fresnos. Tin roofs were lifted from the trailers in a colonia neighborhood just east of the intersection of FM 510 and FM 1847 (Arroyo Blvd). Severe water and structural damage occurred at each residence; insulation was peeled from the roofs and some walls had cracked or collapsed. Both structures were uninhabitable and nine persons were displaced. Farther west along FM 510, a power pole was leaning at a 45 degree angle, and a mesquite tree was uprooted near the intersection of FM 803 and Henderson Road, about 4 miles to the southwest of the residential damage.

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 155 events in a 59-year reporting period, and an additional 42 events within the additional participating jurisdictions within the amended Cameron County Hazard Mitigation Plan Update 2021, which provides a probability of two to three events every year. Even though the intensity of thunderstorm wind events is not always damaging for the Cameron 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 Cameron County planning area, including all participating jurisdictions.

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 Cameron County planning area, including all participating jurisdictions, 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 17,923 manufactured homes (approximately 12%) located in the Cameron County planning area, including the City of Harlingen, (Table 8-5). It is noted that the City of Palm Valley does not currently feature any manufactured homes. In addition, 33.9% (approximately 50,767 structures) of the residential structures in the Cameron County planning area were built before 1980. Table 8-5A reflects the data for manufactured homes and residential structures built before 1980 for the additional participating jurisdictions within Cameron

County. 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 8-5. Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Cameron County[5]	17,923	50,767
City of Harlingen	2,657	10.939
City of Palm Valley	0	476

Table 8-5A. Additional Participating Jurisdictions Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Town of Indian Lake	374	101
City of La Feria	680	1,081
Town of Laguna Vista	3	258
City of Los Fresnos	211	889
City of Port Isabel	611	1,118
City of Primera	104	507
Town of Rancho Viejo	0	515
City of Rio Hondo	127	419
City of San Benito	1,206	4,265
City of Santa Rosa	27	507
City of South Padre Island	0	1,866

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 30.6% of the planning area population live below the poverty level (Table 8-6). Table 8-6A reflects the total population living below poverty level for the additional participating jurisdictions in Cameron County for the Plan Update.

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

Table 8-6. Populations at Greatest Risk by Jurisdiction[6]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Cameron County	129.056
City of Harlingen	16,624
City of Palm Valley	85

Table 8-6A. Additional Participating Jurisdictions Populations at Greatest Risk by Jurisdiction[7]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Town of Indian Lake	248
City of La Feria	1,819
Town of Laguna Vista	631
City of Los Fresnos	2,245
City of Port Isabel	1,902
City of Primera	1,407
Town of Rancho Viejo	195
City of Rio Hondo	812
City of San Benito	7,860
City of Santa Rosa	1,067
City of South Padre Island	481

The following critical facilities would be vulnerable to thunderstorm wind events in each participating jurisdiction: Table 8-7A reflects those critical facilities within the additional participating jurisdictions within Cameron County that would be vulnerbale to thunderstorm wind events.

Table 8-7. Critical Facilities at Risk by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Cameron County	1 Airport, 6 Bridges, 2 Detention Centers, 1 EOC, 2 Fire Stations, 2 Heliports, 2 Hospitals, 11 Park, 2 Police Dispatch Facilities, 1 Police Station, 15 Schools, 2 Seaports, 1 Shelter/Government Facility, 1

[6] US Census Bureau 2018 data for Cameron County.

[7] US Census Bureau 2020 data for additional Participating Jurisdictions for Cameron County.

JURISDICTION	CRITICAL FACILITIES
	Space-X Port, 1 Utility Facility, 9 Water District Facilities, 2 Wind Farms
City of Harlingen	2 EOCs/Government Facilities, 4 Police Station, 1 Communications Center, 1 Public Works Facility, 8 Fire Stations, 3 Communication Towers, 5 Evacuation Centers, 1 Helipad, 18 Banks, 133 Churches, 1 School, 11 Parks, 5 Medical Facilities Hospital, 9 Nursing Home, 1 Communication Tower, 1 Communication Switch Box, 1 Constable Office, 1 DPS Station, 1 EMS, 27 Pump Stations, 2 Lift Stations, 5 Government Facilities, 1 Power Company, 1 Power Plant, 1 Power Utility Station, 62 School Facilities (buildings, teaching facilities, warehouses, offices), 1 Sheriff's Office, 1 College Campus, 1 Water Plant, 1 Airport
City of Palm Valley	1 Government Facility, 1 Wastewater Treatment Facility, 2 Lift Stations, 1 Pump Station, 1 Business

Table 8-7A. Additional Participating Jurisdictions Critical Facilities at Risk by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Town of Indian Lake	1 City Hall, 2 Lift Stations 1 Police Station
City of La Feria	1 City Hall, 2 Shelter Domes, 1 Fire Station, 1 Fire Substation, 1 Irrigation District, 1 Government Building, 1 Library, 2 Utility Pumps, 16 Lift Stations, 1 Police Station, 2 Public Works Facilities, 9 Schools, 1 Bus Barn, 1 Sewer Plant, 1 Solar Panel Infrastructure, 1 Wastewater Treatment Plant, 1 Water Treatment Facility, 2 Water Towers
Town of Laguna Vista	1 Emergency Operations Center, 1 Fire Station, 1 Library
City of Los Fresnos	1 City Hall, 1 Fire Station, 1 Police Station, 1 VFD, 24 Lift Stations, 2 Water Treatment Plants, 1 Water Treatment Tower
City of Port Isabel	1 City Hall, 1 Emergency Operations Center, 1 EMS Station, 1 Fire Station, 1 Police Station, 1 School, 1 Navigation District, 1 Public Works Department, 1 Substation, 1 Water District, 1 Water Treatment Plant, 1 Boat Basin, 1 Ship Channel, 1 Swing Bridge, 1 Causeway
City of Primera	1 City Hall, 1 Communication Center, 11 Lift Stations, 1 Water Tower
Town of Rancho Viejo	1 Town Hall, 1 EMS Station, 1 Police Station, 1 Utilities Department
City of Rio Hondo	1 City Hall, 1 VFD, 1 Fertilizer/Gas Facility, 8 Lift Stations, 1 Sewer Plant, 1 Water Plant, 1 Park, 1 Dam, 1 Boat Ramp
City of San Benito	1 City Hall, 6 Government Buildings, 2 Fire Stations, 1 Police Station,1 AEP Service Center, 3 Schools, 31 Lift Stations, 3 Substations, 1 Public Works Facility, 6 Utility Facilities, 1

JURISDICTION	CRITICAL FACILITIES
	Wastewater Treatment Plant, 1 Wastewater Wetlands, 2 Water Plants, 2 Water Towers
City of Santa Rosa	2 City Halls, 1 Fire Station, 1 Police Station, 1 Lift Station, 1 Public Works Facility, 1 Youth / Respite Center, 1 Wastewater Treatment Plant, 1 Water Treatment Plant
City of South Padre Island	1 Emergency Operations Center, 1 Convention Center, 1 Community Center, 1 Fire Station, 1 Police Station, 2 Government Buildings, 1 Communication Facility, 2 Substations, 1 Transportation Facility, 2 Water Facilities, 1 Water Tower

A thunderstorm wind event can also result in traffic disruptions, injuries and in rare cases, fatalities. Impact of thunderstorms winds experienced in the Cameron County planning area has resulted in one injury and no fatalities. Impact of thunderstorm wind events experienced in the Cameron County planning area, including all participating jurisdictions, 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. Within the additional participating jurisdictions in the amended Cameron County Plan Update, all jurisidictions would be "Limited", except for the City of Port Isabel which would be considered "Minor"; indicating that critical facilities would be shut down for more than one week and more than 10 percent of property would be destroyed or damaged. Overall, the average loss estimate (in 2020 dollars) is $11,679,728, having an approximate annual loss estimate of $197,962 (Table 8-8). The average loss estimate (in 2021 dollars) is $169,556.86, having an approximate annual loss estimate of $11,275,531 (Table 8-8A).

Table 8-8. Potential Annualized Losses by Jurisdiction

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Cameron County	$11,421,328	$193,581
City of Harlingen	$258,399	$4,379
City of Palm Valley	$0	$0
Planning Area	**$11,679,727**	**$197,961**

Table 8-8A. Additional Participating Jurisdictions Potential Annualized Losses by Jurisdiction

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Town of Indian Lake	$0	$0
City of La Feria	$11,737	$176.50
Town of Laguna Vista	$8,271,603	$124,385.01
City of Los Fresnos	$594,890	$8,945.71

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
City of Port Isabel	$2,280,156	$34,288.06
City of Primera	$0	$0
Town of Rancho Viejo	$4,794	$72.09
City of Rio Hondo	$0	$0
City of San Benito	$16,730	$251.58
City of Santa Rosa	$86,282	$1,297.47
City of South Padre Island	$9,339	$140.44
Planning Area	**$11,275,531**	**$169,556.86**

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.
- Activities at locations such as Laguna Atascosa National Wildlife Preserve, Rio Grande River and Bahia Grande Tidal Basin. attract tourism including hiking, camping, boating, and fishing throughout the year. A large thunderstorm wind event could impact recreational activities, placing visitors in imminent danger, potentially requiring emergency services or evacuations.
- 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.

SECTION 9: LIGHTNING

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.

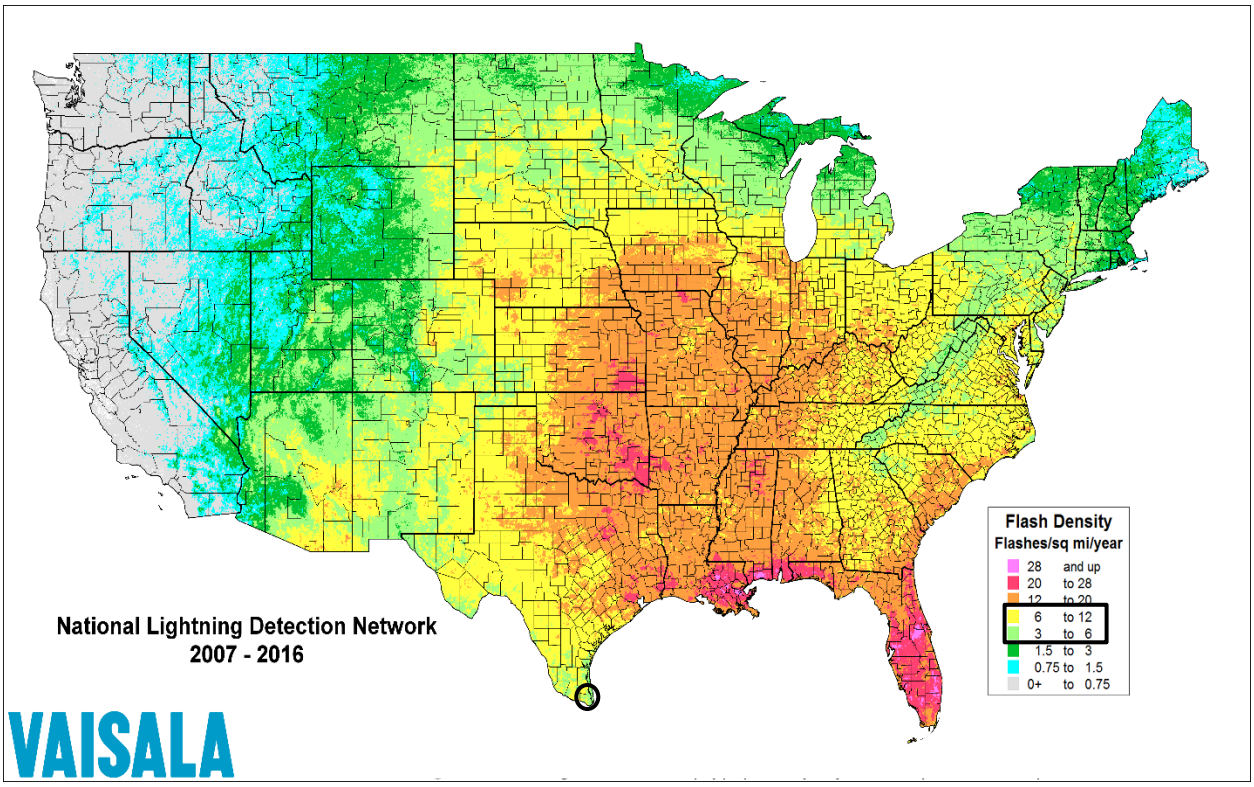
LOCATION

Lightning can strike in any geographic location and is considered a common occurrence in Texas. The Cameron County planning area, including all participating jurisdictions, 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 Cameron 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 2007 and 2016 was 11.3 flashes per square mile. Vaisala's U.S. National Lightning Detection Network lightning flash density map (Figure 9-1) shows a range of three to twelve cloud-to-ground lightning flashes per square mile per year for the entire Cameron County planning area. This rate equates to approximately 3,828 to 15,312 flashes per year for the entire planning area.

Figure 9-1. Lightning Flash Density, 2007-2016



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 9-1).

Table 9-1. 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
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

LAL	CLOUD & STORM DEVELOPMENT	LIGHTNING STRIKES/ 15 MIN
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 (3,828 to 15,312 flashes) and a cloud-to-ground flash density of three to twelve per square mile were divided by the number[1] of thunderstorm events that occur annually in the planning area. Cameron County, including all participating jurisdictions, should expect an average range of three to thirteen 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 2 to 3. The highest being a 3 on the LAL for all participating jurisdictions in the future.

HISTORICAL OCCURRENCES

Since January 1996, there has only been three recorded events for the Cameron County planning area. It is highly likely multiple lightning occurrences have gone unreported before and during the recording period. 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 9-2A reflects historical events that occurred in the additional participating jurisdictions within the amended Cameron County Plan Update 2021.

Table 9-2. Historical Lightning Events, 1996- 2018[2]

JURISDICTION	DATE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	9/29/2011	0	0	$1,705	$0
Cameron County	5/12/2012	0	0	$5,613	$0
Cameron County	5/28/2014	0	0	$10,844	$0
TOTALS		**0**	**0**	**$18,162**	**$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 2020 dollars.

Table 9-2A. Additional Participating Jurisdictions Historical Lightning Events, 1996- 2019[3]

JURISDICTION	DATE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Town of Laguna Vista	5/28/2014	0	0	$11,926	$0
TOTALS		**0**	**0**	**$11,926**	**$0**

Based on the list of historical lightning events for the Cameron County planning area (listed above), including all participating jurisdictions, one event has occurred since the 2015 Plan.

SIGNIFICANT EVENTS

May 28, 2014 – Cameron County

Local law enforcement officials reported two house fires started by lightning strikes in the town of Laguna Vista. Lightning struck a transformer which caused a power outage to approximately 800 residents.

PROBABILITY OF FUTURE EVENTS

Based on historical records and input from the planning team the probability of occurrence for future lightning events in the Cameron County planning area, including all participating jurisdictions, 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 Cameron County planning area is located in an area of the country that experiences three to twelve lightning flashes per square mile per year (approximately 3,828 to 15,312 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 all participating jurisdictions.

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 Cameron County planning area could potentially be impacted and remain vulnerable to possible injury and property loss from lightning strikes. The Cameron County planning area has three reported lightning events per the NCEI, however the county, including all participating jurisdictions, 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 Cameron County, including all participating jurisdictions, 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

[3] Damages are reported in 2021 dollars.

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 Cameron 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 30.6% of the planning area population live below the poverty level (Table 9-3). Table 9-3A reflects the total population of the additional participating jurisdictions in Cameron County that live below the poverty level.

Table 9-3. Populations at Greatest Risk by Jurisdiction[4]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Cameron County	35,652
City of Harlingen	6,465
City of Palm Valley	90

Table 9-3A. Additional Participating Jurisdictions Populations at Greatest Risk by Jurisdiction[5]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Town of Indian Lake	248
City of La Feria	1,819
Town of Laguna Vista	631
City of Los Fresnos	2,245
City of Port Isabel	1,902
City of Primera	1,407
Town of Rancho Viejo	195
City of Rio Hondo	812
City of San Benito	7,860
City of Santa Rosa	1,067

[4] US Census Bureau 2018 data for Cameron County

[5] US Census Bureau 2020 data for the additional Participating Jurisdictions of Cameron County.

JURISDICTION	POPULATION BELOW POVERTY LEVEL
City of South Padre Island	481

The following critical facilities would be vulnerable to lightning events in each participating jurisdiction, where Table 9-4A reflects those facilities that are vulnerable in the additional participating jurisdictions of the amended Cameron County Plan Update 2021:

Table 9-4. Critical Facilities at Risk by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Cameron County	1 Airport, 6 Bridges, 2 Detention Centers, 1 EOC, 2 Fire Stations, 2 Heliports, 2 Hospitals, 11 Park, 2 Police Dispatch Facilities, 1 Police Station, 15 Schools, 2 Seaports, 1 Shelter/Government Facility, 1 Space-X Port, 1 Utility Facility, 9 Water District Facilities, 2 Wind Farms
City of Harlingen	2 EOCs/Government Facilities, 4 Police Station, 1 Communications Center, 1 Public Works Facility, 8 Fire Stations, 3 Communication Towers, 5 Evacuation Centers, 1 Helipad, 18 Banks, 133 Churches, 1 School, 11 Parks, 5 Medical Facilities Hospital, 9 Nursing Home, 1 Communication Tower, 1 Communication Switch Box, 1 Constable Office, 1 DPS Station, 1 EMS, 27 Pump Stations, 2 Lift Stations, 5 Government Facilities, 1 Power Company, 1 Power Plant, 1 Power Utility Station, 62 School Facilities (buildings, teaching facilities, warehouses, offices), 1 Sheriff's Office, 1 College Campus, 1 Water Plant, 1 Airport
City of Palm Valley	1 Government Facility, 1 Wastewater Treatment Facility, 2 Lift Stations, 1 Pump Station, 1 Business

Table 9-4A. Additional Participating Jurisdictions Critical Facilities at Risk by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Town of Indian Lake	1 City Hall, 2 Lift Stations 1 Police Station
City of La Feria	1 City Hall, 2 Shelter Domes, 1 Fire Station, 1 Fire Substation, 1 Irrigation District, 1 Government Building, 1 Library, 2 Utility Pumps, 16 Lift Stations, 1 Police Station, 2 Public Works Facilities, 9 Schools, 1 Bus Barn, 1 Sewer Plant, 1 Solar Panel Infrastructure, 1 Wastewater Treatment Plant, 1 Water Treatment Facility, 2 Water Towers
Town of Laguna Vista	1 Emergency Operations Center, 1 Fire Station, 1 Library
City of Los Fresnos	1 City Hall, 1 Fire Station, 1 Police Station, 1 VFD, 24 Lift Stations, 2 Water Treatment Plants, 1 Water Treatment Tower
City of Port Isabel	1 City Hall, 1 Emergency Operations Center, 1 EMS Station, 1 Fire Station, 1 Police Station, 1 School, 1 Navigation District, 1

JURISDICTION	CRITICAL FACILITIES
	Public Works Department, 1 Substation, 1 Water District, 1 Water Treatment Plant, 1 Boat Basin, 1 Ship Channel, 1 Swing Bridge, 1 Causeway
City of Primera	1 City Hall, 1 Communication Center, 11 Lift Stations, 1 Water Tower
Town of Rancho Viejo	1 Town Hall, 1 EMS Station, 1 Police Station, 1 Utilities Department
City of Rio Hondo	1 City Hall, 1 VFD, 1 Fertilizer/Gas Facility, 8 Lift Stations, 1 Sewer Plant, 1 Water Plant, 1 Park, 1 Dam, 1 Boat Ramp
City of San Benito	1 City Hall, 6 Government Buildings, 2 Fire Stations, 1 Police Station,1 AEP Service Center, 3 Schools, 31 Lift Stations, 3 Substations, 1 Public Works Facility, 6 Utility Facilities, 1 Wastewater Treatment Plant, 1 Wastewater Wetlands, 2 Water Plants, 2 Water Towers
City of Santa Rosa	2 City Halls, 1 Fire Station, 1 Police Station, 1 Lift Station, 1 Public Works Facility, 1 Youth / Respite Center, 1 Wastewater Treatment Plant, 1 Water Treatment Plant
City of South Padre Island	1 Emergency Operations Center, 1 Convention Center, 1 Community Center, 1 Fire Station, 1 Police Station, 2 Government Buildings, 1 Communication Facility, 2 Substations, 1 Transportation Facility, 2 Water Facilities, 1 Water Tower

Impact of lightning experienced in the Cameron County planning area has resulted in no injuries or fatalities. Impact of lightning events experienced in the Cameron County planning area, including all participating jurisdictions, and those additional participating jurisdictions within the amended Plan Update, would be “Limited,” and injuries and illnesses would be treatable with first aid. The quality of life lost would be minor, and facilities would be shut down for 24 hours or less. Overall, the average loss estimate for Cameron County, including all participating jurisdictions, is negligible.

Table 9-5. Potential Annualized Losses by Jurisdiction[6]

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATE
Cameron County	$18,162	$757
City of Harlingen	$0	$0
City of Palm Valley	$0	$0
PLANNING AREA	**$18,162**	**$757**

[6] Damage values are in 2020 dollars.

Table 9-5A. Additional Participating Jurisdictions Potential Annualized Losses by Jurisdiction

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATE
Town of Laguna Vista	$11,926	$467.69
ADDITIONAL PARTICIPATING JURISDICTIONS	**$11,926**	**$467.69**

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.

SECTION 10: DROUGHT

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 10-1 presents definitions for these different types of drought.

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 10-1. 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 Cameron 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 severe drought conditions throughout the county (Figure 10-1). However, the planning area has experienced a range of conditions from normal to exceptional drought conditions over the last ten years (Figure 10-2). There is no distinct geographic boundary to drought; therefore, it can occur throughout the Cameron County planning area equally, including all participating jurisdictions.

Figure 10-1. U.S. Drought Monitor, May 2020

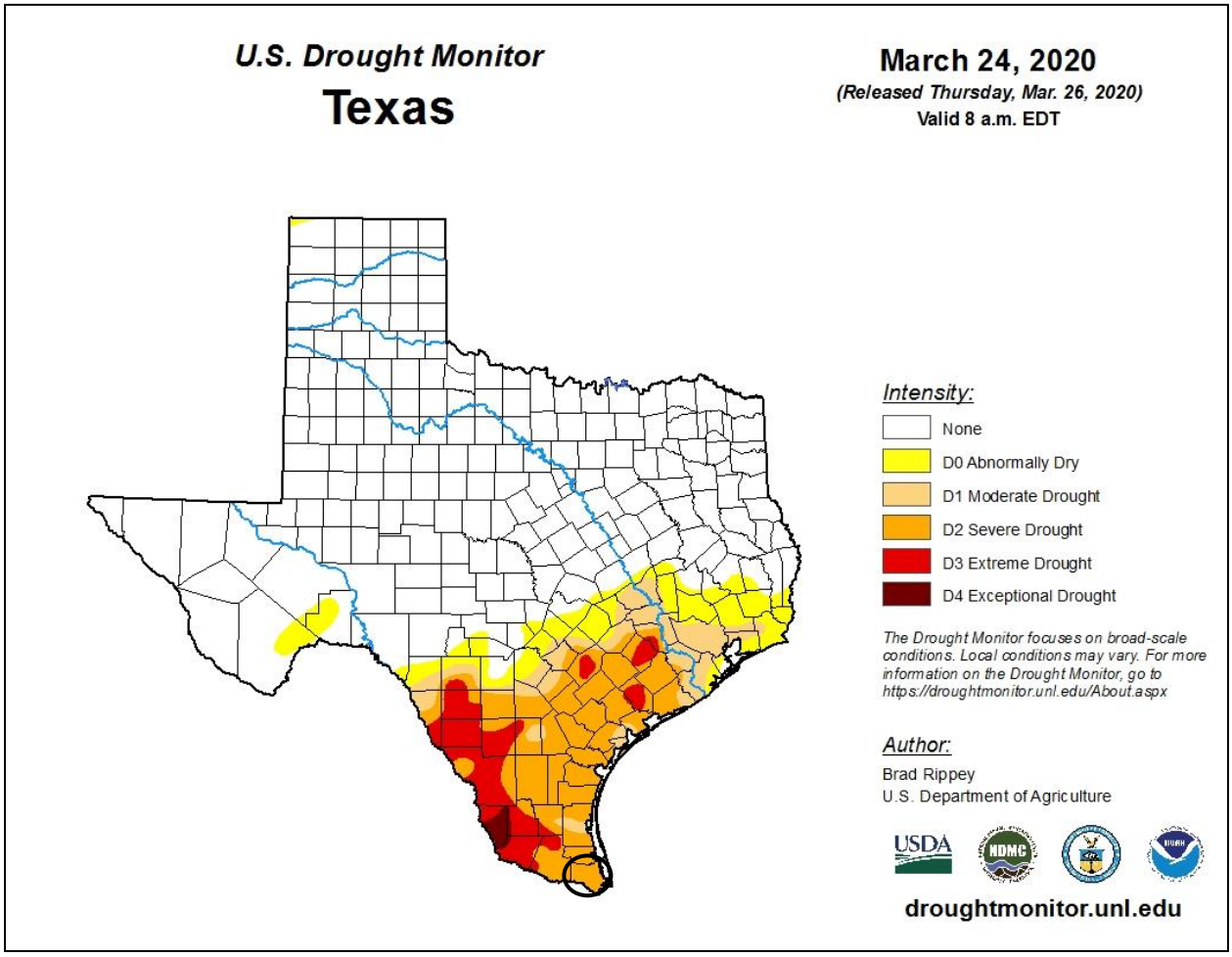
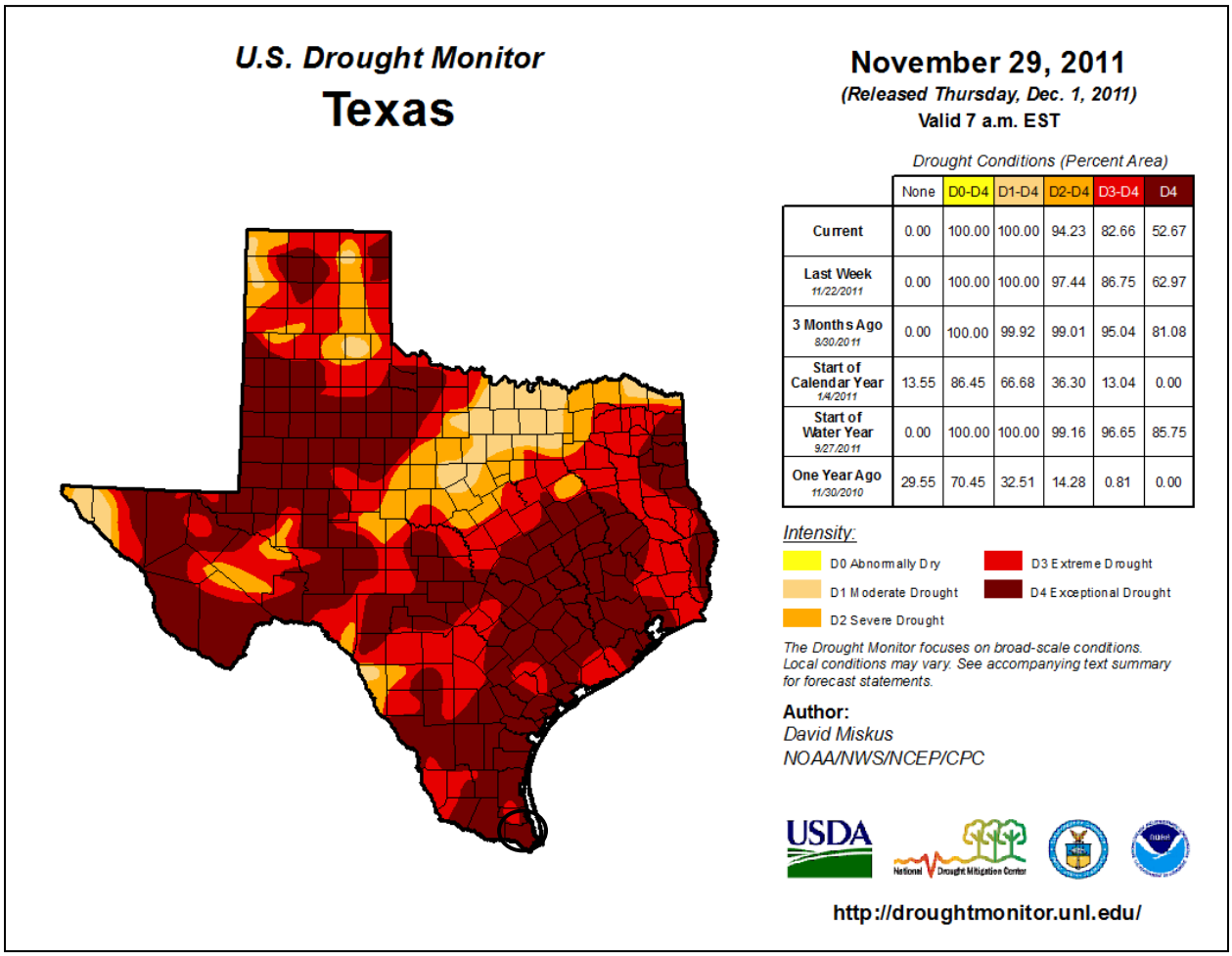


Figure 10-2. U.S. Drought Monitor, November 2011



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. He hydrological impacts of drought (e.g., reservoir levels, groundwater levels, etc.) take longer to develop. Table 10-2 depicts magnitude of drought, while Table 10-3 describes the classification descriptions.

Table 10-2. 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 10-3. 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.

Based on the historical occurrences for drought and the location of the Cameron County planning area, including all participating jurisdictions, 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.

[2] Source: National Drought Mitigation Center

HISTORICAL OCCURRENCES

The Cameron County planning area may typically experience a severe drought. Table 10-4 lists historical events that have occurred in the Cameron County planning area as reported in the National Centers for Environmental Information (NCEI). Historical events with reported damages, injuries, or fatalities are shown in Table 10-5. A total of 191 reported historical drought events impacted the Cameron County planning area between 1996 through November 2019 (Summary Table 10-6).

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, including the additional participating jurisdictions, in the Cameron County planning area are provided on a county-wide basis per the NCEI database.

Table 10-4. Historical Drought Years, 1996-2019[3]

DROUGHT YEAR
1996
2000
2000-2001
2001-2002
2002
2003
2008[4]
2009
2011-2013
2014
2016
2017
2018
14 unique events

[3] Historical data is reported from January 1996 through November 2019.

[4] Two unique events were reported in this year.

Table 10-5. Historical Drought Events, 1996-2019[5]

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	1/1/2001	0	0	$0	$14,555,988
Cameron County	8/18/2009	0	0	$0	$24,741,235
Cameron County	6/1/2011	0	0	$0	$2,091,453
Cameron County	8/23/2011	0	0	$0	$5,295,041
TOTALS		**0**	**0**	**$0**	**$46,683,717**

Table 10-6. Historical Drought Events Summary, 1996-2019

JURISDICTION	NUMBER of EVENTS	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	191	0	0	$0	$46,683,717

Based on the historical drought events for the Cameron County planning area, including all participating jurisdictions, 3 of the unique events have occurred since the 2015 Plan.

SIGNIFICANT EVENTS

Drought - May 2017

Drought conditions intensified across southern Cameron County as the area continued to miss out on rainfall. Rainfall the last week of May, allowed for some slight improvement to D1 conditions.

Drought - March 2011- December 2013

Starting in March 2011 with high temperatures in the 80-90's Cameron County experienced D2 Conditions. In the summer of 2011 drought conditions worsened to D4. Many crops were damaged during the season. As the year progressed it changed between D2 and D3 entering the year 2012 in D3 drought status. Drought conditions improved with a few thunderstorms that came across in the late spring bringing a D2 to the area. This went into July that allowed some rain to bring the status to D1 in summer of 2012. However, that was short lived and the last several months of the 2012 year created D2 and D3 drought impacts. The new year of 2013 experienced some rain bringing the drought to a steady D2 for a month in January. However, early Spring brought a worsened drought to the area with very little rain (D4 conditions). For the summer of 2013 the D4 was alleviated on and off with some rain bringing the drought impact to D3. Towards the end of 2013 the drought seemed to come to a close with the index dropping to D1.

PROBABILITY OF FUTURE EVENTS

Based on available records of historic events, there have been fourteen extended time periods of drought (ranging in length from approximately 30 days to over 270 days) within a 24-year reporting

[5] Only historical events with reported injuries, fatalities or damages are listed. Values are reported in 2020 dollars.

period, which provides a probability of one event every one to two years. This frequency supports a highly likely probability of future events. All participating jurisdiction events are included under the County.

VULNERABILITY AND IMPACT

Loss estimates were based on 24 years of statistical data from the NCEI. A drought event frequency-impact was then developed to determine an impact profile on agriculture products and estimate potential losses due to drought in the area. Table 10-7 shows annualized exposure.

Table 10-7. Potential Annualized Losses for Cameron County

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Cameron County	$46,683,717	$1,945,155

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 Cameron County planning area, including all participating jurisdictions. 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 Cameron County planning area is estimated at 12.8% of the total population, and children under the age of 5 are estimated at 8.5% or an estimated total of 88,833[6] potentially vulnerable residents in the planning area based on age. In addition, an estimated 31.2% of the planning area population live below the poverty level (Table 10-8) which may contribute to overall health impacts of a drought. Table 10-8A represents those populations which may be vulnerable to a drought event within the additional participating jurisdictions within the amended Cameron County Hazard Mitigation Plan Update 2021.

Table 10-8. Populations at Greater Risk by Jurisdiction

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5	POPULATION BELOW POVERTY LEVEL
Cameron County[7]	54,181	35,652	129,056

[6] US Census Bureau 2018 data for Cameron County

[7] County totals includes all incorporated jurisdictions and unincorporated areas.

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5	POPULATION BELOW POVERTY LEVEL
City of Harlingen	9,701	6,465	16,624
City of Palm Valley	654	90	85

Table 10-8A. Additional Participating Jurisdictions Populations at Greater Risk by Jurisdiction[8]

JURISDICTION	POPULATION 65 AND OLDER	POPULATION UNDER 5	POPULATION BELOW POVERTY LEVEL
Town of Indian Lake	126	152	248
City of La Feria	1,495	560	1,819
Town of Laguna Vista	1,112	203	631
City of Los Fresnos	666	850	2,245
City of Port Isabel	1,172	462	1,902
City of Primera	415	604	1,407
Town of Rancho Viejo	523	96	195
City of Rio Hondo	555	172	812
City of San Benito	4,041	1,665	7,860
City of Santa Rosa	288	199	1,067
City of South Padre Island	884	73	481

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 Cameron County planning area, including all participating jurisdictions, 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

[8] US Census Bureau 2020 data for the additional Participating Jurisdictions of Cameron County.

for 24 hours or less, and less than 10% of property is destroyed or with major damage. Annualized loss over the 24-year reporting period in Cameron County is estimated to be $1,945,155.

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 10-9 lists the drought impacts to Cameron County from 2005 to 2019 based on reports received by the Drought Impact Reporter.

Table 10-9. Drought Impacts, 2005-2019

DROUGHT IMPACTS 2005-2019	
Agriculture	94
Business & Industry	1
Energy	1
Fire	23
Plants & Wildlife	59
Relief, Response & Restrictions	29
Society & Public Health	8
Tourism & Recreation	1
Water Supply & Quality	54

Drought has the potential to impact people in the Cameron 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 11: TORNADO

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 11-1. 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 Cameron County planning area including all participating jurisdictions are uniformly exposed to tornado activity. The entire Cameron County planning area is located in Wind Zone III (Figure 11-1), where tornado winds can be as high as 200 mph.

Figure 11-1. 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] Cameron County is indicated by the star.

Table 11-2. 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 11: TORNADO

Tornado magnitudes prior to 2005 were determined using the traditional version of the Fujita Scale (Table 11-2). Since February 2007, the Fujita Scale has been replaced by the Enhanced Fujita Scale (Table 11-3), 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 11-3. 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 areas location in Wind Zone III, the planning area could experience anywhere from an EF0 to EF5 depending on the wind speed.

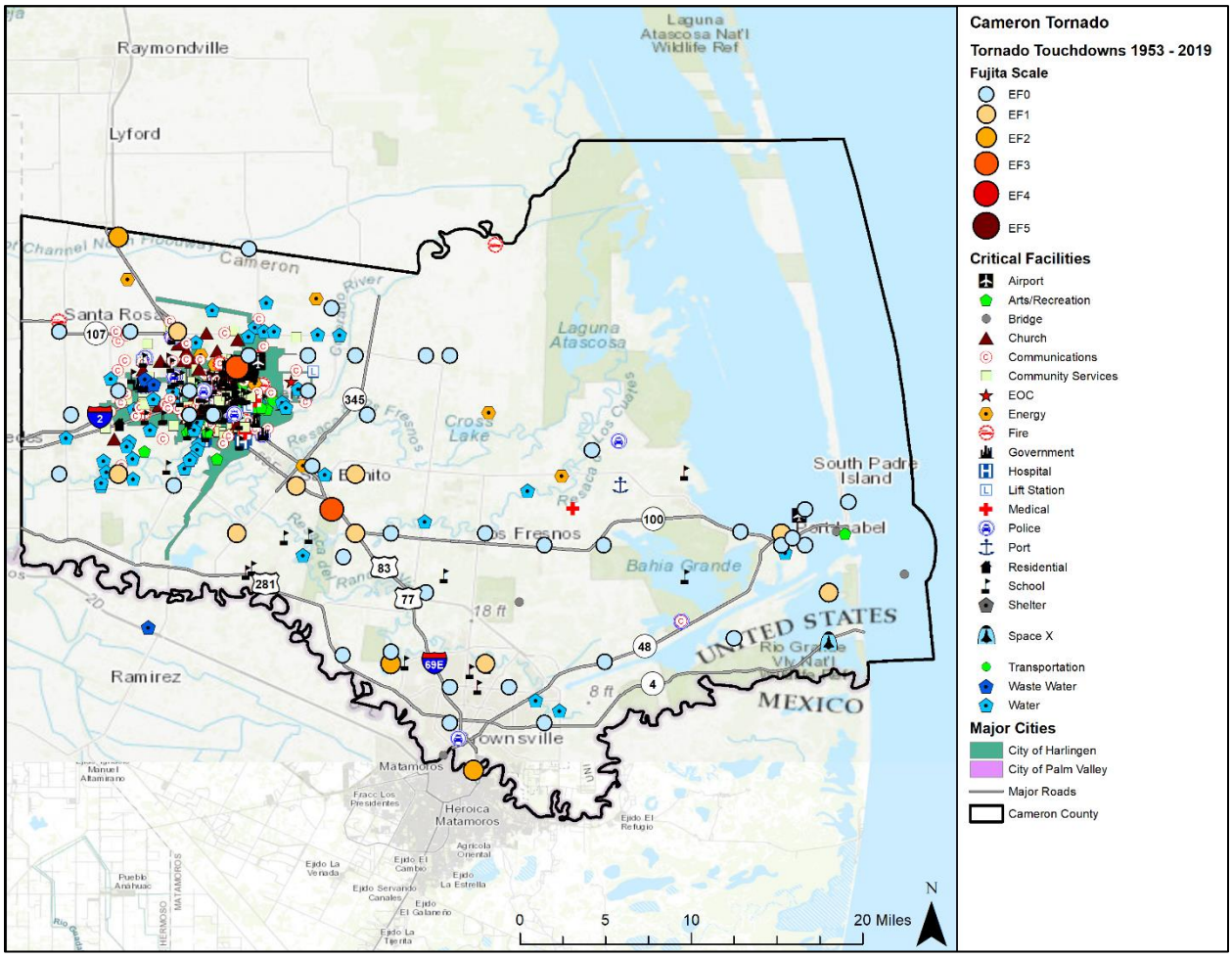
The events in Cameron County (converted from the Fujita Scale) have been between EF0 and EF5 (Table 11-4). Table 11-4A shows the historical events for the additional participating jurisdictions within the amended Cameron County Plan Update 2021. Therefore, the range of intensity that the Cameron County planning area, including all participating jurisdictions, 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 would be an 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 and participating jurisdictions is provided within a jurisdiction-wide basis per the NCEI database.

Figure 11-2 identifies the locations of previous occurrences in the Cameron County planning area from 1953 through November 2019, while Figure 11-2A reflects the location of the previous occurs within the additional participating jurisdiction within the Amended Plan Update. A total of 63 events have been recorded by the Storm Prediction Center (NOAA) and NCEI databases for the Cameron County planning area, including all participating jurisdictions. A total of 12 events have been recorded for the additional participating jurisdictions within Cameron County.

Figure 11-2. Spatial Historical Tornado Events, 1953-2019[3]



[3] Source: NOAA Records

Figure 11-2A. Spatial Historical Tornado Events, 1953-2019

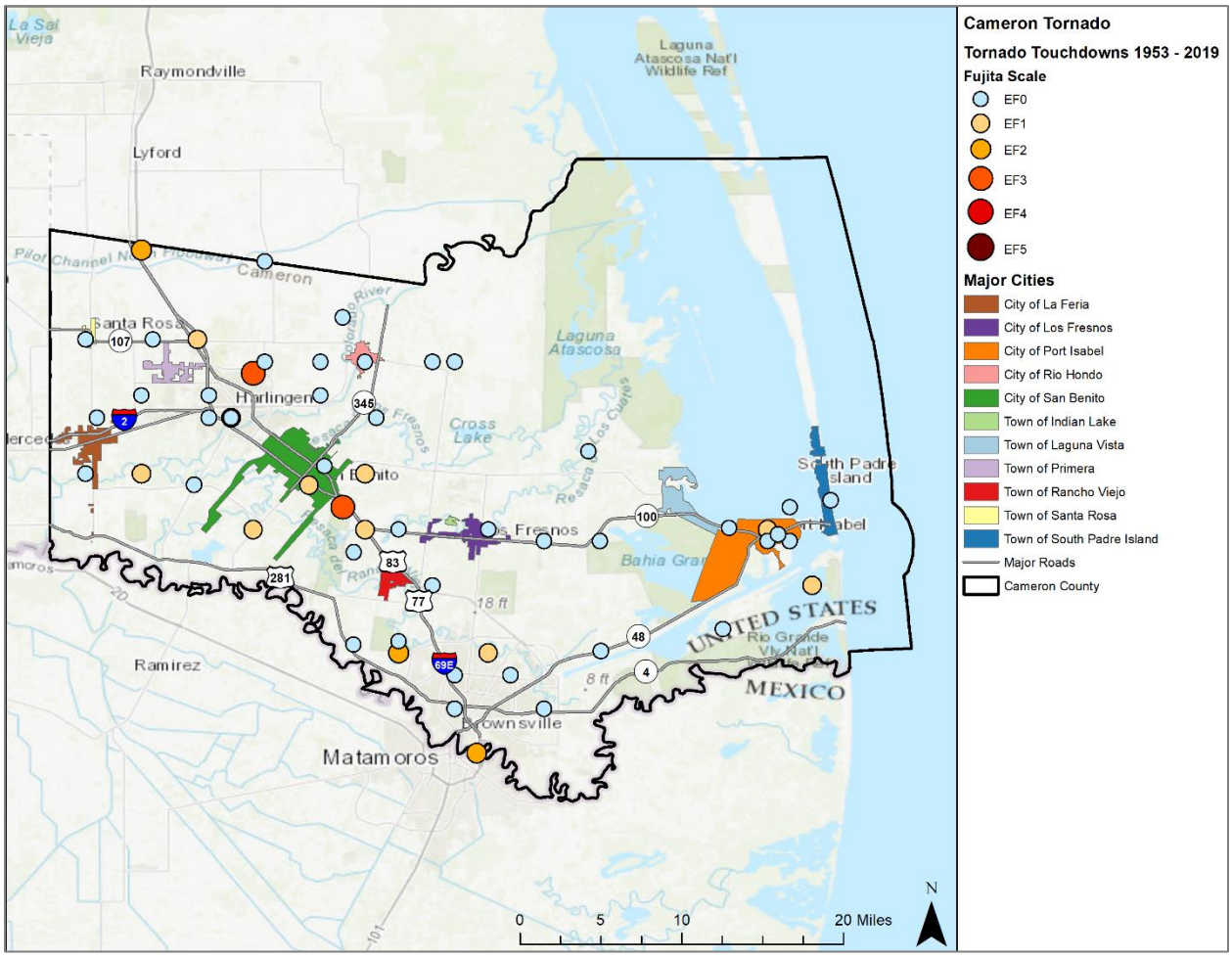


Table 11-4. Historical Tornado Events, 1953-2019[4]

JURISDICTION	DATE	TIME	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	7/15/1953	1:30 PM	F1	0	0	$2,406	$0
Cameron County	2/16/1957	1:30 PM	F0	0	0	$2,328	$0
Cameron County	5/12/1969	6:00 PM	F3	0	0	$177,178	$0
Cameron County	5/12/1969	8:30 PM	F2	0	0	$177,178	$0
Cameron County	5/12/1969	9:00 PM	F3	0	0	$177,178	$0
Cameron County	5/13/1969	1:30 AM	F1	0	0	$1,772	$0

[4] Only recorded events with fatalities, injuries or damages are listed. Magnitude is listed when available. Damage values are in 2020 dollars.

SECTION 11: TORNADO

JURISDICTION	DATE	TIME	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	5/24/1970	6:23 PM	F2	0	0	$167,080	$0
Cameron County	8/24/1976	1:00 PM	F0	0	0	$11,236	$0
Cameron County	4/16/1977	6:25 AM	F1	0	0	$107,488	$0
Cameron County	4/21/1977	2:15 PM	F1	0	0	$1,074,879	$0
Cameron County	8/9/1980	3:45 AM	F2	0	0	$7,742,227	$0
Cameron County	11/6/1983	11:30 AM	F0	0	0	$63,728	$0
Cameron County	11/6/1983	11:50 AM	F0	0	0	$63,728	$0
Cameron County	9/16/1988	12:30 PM	F0	0	0	$538,337	$0
Cameron County	9/16/1988	1:00 PM	F0	0	0	$538,337	$0
Cameron County	9/16/1988	2:00 PM	F1	0	0	$5,383,368	$0
Cameron County	11/17/1989	2:50 PM	F0	0	0	$51,225	$0
Cameron County	4/29/1991	7:03 AM	F0	0	0	$4,770	$0
Cameron County	4/4/1997	3:25 AM	F1	0	0	$72,464	$0
Cameron County	11/4/1998	3:25 AM	F0	0	0	$31,460	$0
Cameron County	4/26/1999	4:35 PM	F0	0	0	$1	$3,104
Cameron County	5/29/2002	7:17 PM	F0	0	0	$14,348	$0
Cameron County	7/20/2005	6:35 AM	F0	0	0	$39,607	$0
Cameron County	11/7/2008	12:10 PM	EF0	0	0	$1,214	$0
Cameron County	6/30/2010	9:10 AM	EF0	0	0	$4,734	$0
Cameron County	6/30/2010	9:35 AM	EF0	0	0	$11,835	$0
Cameron County	5/11/2012	2:15 AM	EF0	0	0	$16,838	$0
Cameron County	7/26/2019	2:15 PM	EF0	0	0	$503	$0
TOTALS			**(Max Extent)**	**0**	**2**	**$16,477,445**	**$3,104**

Table 11-4A. Additional Participating Jurisdictions Historical Tornado Events, 1953-2019[5]

JURISDICTION	DATE	TIME	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Los Fresnos	11/4/1998	11:05 AM	F0	0	0	$34,600	$0
City of Rio Hondo	5/29/2002	7:17 PM	F0	0	0	$15,780	$0
City of Rio Hondo	7/20/2005	6:35 AM	F0	0	0	$43,559	$0
City of Port Isabel	6/30/2010	9:10 AM	F0	0	0	$5,207	$0
City of San Benito	5/11/2012	2:15 AM	F0	0	0	$18,518	$0
City of Port Isabel	7/26/2019	2:15 PM	F0	0	0	$553	$0
TOTALS			**(Max Extent)**	**0**	**0**	**$118,217**	**$0**

Table 11-5. Summary of Historical Events, 1953-2018[6]

JURISDICTION	Number of Events	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	57	F3	0	0	$16,477,445	$3,104
City of Harlingen	6	F0	0	0	$0	$0
City of Palm Valley	0	N/A	N/A	N/A	$0	$0
TOTAL LOSSES	**63**	**(Max Extent)**	**0**	**2**	**$16,480,550**	

Table 11-5A. Additional Participating Jurisdictions Summary of Historical Events, 1953-2019[7]

JURISDICTION	Number of Events	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Town of Indian Lake	0	N/A	0	0	$0	$0
City of La Feria	1	F0	0	0	$0	$0
Town of Laguna Vista	0	N/A	0	0	$0	$0

[5] Only recorded events with fatalities, injuries or damages are listed. Magnitude is listed when available. Damage values are in 2021 dollars.
[6] Damages reported in 2020 dollars.
[7] Damages reported in 2021 dollars.

JURISDICTION	Number of Events	MAGNITUDE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
City of Los Fresnos	1	F0	0	0	$34,600	$0
City of Port Isabel	3	EF0	0	0	$5,760	$0
City of Primera	1	F0	0	0	$0	$0
Town of Rancho Viejo	1	F0	0	0	$0	$0
City of Rio Hondo	3	F0	0	0	$59,339	$0
City of San Benito	1	EF0	0	0	$18,518	$0
City of Santa Rosa	1	F0	0	0	$0	$0
City of South Padre Island	0	F0	0	0	$0	$0
TOTAL LOSSES	**12**	**(Max Extent)**	**0**	**0**	**$118,217**	

Based on the list of historical tornado events for the Cameron County planning area (listed above), including all participating jurisdictions, 2 of the events have occurred since the 2015 Plan. Based on the list of historical tornado events for the additional participating jurisdictions within the Cameron County planning are (listed above), one event has occurred since the 2015 Plan.

SIGNIFICANT EVENTS

July 26, 2019 – Cameron County

Beach Patrol and Emergency Management from the City of South Padre Island, as well as public video, showed a brief waterspout moved onshore near Gulf Boulevard City Beach Access #10. Before dissipating, the waterspout displaced beach umbrellas and tents, with minimal damage.

August 31, 2005 – City of Harlingen

Clusters of severe thunderstorms moved through the Lower Rio Grande Valley of Texas causing damage to numerous trees, utility poles, railroad equipment, and buildings extending from Raymondville to Harlingen to McCook and Edinburg. The storms began to develop in the midafternoon hours between 2 and 3 PM CDT as the sea breeze boundary migrated westward from the Gulf of Mexico. Additional thunderstorms over northern Hidalgo and Starr counties began generating surface outflow boundaries near the original storm northeast of Raymondville. Of interesting note, several large dust devils had been observed by NWS meteorologists in Kenedy and Willacy counties in the early afternoon, suggesting that the surface air was quite unstable and sufficient rotation was available for tornadoes to form. As the outflow boundaries began to converge at Raymondville, the storm began producing severe wind gusts. A tornado moved through Raymondville, Texas at 4:50 PM CDT, lasting about two minutes, while the entire storm lasted from 4:45 PM until about 5:30 PM CDT. The tornado touched down near 6th Street and San Francisco, moving southwest along the railroad track and Business 77. The director of Emergency Management in Raymondville was a witness to the tornado and relayed the report to the police department. The tornado dissipated at the southern end of town and appeared to have

been the only tornado to form out of this storm. Spotter reports and damage survey crews noted isolated damage along the path with several trees and buildings sustaining minor damage. Rail gate crossings were twisted and broken apart along with several utility poles that were snapped apart several feet above the ground. Another tornado was reported just west of Combes, Texas. That tornado was short-lived and did not produce any damage. Elsewhere, reports of funnel clouds and a tornado were also received in Harlingen, Texas south of Raymondville. The tornado touched down in open farmland spinning up dust and some debris. However, no damage was reported with this twister. Additional storms generated severe winds around McCook, Texas, where minor damage was sustained to barns and smaller structures. Several reports of broken trees (6-8 inches in diameter) were also noted. At the intersection of M Road and Schunior, in Edinburg, Texas, a series of high-tension power poles were snapped off 10 to 12 feet above the ground. Oddly, no other structures in the vicinity sustained damage and it appears that the damage was caused by straight line severe thunderstorm wind gusts. Incidentally, several days prior to these severe thunderstorms, the Rio Grande Valley and northeast Mexico (state of Tamaulipas) had experienced record maximum temperatures ranging from 104 to 106 degrees Fahrenheit, due in large part to atmospheric subsidence caused by the effects of Hurricane Katrina.

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, Cameron County, including all participating jurisdictions, can experience a tornado touchdown approximately once every year. This frequency supports a highly likely probability of future events for Cameron County, including all participating jurisdictions.

VULNERABILITY AND IMPACT

Because tornadoes often cross jurisdictional boundaries, all existing and future buildings, facilities, and populations in the entire Cameron County planning area, including all participating jurisdictions, 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 Cameron County planning area features multiple mobile or manufactured home parks throughout the planning area, including all 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 all participating jurisdictions and unincorporated areas of the county which would also be more vulnerable. The US Census data indicates a total of 17,923 manufactured homes located in the Cameron County planning area (12%), including all the City of Harlingen (Table 11-6). It should be noted that the City of Palm Valley currently does not feature any manufactured homes. In addition, 33.9% (approximately 50,767 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 tornado events. Table 11-6A reflects the manufactured home and single family residences built before 1980 for the additional participating jurisdictions in Cameron County that would be considered vulnerable to a tornado event.

Table 11-6. Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Cameron County[8]	17,923	50,767
City of Harlingen	2,657	10,939
City of Palm Valley	0	476

Table 11-6A. Additional Participating Jurisdictions Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Town of Indian Lake	374	101
City of La Feria	680	1,081
Town of Laguna Vista	3	258
City of Los Fresnos	211	889
City of Port Isabel	611	1,118
City of Primera	104	507
Town of Rancho Viejo	0	515
City of Rio Hondo	127	419

[8] County totals includes all incorporated jurisdictions and unincorporated areas.

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
City of San Benito	1,206	4,265
City of Santa Rosa	27	507
City of South Padre Island	0	1,866

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 30.6% of the planning area population live below the poverty level (Table 11-7). Table 11-7A identifies the population living below poverty level for the additional participating jurisdictions with the amended Plan Update.

Table 11-7. Populations at Greatest Risk by Jurisdiction[9]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Cameron County	129,056
City of Harlingen	16,624
City of Palm Valley	85

Table 11-7A. Additional Participating Jurisdictions Populations at Greatest Risk by Jurisdiction[10]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Town of Indian Lake	248
City of La Feria	1,819
Town of Laguna Vista	631
City of Los Fresnos	2,245
City of Port Isabel	1,902
City of Primera	1,407
Town of Rancho Viejo	195
City of Rio Hondo	812
City of San Benito	7,860

[9] US Census Bureau 2018 data for Cameron County

[10] US Census Bureau 2020 data for the additional Participating Jurisdictions of Cameron County.

JURISDICTION	POPULATION BELOW POVERTY LEVEL
City of Santa Rosa	1,067
City of South Padre Island	481

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

Table 11-8. Critical Facilities at Risk by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Cameron County	1 Airport, 6 Bridges, 2 Detention Centers, 1 EOC, 2 Fire Stations, 2 Heliports, 2 Hospitals, 11 Park, 2 Police Dispatch Facilities, 1 Police Station, 15 Schools, 2 Seaports, 1 Shelter/Government Facility, 1 Space-X Port, 1 Utility Facility, 9 Water District Facilities, 2 Wind Farms
City of Harlingen	2 EOCs/Government Facilities, 4 Police Station, 1 Communications Center, 1 Public Works Facility, 8 Fire Stations, 3 Communication Towers, 5 Evacuation Centers, 1 Helipad, 18 Banks, 133 Churches, 1 School, 11 Parks, 5 Medical Facilities Hospital, 9 Nursing Home, 1 Communication Tower, 1 Communication Switch Box, 1 Constable Office, 1 DPS Station, 1 EMS, 27 Pump Stations, 2 Lift Stations, 5 Government Facilities, 1 Power Company, 1 Power Plant, 1 Power Utility Station, 62 School Facilities (buildings, teaching facilities, warehouses, offices), 1 Sheriff's Office, 1 College Campus, 1 Water Plant, 1 Airport
City of Palm Valley	1 Government Facility, 1 Wastewater Treatment Facility, 2 Lift Stations, 1 Pump Station, 1 Business

Table 11-8A. Additional Participating Jurisdictions Critical Facilities at Risk by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Town of Indian Lake	1 City Hall, 2 Lift Stations 1 Police Station
City of La Feria	1 City Hall, 2 Shelter Domes, 1 Fire Station, 1 Fire Substation, 1 Irrigation District, 1 Government Building, 1 Library, 2 Utility Pumps, 16 Lift Stations, 1 Police Station, 2 Public Works Facilities, 9 Schools, 1 Bus Barn, 1 Sewer Plant, 1 Solar Panel Infrastructure, 1 Wastewater Treatment Plant, 1 Water Treatment Facility, 2 Water Towers
Town of Laguna Vista	1 Emergency Operations Center, 1 Fire Station, 1 Library
City of Los Fresnos	1 City Hall, 1 Fire Station, 1 Police Station, 1 VFD, 24 Lift Stations, 2 Water Treatment Plants, 1 Water Treatment Tower

JURISDICTION	CRITICAL FACILITIES
City of Port Isabel	1 City Hall, 1 Emergency Operations Center, 1 EMS Station, 1 Fire Station, 1 Police Station, 1 School, 1 Navigation District, 1 Public Works Department, 1 Substation, 1 Water District, 1 Water Treatment Plant, 1 Boat Basin, 1 Ship Channel, 1 Swing Bridge, 1 Causeway
City of Primera	1 City Hall, 1 Communication Center, 11 Lift Stations, 1 Water Tower
Town of Rancho Viejo	1 Town Hall, 1 EMS Station, 1 Police Station, 1 Utilities Department
City of Rio Hondo	1 City Hall, 1 VFD, 1 Fertilizer/Gas Facility, 8 Lift Stations, 1 Sewer Plant, 1 Water Plant, 1 Park, 1 Dam, 1 Boat Ramp
City of San Benito	1 City Hall, 6 Government Buildings, 2 Fire Stations, 1 Police Station,1 AEP Service Center, 3 Schools, 31 Lift Stations, 3 Substations, 1 Public Works Facility, 6 Utility Facilities, 1 Wastewater Treatment Plant, 1 Wastewater Wetlands, 2 Water Plants, 2 Water Towers
City of Santa Rosa	2 City Halls, 1 Fire Station, 1 Police Station, 1 Lift Station, 1 Public Works Facility, 1 Youth / Respite Center, 1 Wastewater Treatment Plant, 1 Water Treatment Plant
City of South Padre Island	1 Emergency Operations Center, 1 Convention Center, 1 Community Center, 1 Fire Station, 1 Police Station, 2 Government Buildings, 1 Communication Facility, 2 Substations, 1 Transportation Facility, 2 Water Facilities, 1 Water Tower

The average loss estimate of property and crop is $16,480,550 (in 2020 dollars), having an approximate annual loss estimate of $245,978 (Table 11-9). Table 11-9A depicts the average loss estimate of property and crop $118,217 (in 2021 dollars), having an approximate annual loss estimate of $1,653.38 for the additional participating jurisdictions within Cameron County. Based on historic loss and damages, the impact of tornado on the Cameron County planning area, including all participating jurisdictions, and additional participating jurisdictions, can be considered "Limited," with less than 10 percent of property expected to be destroyed, injuries that can be treated with first aid, and critical facilities shut down for 24-hours or less.

Table 11-9. Potential Annualized Losses by Jurisdiction

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Cameron County	$16,480,550	$245,978
City of Harlingen	$0	$0
City of Palm Valley	$0	$0
Planning Area	**$16,480,550**	**$245,978**

Table 11-9A. Additional Participating Jurisdictions Potential Annualized Losses by Jurisdiction

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Town of Indian Lake	$0	$0
City of La Feria	$0	$0
Town of Laguna Vista	$0	$0
City of Los Fresnos	$34,600	$483.92
City of Port Isabel	$5,760	$80.56
City of Primera	$0	$0
Town of Rancho Viejo	$0	$0
City of Rio Hondo	$59,339	$829.92
City of San Benito	$18,518	$258.99
City of Santa Rosa	$0	$0
City of South Padre Island	$0	$0
Planning Area	**$118,217**	**$1,653.38**

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 12: HAIL

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 Cameron County planning area, including all participating jurisdictions, 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 12-1.

Table 12-1. 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 12-1 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 Cameron County planning area, including all participating jurisdictions, 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 Cameron County planning area resulted in hail measuring 4.0 inches in diameter, or a H10, Super Hailstorm. This is the worst extent the planning area can anticipate in the future.

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

HISTORICAL OCCURRENCES

Historical evidence shown in Figure 12-1 demonstrates that the planning area is vulnerable to hail events overall, which typically result from severe thunderstorm activity, where Figure 12-1A reflects the events for the additional participating jurisdictions within Cameron County. Historical events with reported damages, injuries, or fatalities are shown in Table 12-2. Table 12-2A reflects the historical events with the reported damages, injuries, or fatalities for the additional participating jurisdictions within the amended Cameron County Hazard Mitigation Plan Update 2021. A total of 82 reported historical hail events impacted the Cameron County planning area between 1956 through November 2019 (Summary Table 12-3), and a total of 19 events within the additional participating jurisdictions (Summary Table 12-3A). These events were reported to NCEI and NOAA databases and may not represent all hail events to have occurred during the past 64 years. Only those events for the Cameron County planning area with latitude and longitude available were plotted (Figure 12-1).

Figure 12-1. Spatial Historical Hail Events, 1956-2019

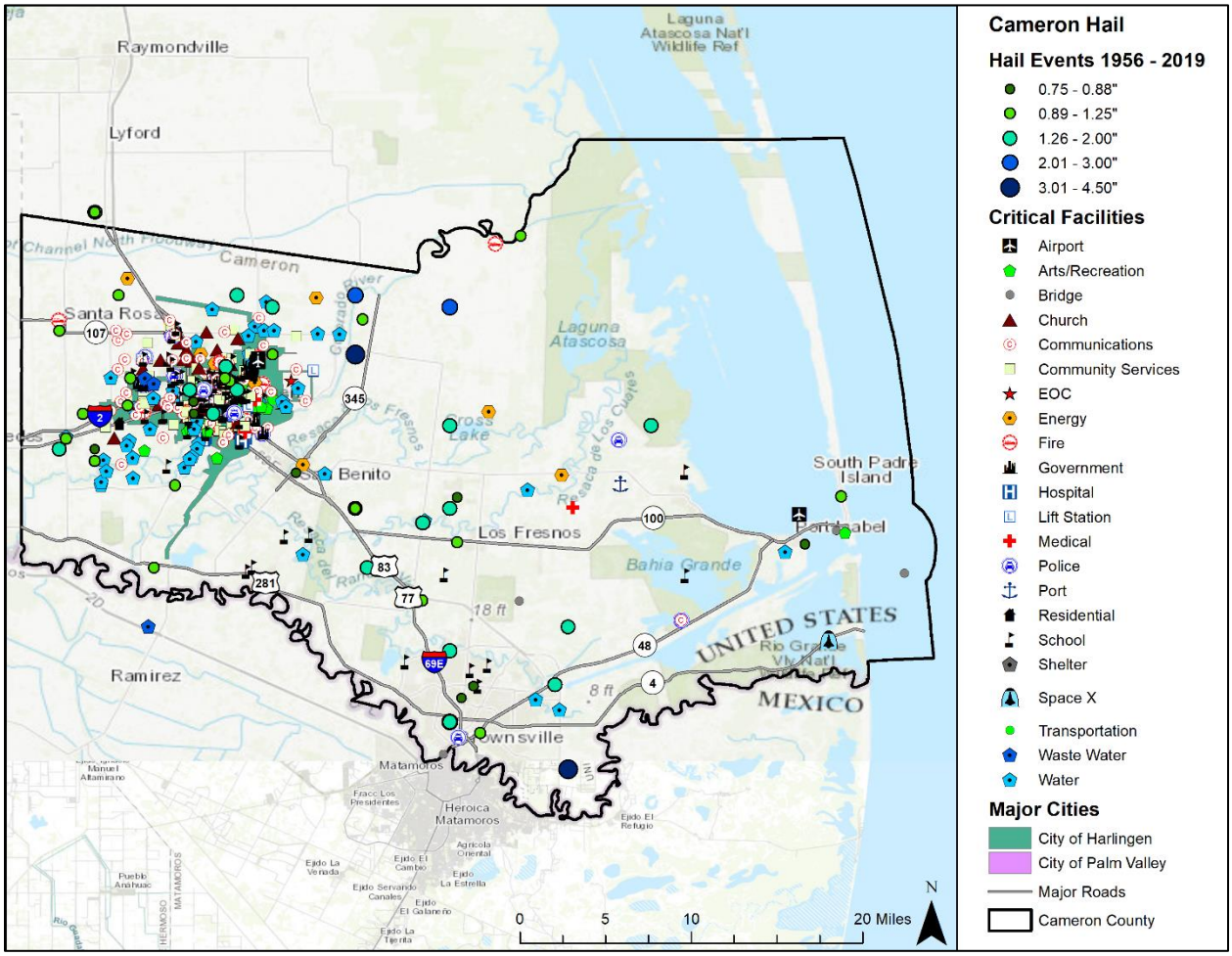


Figure 12-1A. Spatial Historical Hail Events, 1956-2019

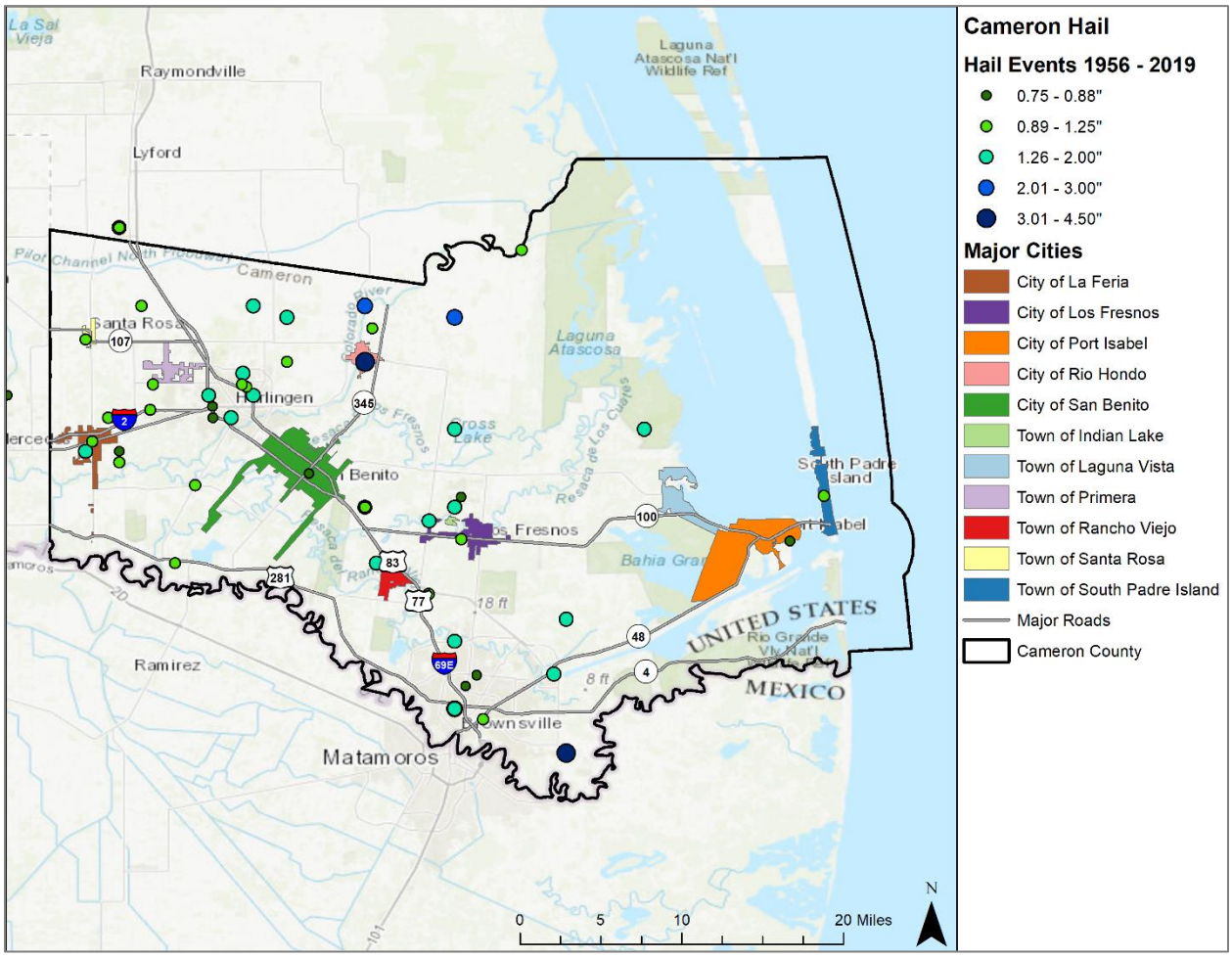


Table 12-2. Historical Hail Events, 1956-2019[2]

JURISDICTION	DATE	MAGNITUDE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
City of Harlingen	3/9/1994	1.75	0	0	$87,626	$8,763
Cameron County	4/8/2003	2.75	5	0	$70,177,095	$0
Cameron County	5/12/2012	1.25	0	0	$561	$0
Cameron County	4/2/2017	2.75	0	0	$10,550	$0
Cameron County	4/2/2017	2.5	0	0	$2,110	$0
Cameron County	4/2/2017	3.01	0	0	$15,825	$0

[2] Only recorded events with fatalities, injuries, and/or damages are listed.

JURISDICTION	DATE	MAGNITUDE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
TOTALS		**(Max Extent)**	**5**	**0**	**$70,302,530**	

Table 12-2A. Additional Participating Jurisdictions Historical Hail Events, 1956-2019[3]

JURISDICTION	DATE	MAGNITUDE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
City of Rio Hondo	4/2/2017	3.01	0	0	$17,404	$0
City of Rio Hondo	4/2/2017	2.75	0	0	$11,603	$0
TOTALS		**(Max Extent)**	**0**	**0**	**$29,007**	

Table 12-3. Historical Hail Events Summary, 1956-2019

JURISDICTION	NUMBER of EVENTS	MAGNITUDE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	76	4.0 inches	5	0	$70,206,141	$0
City of Harlingen	6	1.75 inches	0	0	$87,626	$8,763
City of Palm Valley	0	N/A	N/A	N/A	$0	$0
TOTAL LOSSES	**82**	**(Max Extent)**	**5**	**0**	**$70,302,530**	

Table 12-3A. Additional Participating Jurisdictions Historical Hail Events Summary, 1956-2019

JURISDICTION	NUMBER of EVENTS	MAGNITUDE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
Town of Indian Lake	0	N/A	N/A	N/A	$0	$0
City of La Feria	4	1.25 inches	0	0	$0	$0
Town of Laguna Vista	0	N/A	N/A	N/A	$0	$0
City of Los Fresnos	1	1 inch	0	0	$0	$0
City of Port Isabel	2	1 inch	0	0	$0	$0
City of Primera	3	1.75 inches	0	0	$0	$0
Town of Rancho Viejo	0	N/A	N/A	N/A	$0	$0

[3] Only recorded events with fatalities, injuries, and/or damages are listed.

JURISDICTION	NUMBER of EVENTS	MAGNITUDE	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
City of Rio Hondo	6	3.01 inches	0	0	$29,007	$0
City of San Benito	2	0.88 inches	0	0	$0	$0
City of Santa Rosa	1	1 inch	0	0	$0	$0
City of South Padre Island	0	N/A	N/A	N/A	$0	$0
TOTAL LOSSES	**19**	**(Max Extent)**		**0**	**$29,007**	

Based on the list of historical hail events for the Cameron County planning area (listed above), including all participating jurisdictions, 13 of the events have occurred since the 2015 Plan. Based on the list of historical hail events for the additional participating jurisdictions within the Cameron County planning are (listed above), 6 events have occurred since the 2015 Plan.

SIGNIFICANT EVENTS

April 2, 2017 – Cameron County

Scattered severe thunderstorms developed across the coastal counties in the morning producing hail the size of a quarter. Shortly before 9 pm, another storm developed between La Feria and Harlingen, dropping quarter to golf ball sized hail to the north half of Harlingen, from near Bass Boulevard north of I-2 eastward to Loop 499 and Valley International Airport; a second round formed on the rear flank of the initial storm and dropped another round of smaller hail 15 to 30 minutes later over some of the same areas. The first Harlingen storm peaked over Rio Hondo, 7 miles east of Harlingen, between 905 and 920 pm, where hailstones up to 3.5 inches in diameter fell. Dozens of vehicles in each storm sustained damage from cracked windshields and dinged or dented exteriors, as well as roofs.

May 12, 2012 – City of Harlingen

A little more than a day after a thunderstorm system brought more severe weather to the Rio Grande Valley, the last vestige of very unstable air held forth mainly along and east of Highway 77. Despite unfavorable upper level conditions, the combination of the unstable air with a trigger in the form of a wind shift/dry line, which moved within striking distance of Highway 77, allowed a small but potent cluster of thunderstorms to explosively grow initially in northern Willacy County just before 4 PM CDT. These storms would produce south moving outflows, which added to the dryline trigger. Additional storms would fire in only a half hour, working on the very unstable atmosphere to increase updraft speed and develop at least quarter to half dollar sized hail between west Harlingen, La Feria, and points south between 5:15 and 5:45 PM CDT. Once again, there was some damage to vehicles caught in the hail, many containing jagged edges. Many residents were caught by surprise by the rapid development and moved their vehicles under gas station canopies, car washes, and highway underpasses. Nickel to quarter size hail was reported at Altas Palmas and Highway 83, and quarter size hail along Highway 83 on the west side of Harlingen. A report from the spouse of a NWS employee confirmed that a car windshield was broken from the hail.

PROBABILITY OF FUTURE EVENTS

Based on available records of historic events, 82 events in a 64-year reporting period for Cameron County provides a probability of one event per year. This frequency supports a highly likely probability of future events for the Cameron County planning area including all participating jurisdictions.

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 most commonly damaged 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 Cameron 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 the City of Harlingen which would also be more vulnerable. It should be noted that the City of Palm Valley does not currently feature any manufactured homes. The US Census data indicates a total of 17,923 (12%) manufactured homes located in the Cameron County planning area including all participating jurisdictions (Table 12-4). In addition, 33.9 (approximately 50,767 structures) of the single family residential (SFR) structures in the Cameron County planning area were built before 1980. Table 12-4A indicates the total manufactured home and single family residences built before 1980 within the additional participating jurisdictions of Cameron County. 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 hail events.

Table 12-4. Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Cameron County[4]	17,923	50,767
City of Harlingen	2,657	10,939
City of Palm Valley	0	476

[4] County totals includes all incorporated jurisdictions and unincorporated areas.

Table 12-4A. Additional Participating Jurisdictions Structures at Greater Risk by Jurisdiction

JURISDICTION	MANUFACTURED HOMES	SFR STRUCTURES BUILT BEFORE 1980
Town of Indian Lake	374	101
City of La Feria	680	1,081
Town of Laguna Vista	3	258
City of Los Fresnos	211	889
City of Port Isabel	611	1,118
City of Primera	104	507
Town of Rancho Viejo	0	515
City of Rio Hondo	127	419
City of San Benito	1,206	4,265
City of Santa Rosa	27	507
City of South Padre Island	0	1,866

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 30.6% of the planning area population live below the poverty level (Table 12-5). Table 12-5A reflects the total population that lives below the poverty level within the additional participating jurisdictions within the Plan Update 2021.

Table 12-5. Populations at Greatest Risk by Jurisdiction[5]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Cameron County	129,056
City of Harlingen	16,624
City of Palm Valley	85

[5] US Census Bureau 2018 data for Cameron County

Table 12-5A. Additional Participating Jurisdictions Populations at Greatest Risk by Jurisdiction[6]

JURISDICTION	POPULATION BELOW POVERTY LEVEL
Town of Indian Lake	248
City of La Feria	1,819
Town of Laguna Vista	631
City of Los Fresnos	2,245
City of Port Isabel	1,902
City of Primera	1,407
Town of Rancho Viejo	195
City of Rio Hondo	812
City of San Benito	7,860
City of Santa Rosa	1,067
City of South Padre Island	481

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

Table 12-6. Critical Facilities at Risk by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Cameron County	1 Airport, 6 Bridges, 2 Detention Centers, 1 EOC, 2 Fire Stations, 2 Heliports, 2 Hospitals, 11 Park, 2 Police Dispatch Facilities, 1 Police Station, 15 Schools, 2 Seaports, 1 Shelter/Government Facility, 1 Space-X Port, 1 Utility Facility, 9 Water District Facilities, 2 Wind Farms
City of Harlingen	2 EOCs/Government Facilities, 4 Police Station, 1 Communications Center, 1 Public Works Facility, 8 Fire Stations, 3 Communication Towers, 5 Evacuation Centers, 1 Helipad, 18 Banks, 133 Churches, 1 School, 11 Parks, 5 Medical Facilities Hospital, 9 Nursing Home, 1 Communication Tower, 1 Communication Switch Box, 1 Constable Office, 1 DPS Station, 1 EMS, 27 Pump Stations, 2 Lift Stations, 5 Government Facilities, 1 Power Company, 1 Power Plant, 1 Power Utility Station, 62 School Facilities (buildings, teaching facilities, warehouses, offices), 1 Sheriff's Office, 1 College Campus, 1 Water Plant, 1 Airport
City of Palm Valley	1 Government Facility, 1 Wastewater Treatment Facility, 2 Lift Stations, 1 Pump Station, 1 Business

[6] US Census Bureau 2020 data for the additional Participating Jurisdictions of Cameron County.

Table 12-6A. Additional Participating Jurisdictions Critical Facilities at Risk by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Town of Indian Lake	1 City Hall, 2 Lift Stations 1 Police Station
City of La Feria	1 City Hall, 2 Shelter Domes, 1 Fire Station, 1 Fire Substation, 1 Irrigation District, 1 Government Building, 1 Library, 2 Utility Pumps, 16 Lift Stations, 1 Police Station, 2 Public Works Facilities, 9 Schools, 1 Bus Barn, 1 Sewer Plant, 1 Solar Panel Infrastructure, 1 Wastewater Treatment Plant, 1 Water Treatment Facility, 2 Water Towers
Town of Laguna Vista	1 Emergency Operations Center, 1 Fire Station, 1 Library
City of Los Fresnos	1 City Hall, 1 Fire Station, 1 Police Station, 1 VFD, 24 Lift Stations, 2 Water Treatment Plants, 1 Water Treatment Tower
City of Port Isabel	1 City Hall, 1 Emergency Operations Center, 1 EMS Station, 1 Fire Station, 1 Police Station, 1 School, 1 Navigation District, 1 Public Works Department, 1 Substation, 1 Water District, 1 Water Treatment Plant, 1 Boat Basin, 1 Ship Channel, 1 Swing Bridge, 1 Causeway
City of Primera	1 City Hall, 1 Communication Center, 11 Lift Stations, 1 Water Tower
Town of Rancho Viejo	1 Town Hall, 1 EMS Station, 1 Police Station, 1 Utilities Department
City of Rio Hondo	1 City Hall, 1 VFD, 1 Fertilizer/Gas Facility, 8 Lift Stations, 1 Sewer Plant, 1 Water Plant, 1 Park, 1 Dam, 1 Boat Ramp
City of San Benito	1 City Hall, 6 Government Buildings, 2 Fire Stations, 1 Police Station,1 AEP Service Center, 3 Schools, 31 Lift Stations, 3 Substations, 1 Public Works Facility, 6 Utility Facilities, 1 Wastewater Treatment Plant, 1 Wastewater Wetlands, 2 Water Plants, 2 Water Towers
City of Santa Rosa	2 City Halls, 1 Fire Station, 1 Police Station, 1 Lift Station, 1 Public Works Facility, 1 Youth / Respite Center, 1 Wastewater Treatment Plant, 1 Water Treatment Plant
City of South Padre Island	1 Emergency Operations Center, 1 Convention Center, 1 Community Center, 1 Fire Station, 1 Police Station, 2 Government Buildings, 1 Communication Facility, 2 Substations, 1 Transportation Facility, 2 Water Facilities, 1 Water Tower

Hail has been known to cause injury to humans and occasionally has been fatal. Overall, the average loss estimate of property and crops (in 2020 dollars) is $70,302,530, having an approximate annual loss estimate of $1,098,477. Within the additional participating jurisdictions of Cameron County, the average loss estimate of property and crops (in 2021 dollars) is $29,007, having an approximate annual loss estimate of $436.20. Based on historic loss and damages, the impact of hail damages on the Cameron County planning area, including all participating

jurisdictions, and the additional participating jurisdictions within the Plan Update 2021, can be considered “Minor” severity of impact meaning injuries and illness do not result in permanent disability, county area facilities are shut down for one week or more, and more than ten percent of property destroyed or with major damage.

Table 12-7. Potential Annualized Losses by Jurisdiction

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATE
Cameron County	$70,206,141	$1,096,971
City of Harlingen	$96,389	$1,506
City of Palm Valley	$0	$0
Planning Area	**$70,302,530**	**$1,098,477**

Table 12-7A. Additional Participating Jurisdictions Potential Annualized Losses by Jurisdiction

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATE
Town of Indian Lake	$0	$0
City of La Feria	$0	$0
Town of Laguna Vista	$0	$0
City of Los Fresnos	$0	$0
City of Port Isabel	$0	$0
City of Primera	$0	$0
Town of Rancho Viejo	$0	$0
City of Rio Hondo	$29,007	$436.20
City of San Benito	$0	$0
City of Santa Rosa	$0	$0
City of South Padre Island	$0	$0
Planning Area	**$29,007**	**$436.20**

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 13: WINTER STORM

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 Cameron 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, on average, the Cameron County planning area, including all participating jurisdictions, typically experience approximately 1-10 extreme cold days a year, meaning up to 10 days are at or around freezing temperatures. 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 Cameron County planning area, including all participating jurisdictions.

Figure 13-1. Extreme Cold Days, 1960-2003[1]

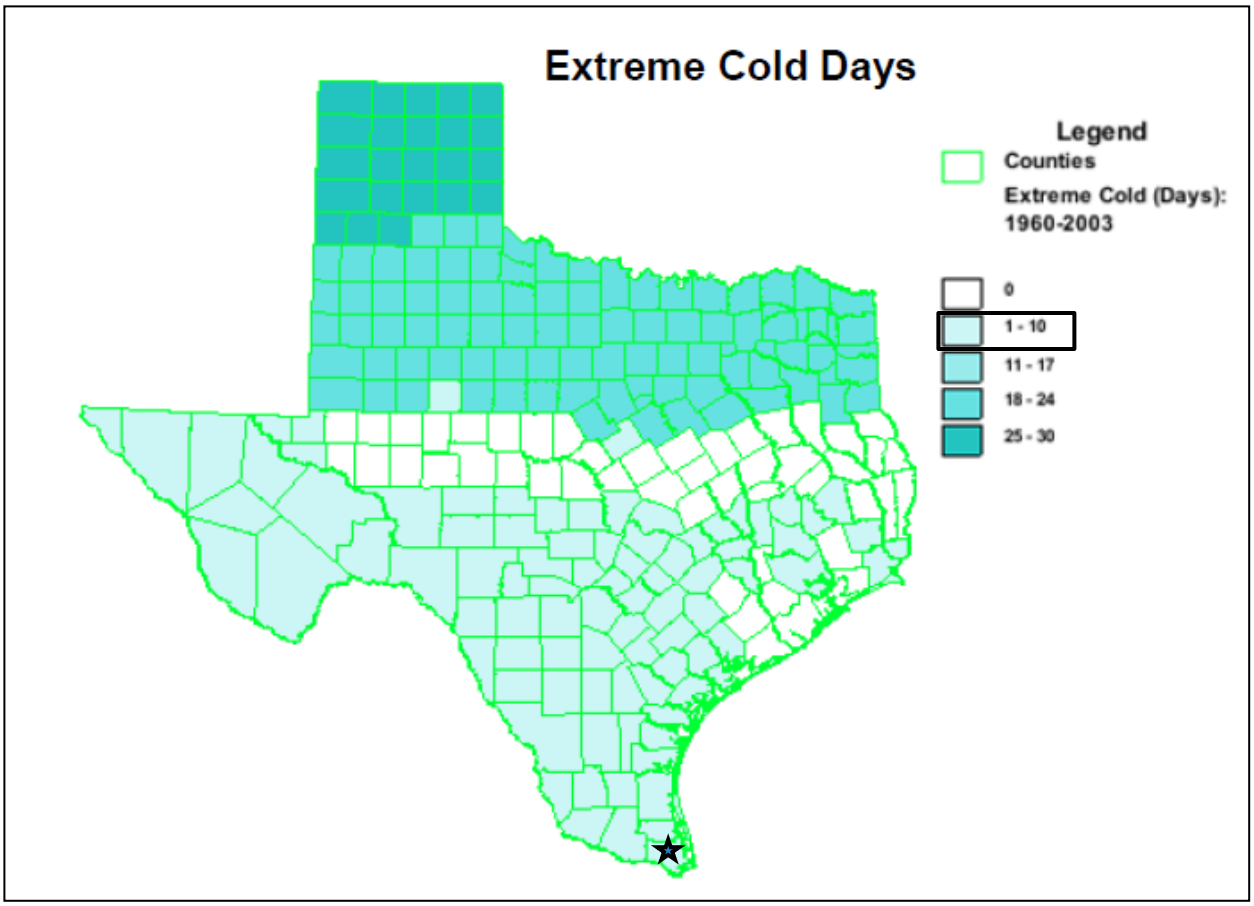


Table 13-1. Types of Winter Storms

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.
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.

[1] Source: National Weather Service. Cameron County indicated by star.

TYPE OF WINTER STORM	DESCRIPTION
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 Cameron County planning area, including all participating jurisdictions, are considered to be exposed to a winter storm hazard and could potentially be impacted.

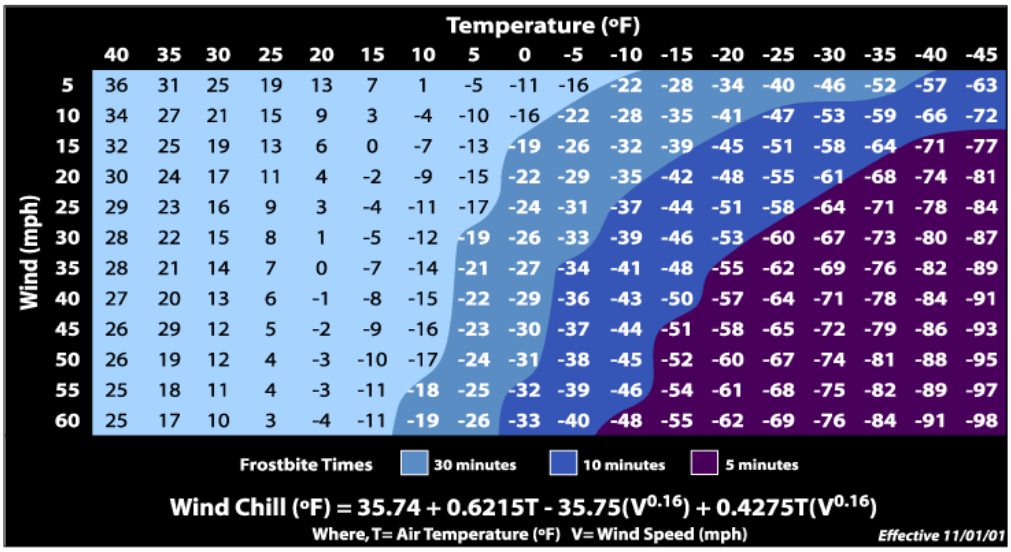
EXTENT

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
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 Cameron County planning area, including all participating jurisdictions, has never experienced a blizzard, but based on 34 previous occurrences recorded from 1996 through November 2019, it has been subject to winter storm watches, warnings, freezing rain, sleet, and wind chill.

The average number of cold days is similar for the entire planning area, including all participating jurisdictions. 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. Cameron County planning area, including all participating jurisdictions, can expect anywhere between 0.1 to 4.0 inches of ice and snow during a winter storm event and temperatures between 25 and 50 degrees with winds ranging from 0 to 20 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 Cameron County from 1996 through November 2019 provided by the NCEI database. There have been 34 recorded winter storm events in Cameron County, including all participating jurisdictions, along with the additional participating jurisdictions. 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. 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, 1996-2019[2]

JURISDICTION	DATE	DEATHS	INJURIES	PROPERTY DAMAGE	CROP DAMAGE
Cameron County	2/3/2011	0	0	$0	$5,828,299
Cameron County	2/3/2011	0	0	$5,828	$0
Cameron County	2/3/2011	0	0	$11,657	$0
Cameron County	1/16/2018	0	0	$52,038	$0
TOTALS		**0**	**0**	**$5,897,822**	

Based on the list of historical winter storm events for the Cameron County planning area (listed above), including all participating jurisdictions, 10 of the events have occurred since the 2015 Plan.

SIGNIFICANT EVENTS

January 16, 2018 – Cameron County

Ice glazed 1/8 to 1/16 inch on trees and grasses beginning late afternoon of January 16th and continuing through just prior to midnight before precipitation tapered off. Temperatures, which fell to between 28 and 30 degrees allowed untreated elevated road surfaces to quickly glaze over. This resulted in dozens of mostly minor accidents along elevated portions of IH-2 and IH-69E during the peak and for a few hours after the evening commute. The elevated interchanges between these highways was closed through the morning commute after at least two tractor-trailer trucks slid and blocked access. Other elevated portions of these and other roads, including FM-511 and SR 550 (toll) were closed due to the glaze. Power outages in the county exceeded 22 thousand (most likely in Cameron County), though the source may have been related more to intense usage on an early weeknight during the peak of the winter school and work season than to glaze icing alone.

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 Cameron County planning area, including all participating jurisdictions, 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

[2] Values are in 2020 dollars. Only historical events with injuries, fatalities, or damages have been listed.

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 Cameron County planning area, including all participating jurisdictions, 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
Cameron County	1 Airport, 6 Bridges, 2 Detention Centers, 1 EOC, 2 Fire Stations, 2 Heliports, 2 Hospitals, 11 Park, 2 Police Dispatch Facilities, 1 Police Station, 15 Schools, 2 Seaports, 1 Shelter/Government Facility, 1 Space-X Port, 1 Utility Facility, 9 Water District Facilities, 2 Wind Farms
City of Harlingen	2 EOCs/Government Facilities, 4 Police Station, 1 Communications Center, 1 Public Works Facility, 8 Fire Stations, 3 Communication Towers, 5 Evacuation Centers, 1 Helipad, 18 Banks, 133 Churches, 1 School, 11 Parks, 5 Medical Facilities Hospital, 9 Nursing Home, 1 Communication Tower, 1 Communication Switch Box, 1 Constable Office, 1 DPS Station, 1 EMS, 27 Pump Stations, 2 Lift Stations, 5 Government Facilities, 1 Power Company, 1 Power Plant, 1 Power Utility Station, 62 School Facilities (buildings, teaching facilities, warehouses, offices), 1 Sheriff's Office, 1 College Campus, 1 Water Plant, 1 Airport
City of Palm Valley	1 Government Facility, 1 Wastewater Treatment Facility, 2 Lift Stations, 1 Pump Station, 1 Business

Table 13-4A. Additional Participating Jurisdictions Critical Facilities by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Town of Indian Lake	1 City Hall, 2 Lift Stations 1 Police Station
City of La Feria	1 City Hall, 2 Shelter Domes, 1 Fire Station, 1 Fire Substation, 1 Irrigation District, 1 Government Building, 1 Library, 2 Utility Pumps, 16 Lift Stations, 1 Police Station, 2 Public Works Facilities, 9 Schools, 1 Bus Barn, 1 Sewer Plant, 1 Solar Panel Infrastructure, 1 Wastewater Treatment Plant, 1 Water Treatment Facility, 2 Water Towers
Town of Laguna Vista	1 Emergency Operations Center, 1 Fire Station, 1 Library
City of Los Fresnos	1 City Hall, 1 Fire Station, 1 Police Station, 1 VFD, 24 Lift Stations, 2 Water Treatment Plants, 1 Water Treatment Tower

JURISDICTION	CRITICAL FACILITIES
City of Port Isabel	1 City Hall, 1 Emergency Operations Center, 1 EMS Station, 1 Fire Station, 1 Police Station, 1 School, 1 Navigation District, 1 Public Works Department, 1 Substation, 1 Water District, 1 Water Treatment Plant, 1 Boat Basin, 1 Ship Channel, 1 Swing Bridge, 1 Causeway
City of Primera	1 City Hall, 1 Communication Center, 11 Lift Stations, 1 Water Tower
Town of Rancho Viejo	1 Town Hall, 1 EMS Station, 1 Police Station, 1 Utilities Department
City of Rio Hondo	1 City Hall, 1 VFD, 1 Fertilizer/Gas Facility, 8 Lift Stations, 1 Sewer Plant, 1 Water Plant, 1 Park, 1 Dam, 1 Boat Ramp
City of San Benito	1 City Hall, 6 Government Buildings, 2 Fire Stations, 1 Police Station,1 AEP Service Center, 3 Schools, 31 Lift Stations, 3 Substations, 1 Public Works Facility, 6 Utility Facilities, 1 Wastewater Treatment Plant, 1 Wastewater Wetlands, 2 Water Plants, 2 Water Towers
City of Santa Rosa	2 City Halls, 1 Fire Station, 1 Police Station, 1 Lift Station, 1 Public Works Facility, 1 Youth / Respite Center, 1 Wastewater Treatment Plant, 1 Water Treatment Plant
City of South Padre Island	1 Emergency Operations Center, 1 Convention Center, 1 Community Center, 1 Fire Station, 1 Police Station, 2 Government Buildings, 1 Communication Facility, 2 Substations, 1 Transportation Facility, 2 Water Facilities, 1 Water Tower

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 Cameron County planning area is estimated at 12.8% of the total population or an estimated total of 54,181[3] potentially vulnerable residents in the planning area based on age. An estimated 30.6% of the planning area population live below the poverty level (Table 13-5). Table 13-5A reflects the population of the additional participating jurisdictions that are potentially vulnerable based on age and that live below poverty level.

Table 13-5. Population at Greater Risk by Jurisdiction

JURISDICTION	POPULATION 65 AND OLDER	POPULATION BELOW POVERTY LEVEL
Cameron County[4]	54,181	129,056

[3] US Census Bureau 2018 data for Cameron County

[4] County totals includes all incorporated jurisdictions and unincorporated areas.

JURISDICTION	POPULATION 65 AND OLDER	POPULATION BELOW POVERTY LEVEL
City of Harlingen	9,701	16,624
City of Palm Valley	654	85

Table 13-5A. Additional Participating Jurisdictions Population at Greater Risk by Jurisdiction[5]

JURISDICTION	POPULATION 65 AND OLDER	POPULATION BELOW POVERTY LEVEL
Town of Indian Lake	126	248
City of La Feria	1,495	1,819
Town of Laguna Vista	1,112	631
City of Los Fresnos	666	2,245
City of Port Isabel	1,172	1,902
City of Primera	415	1,407
Town of Rancho Viejo	523	195
City of Rio Hondo	555	812
City of San Benito	4,041	7,860
City of Santa Rosa	288	1,067
City of South Padre Island	884	481

Historic loss, in 2020 dollars, is estimated at $5,897,822 in damages over the 24-year recording period giving an approximate loss of $245,743 in damages annually (Table 13-6). The potential severity of impact for the Cameron County planning area, including all participating jurisdictions, are “Limited” meaning injuries are treatable with first aid, shutdown of facilities and services for 24 hours or less, and less than 10% of property destroyed or with major damage.

Table 13-6. Potential Annualized Losses for Cameron County

JURISDICTION	PROPERTY & CROP LOSS	ANNUAL LOSS ESTIMATES
Cameron County	$5,897,822	$245,743

[5] US Census Bureau 2020 data for the additional Participating Jurisdictions of Cameron County.

SECTION 13: WINTER STORM

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: WILDFIRE

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 14-1 through 14-3). Figures 14-12 through 14-22 indicate the threat to people and property from a wildfire event within the additional participating jurisdictions within the amended Cameron County Hazard Mitigation Plan Update 2021. It is estimated that 36.2 percent of the total population in Cameron County live within the WUI. However, the entire Cameron County planning area is at risk for wildfires.

Figure 14-1. Wildland Urban Interface Map – Cameron County

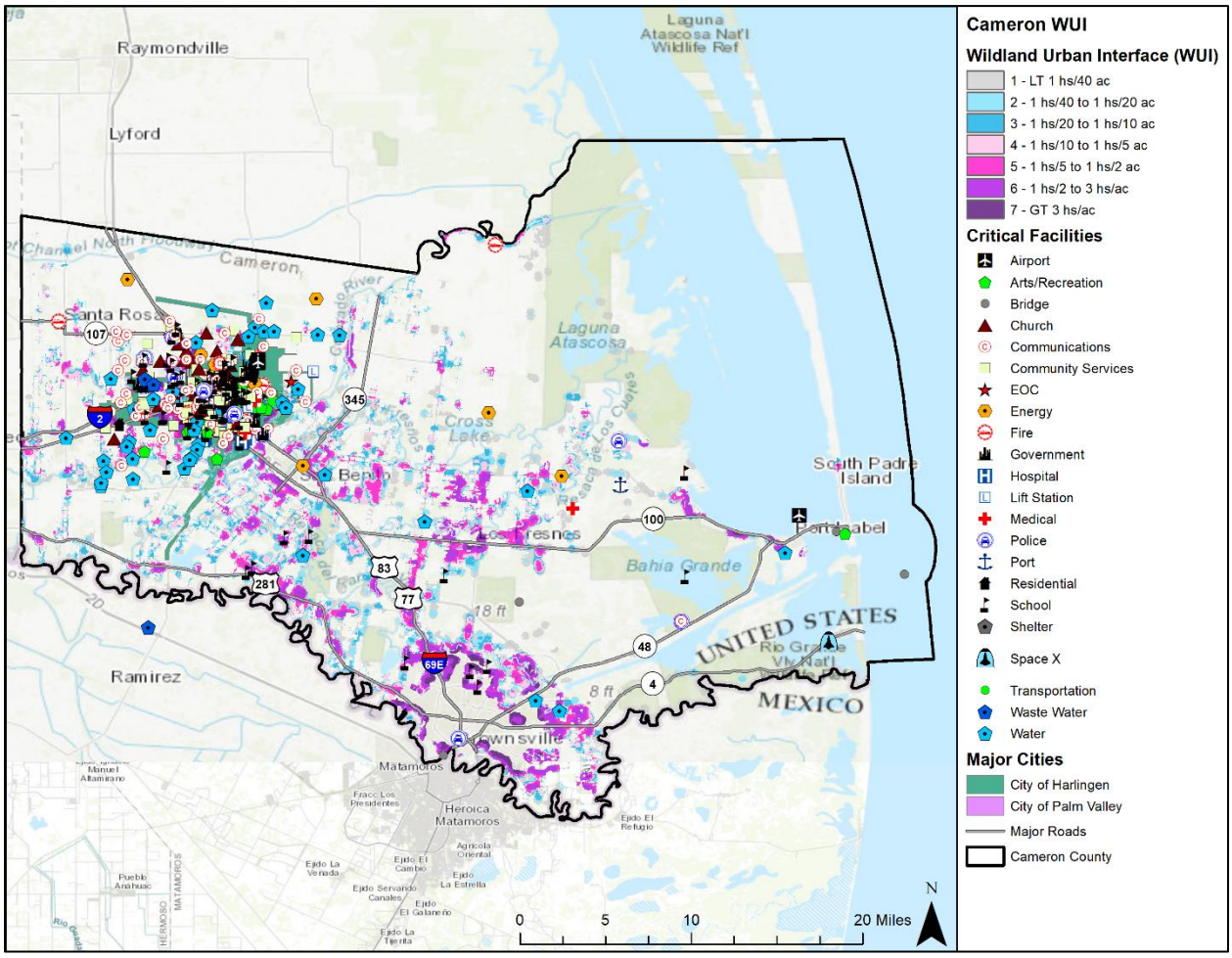
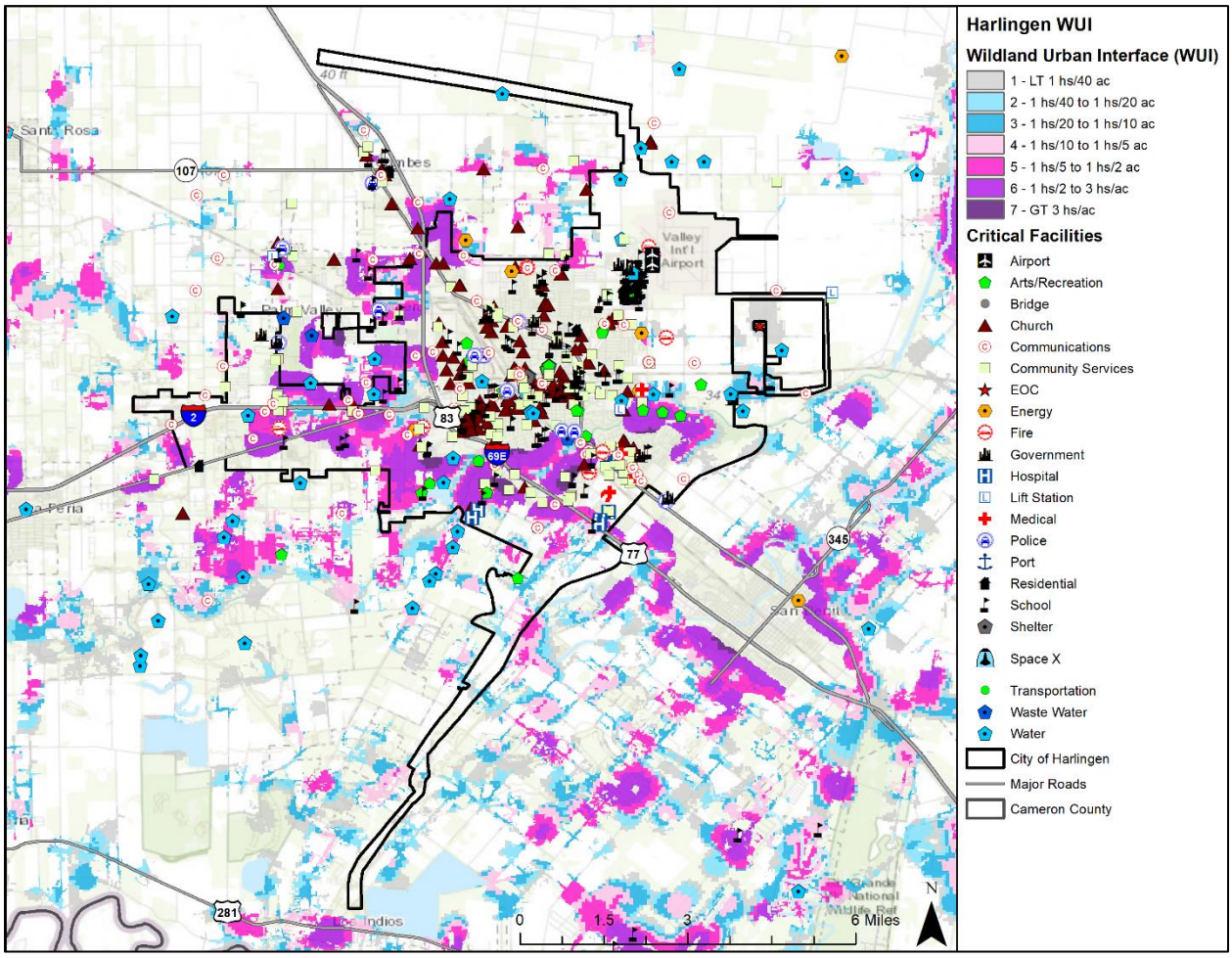
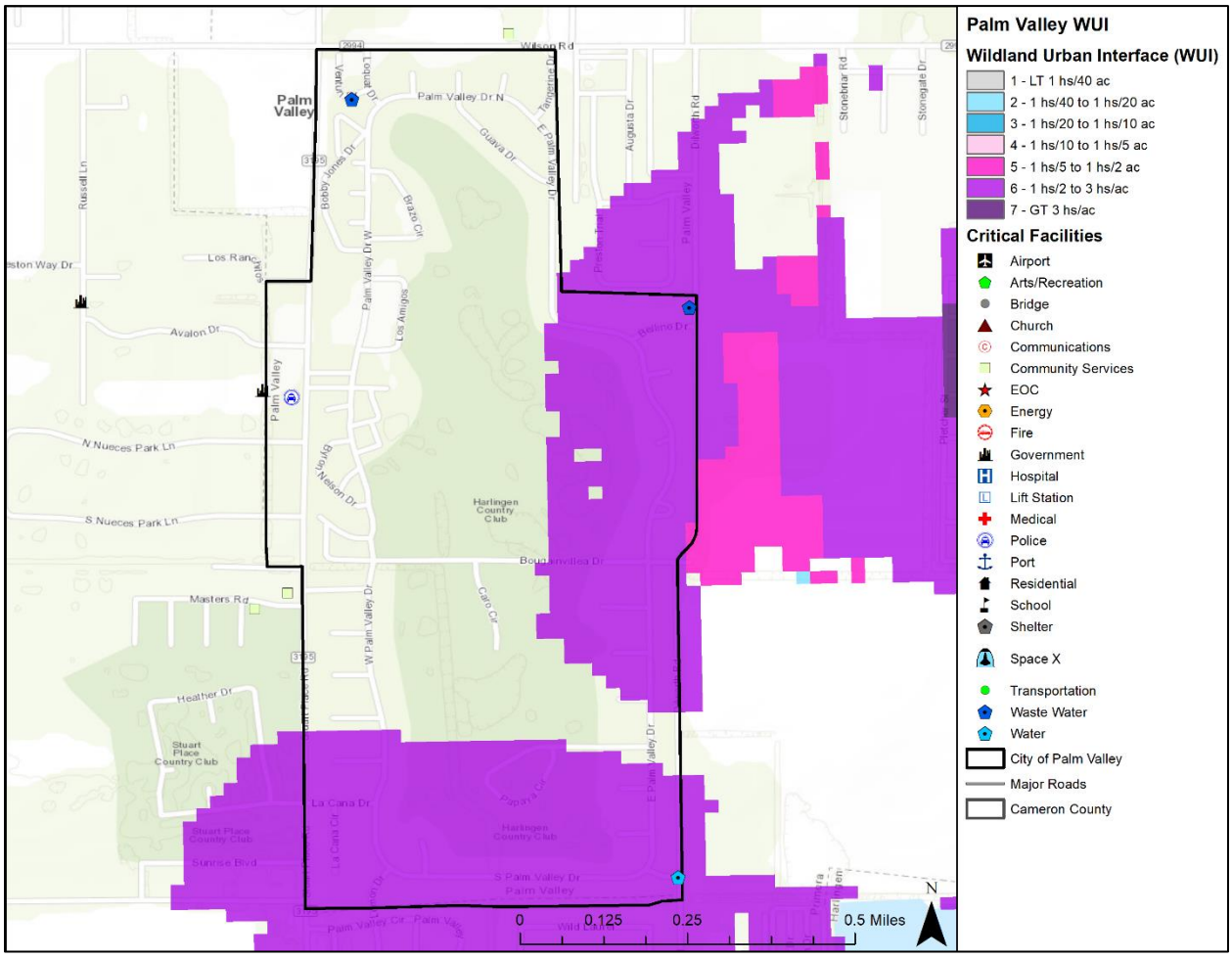


Figure 14-2. Wildland Urban Interface Map – City of Harlingen



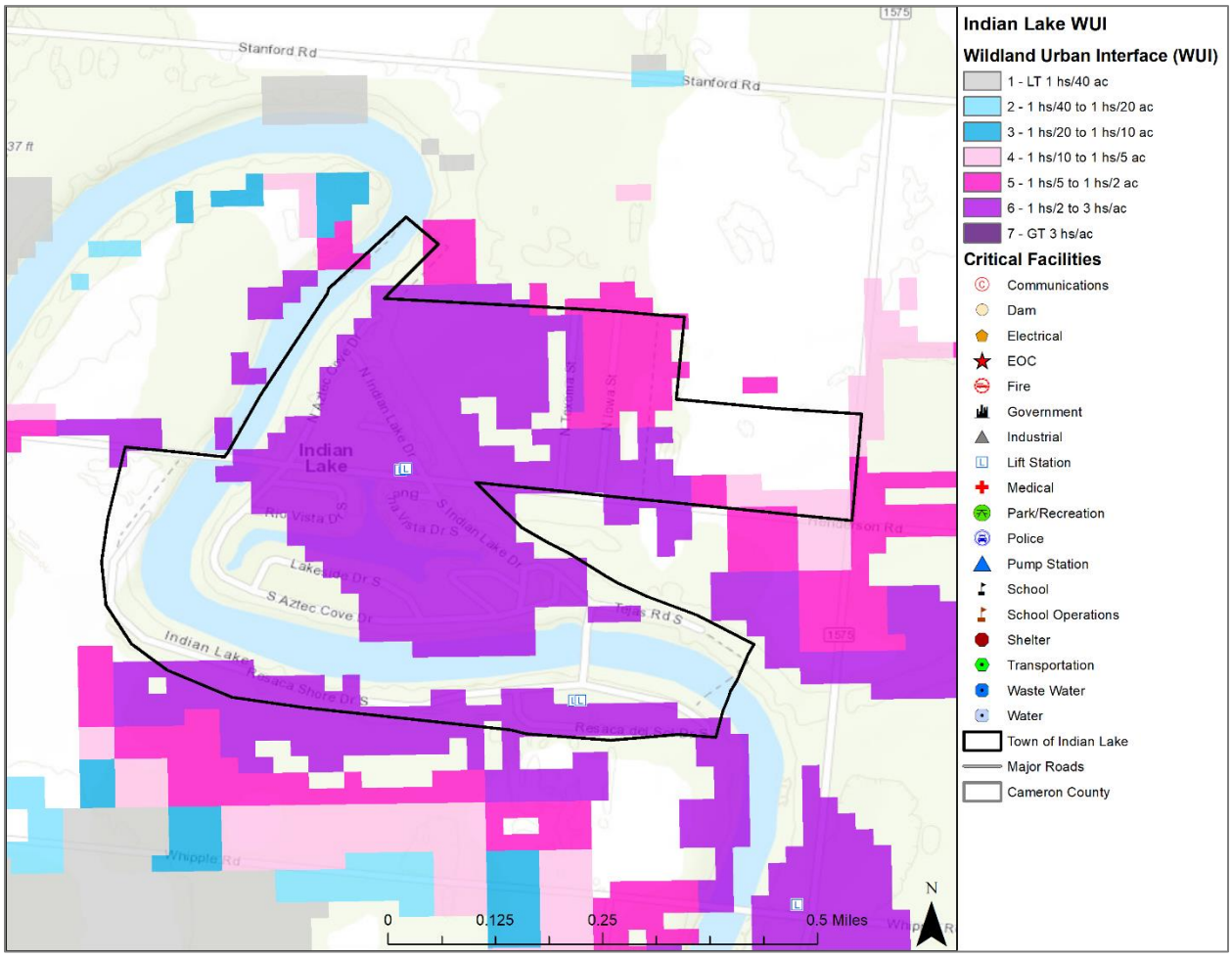
It is estimated that 23.3 percent of the total population in the City of Harlingen live within the WUI. However, the entire City of Harlingen is at risk for wildfires.

Figure 14-3. Wildland Urban Interface Map – City of Palm Valley



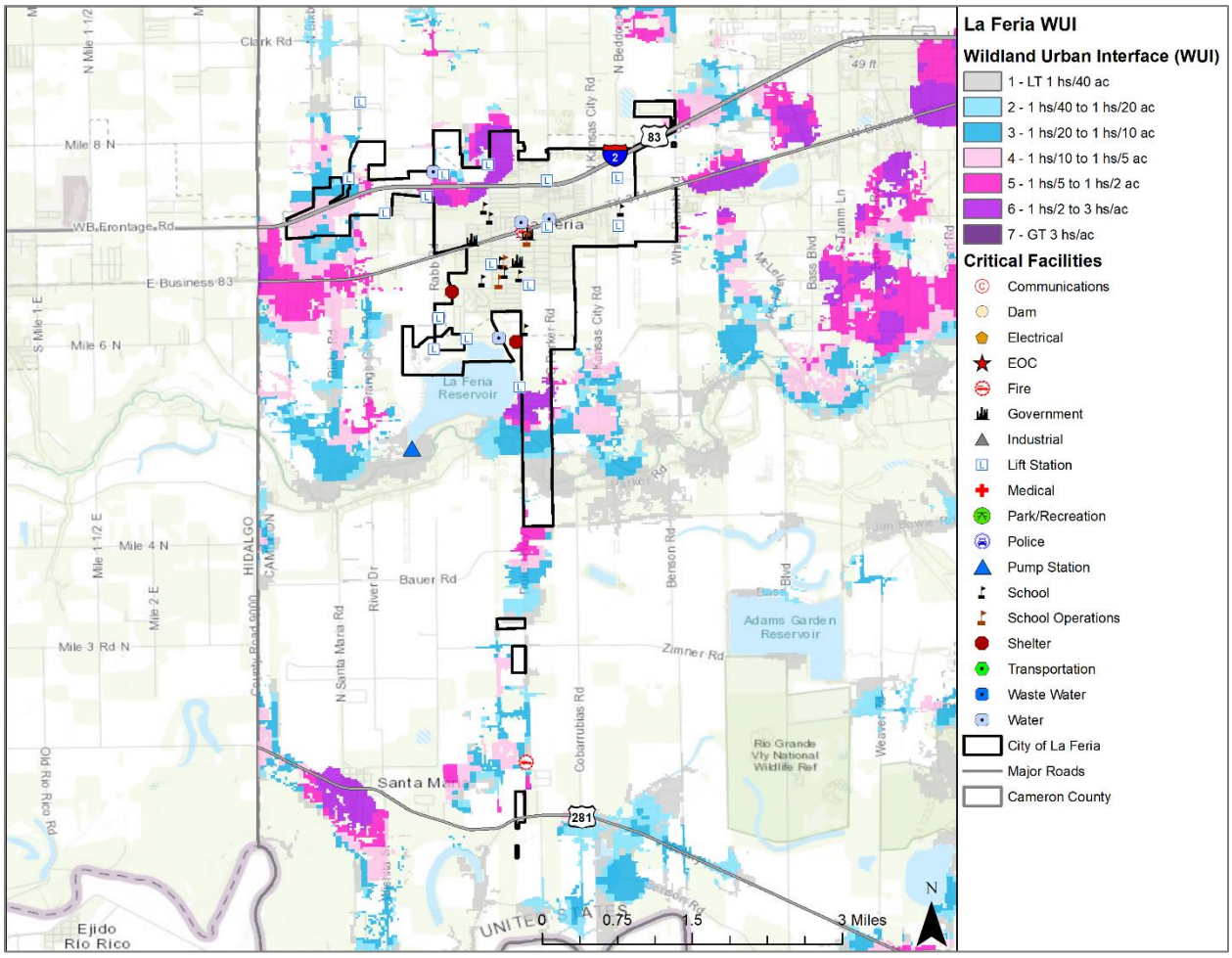
It is estimated that 45.6 percent of the total population in the City of Palm Valley live within the WUI. However, the entire City of Palm Valley is at risk for wildfires.

Figure 14-12. Wildland Urban Interface Map – Town of Indian Lake



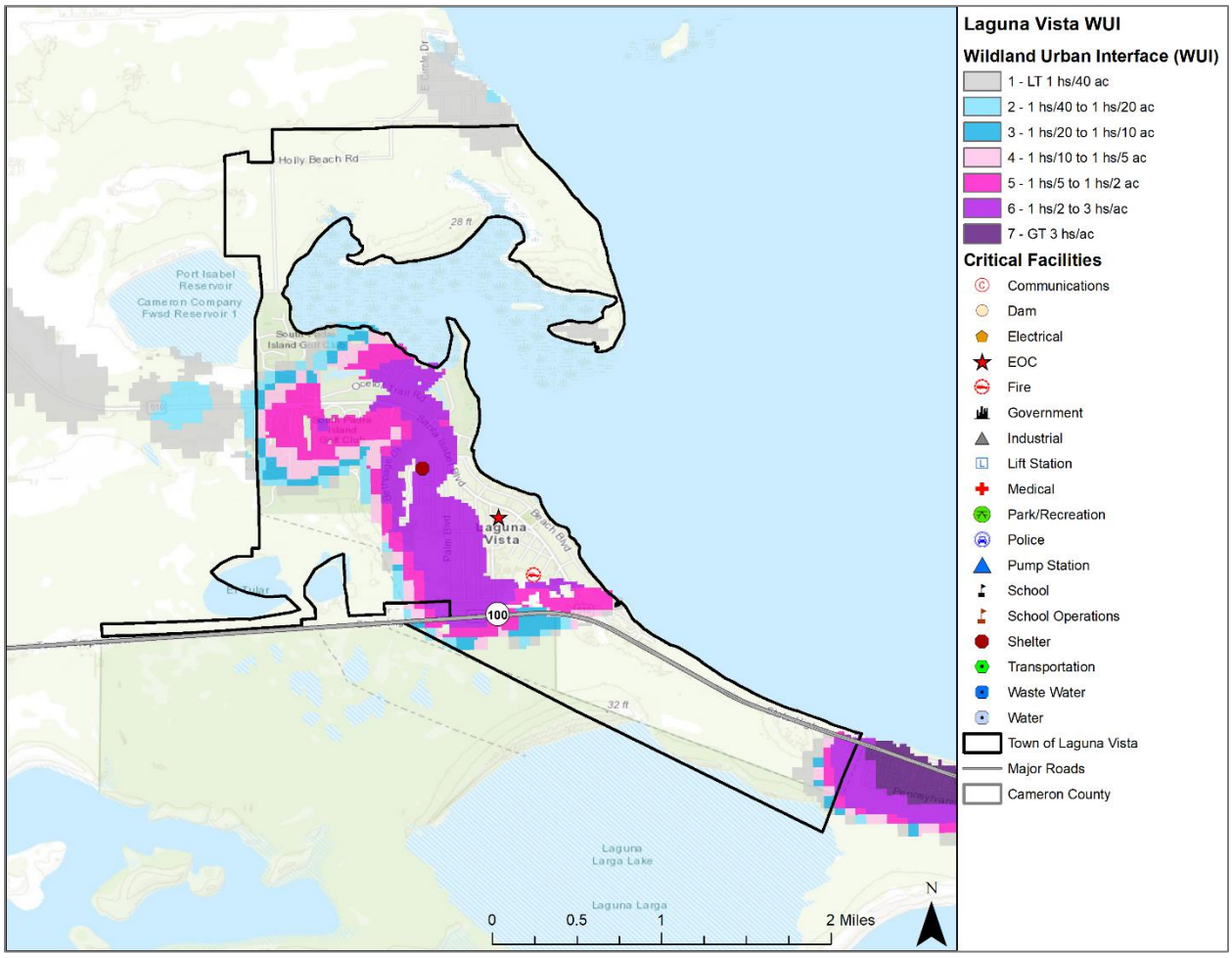
It is estimated that 61.3 percent of the total population in the Town of Indian Lake live within the WUI. However, the entire Town of Indian Lake is at some risk for wildfires.

Figure 14-13. Wildland Urban Interface Map – City of La Feria



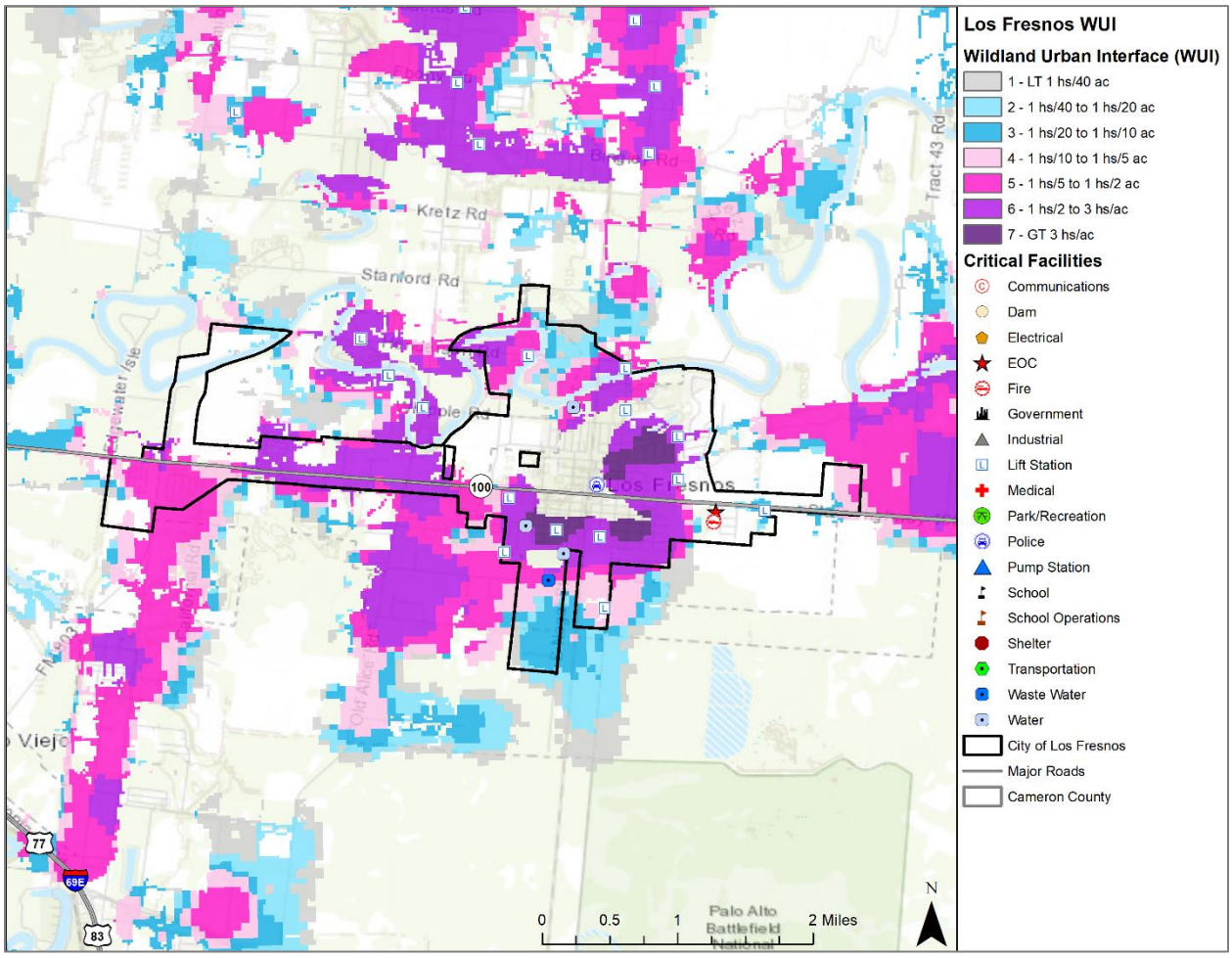
It is estimated that 8.2 percent of the total population in the City of La Feria live within the WUI. However, the entire City of La Feria is at some risk for wildfires.

Figure 14-14. Wildland Urban Interface Map – Town of Laguna Vista



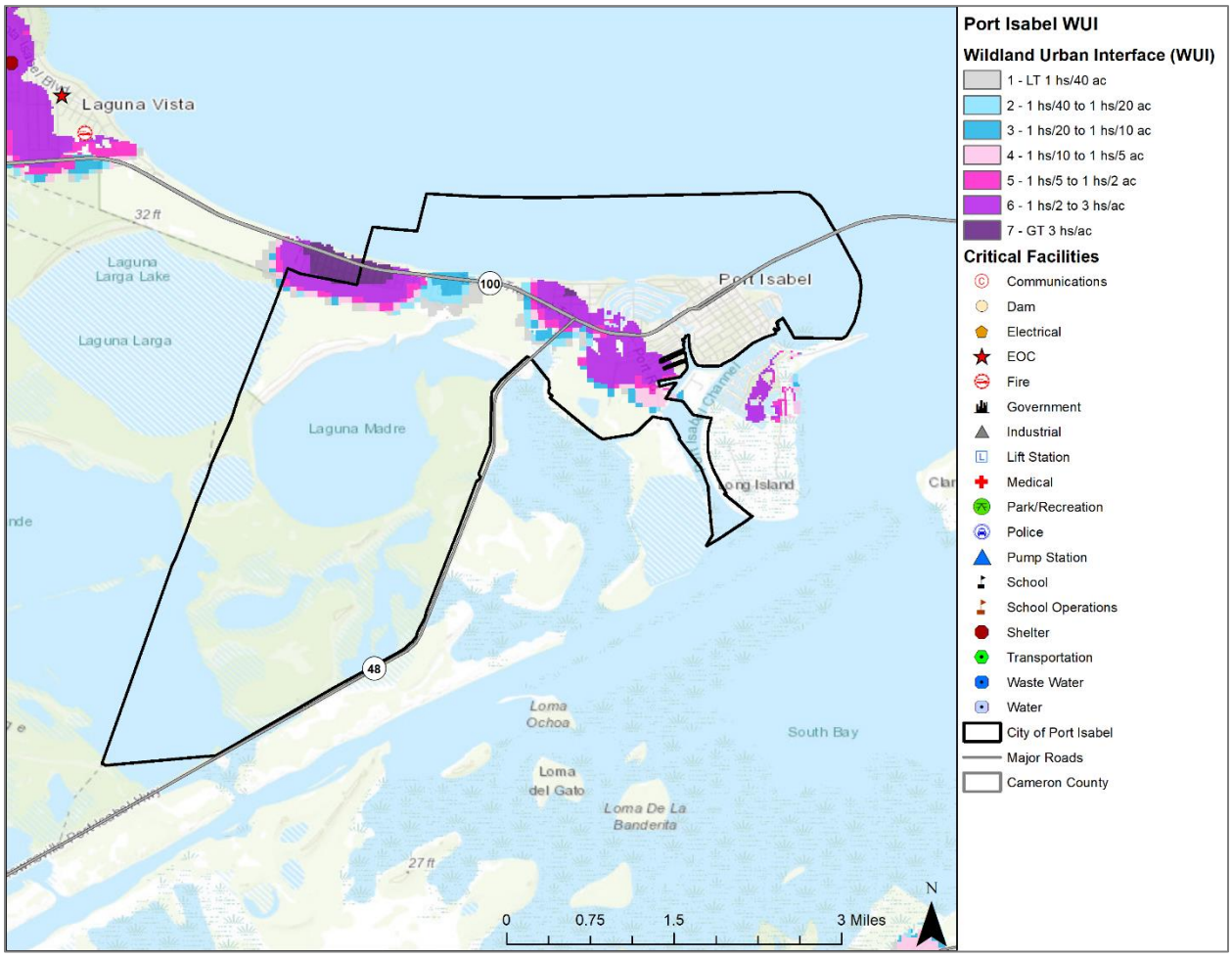
It is estimated that 61 percent of the total population in the Town of Laguna Vista live within the WUI. However, the entire Town of Laguna Vista is at some risk for wildfires.

Figure 14-15. Wildland Urban Interface Map – City of Los Fresnos



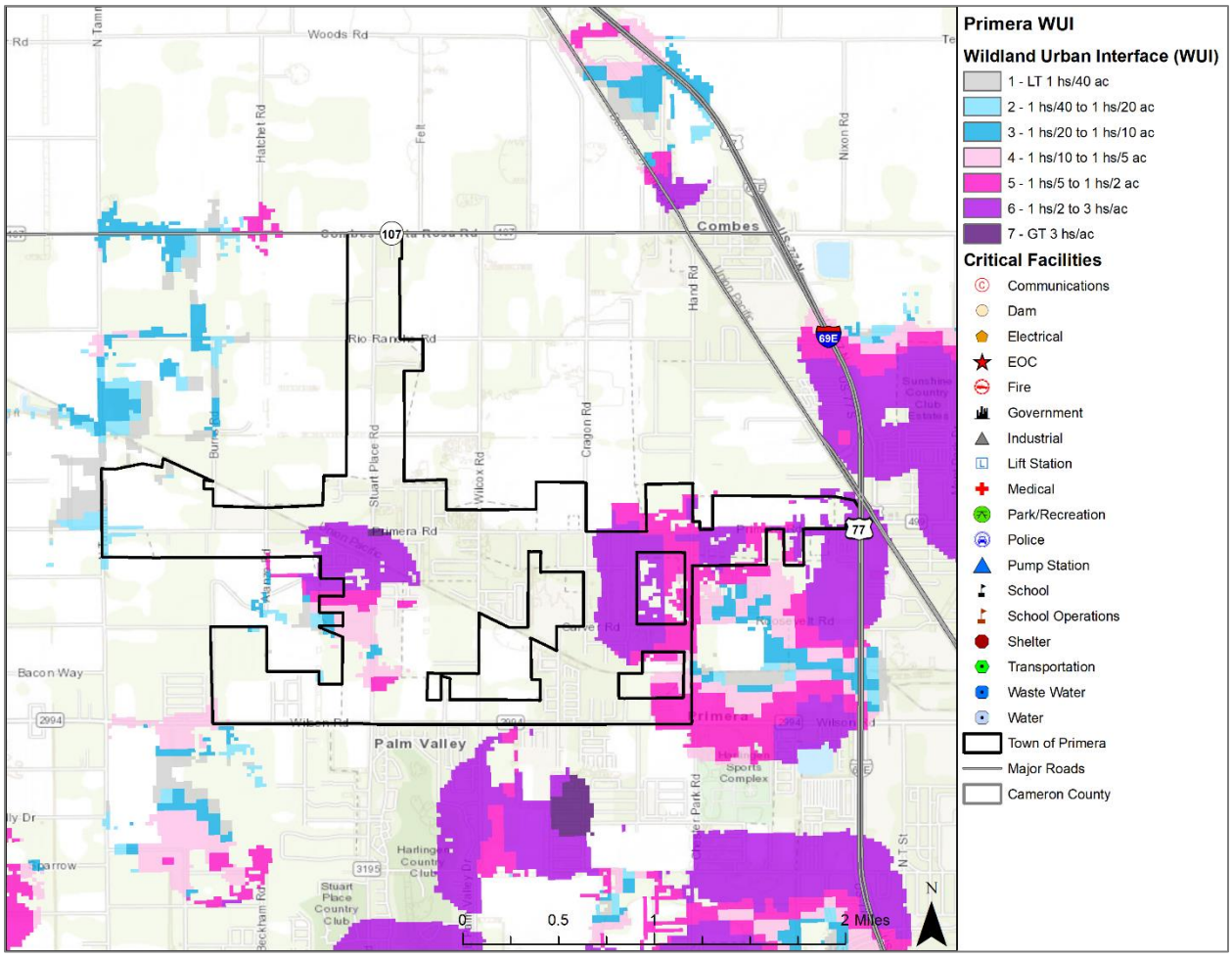
It is estimated that 67.7 percent of the total population in the City of Los Fresnos live within the WUI. However, the entire City of Los Fresnos is at some risk for wildfires.

Figure 14-16. Wildland Urban Interface Map – City of Port Isabel



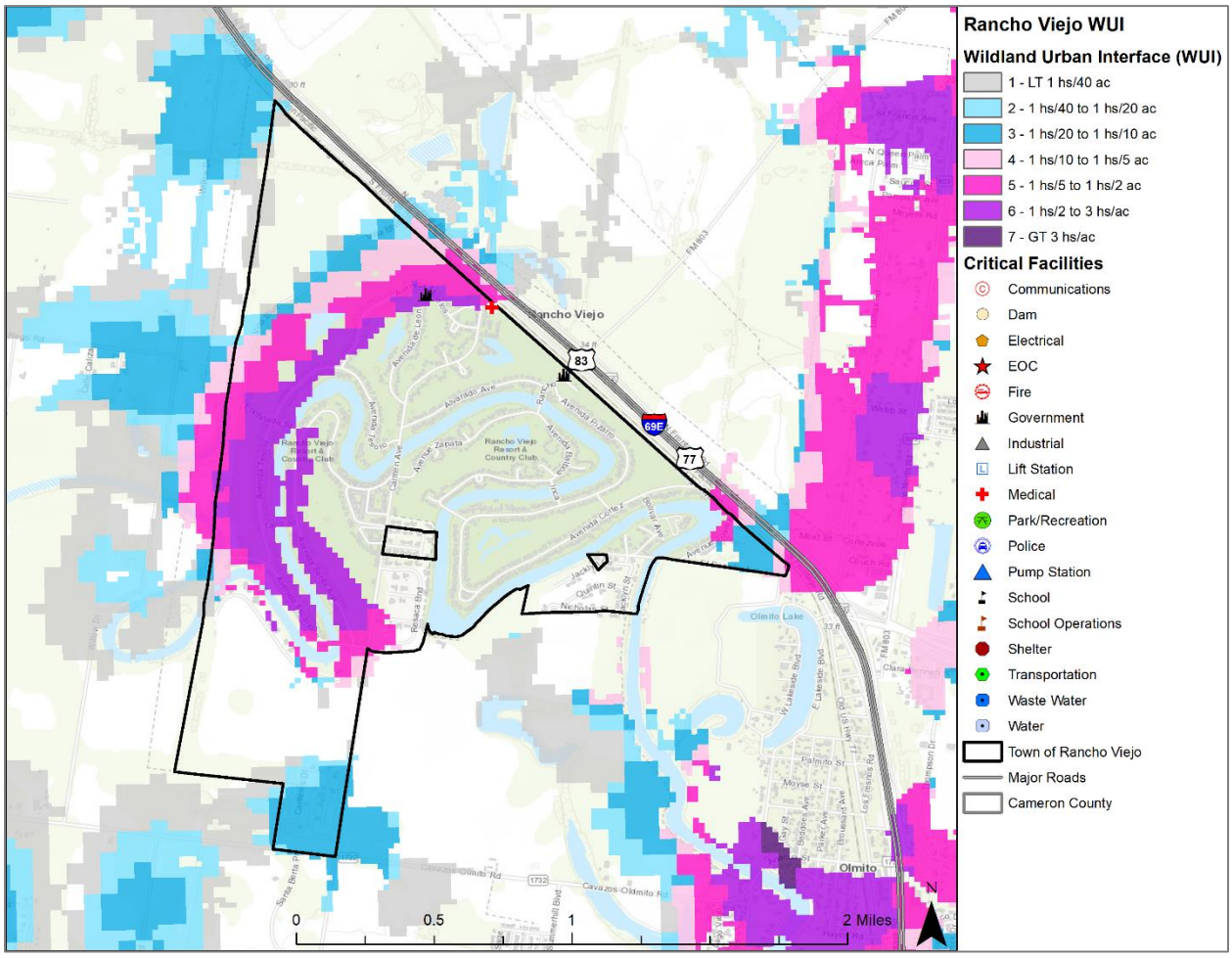
It is estimated that 17.6 percent of the total population in the City of Port Isabel live within the WUI. However, the entire City of Port Isabel is at some risk for wildfires.

Figure 14-17. Wildland Urban Interface Map – City of Primera



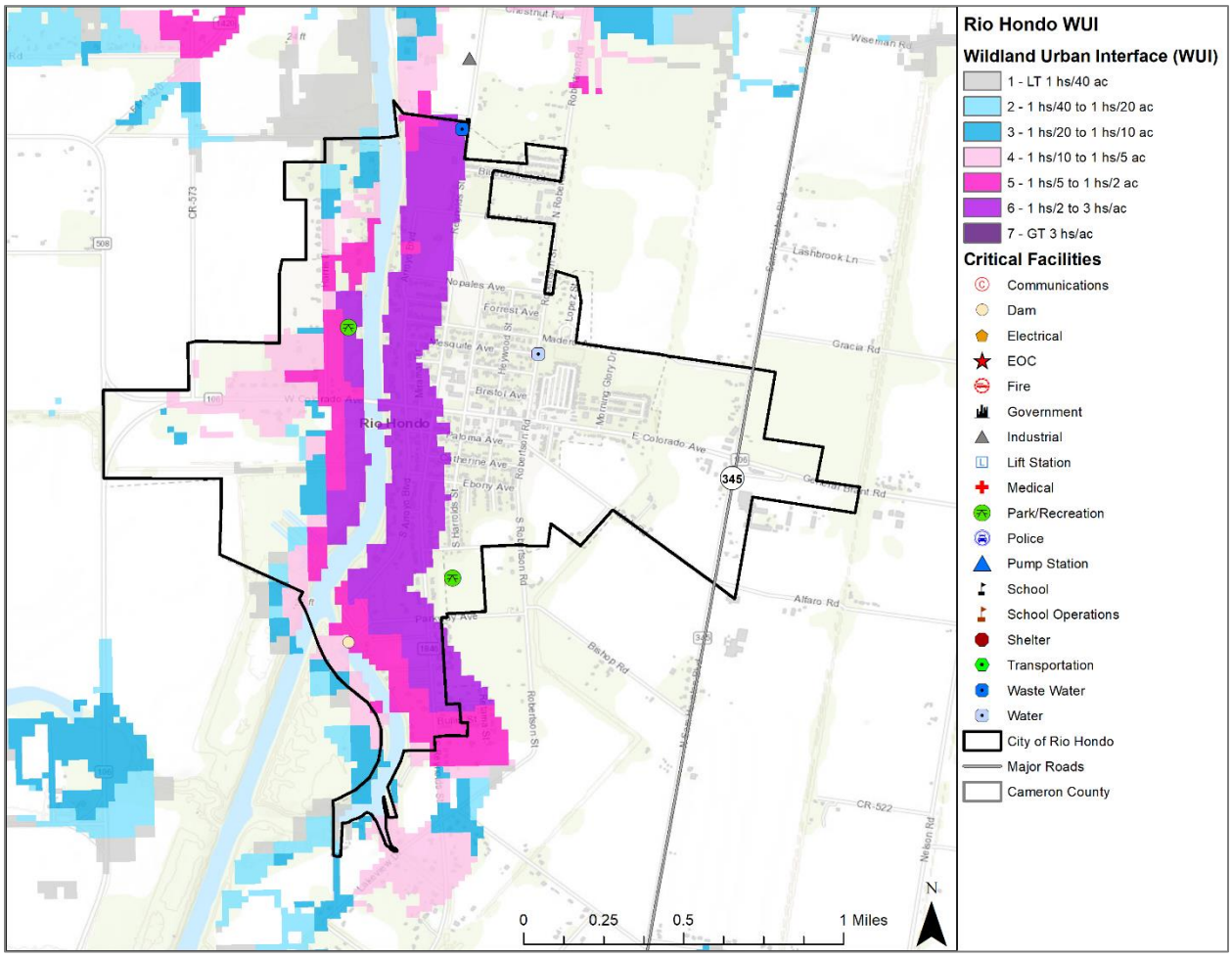
It is estimated that 27.4 percent of the total population in the City of Primera live within the WUI. However, the entire City of Primera is at some risk for wildfires.

Figure 14-18. Wildland Urban Interface Map – Town of Rancho Viejo



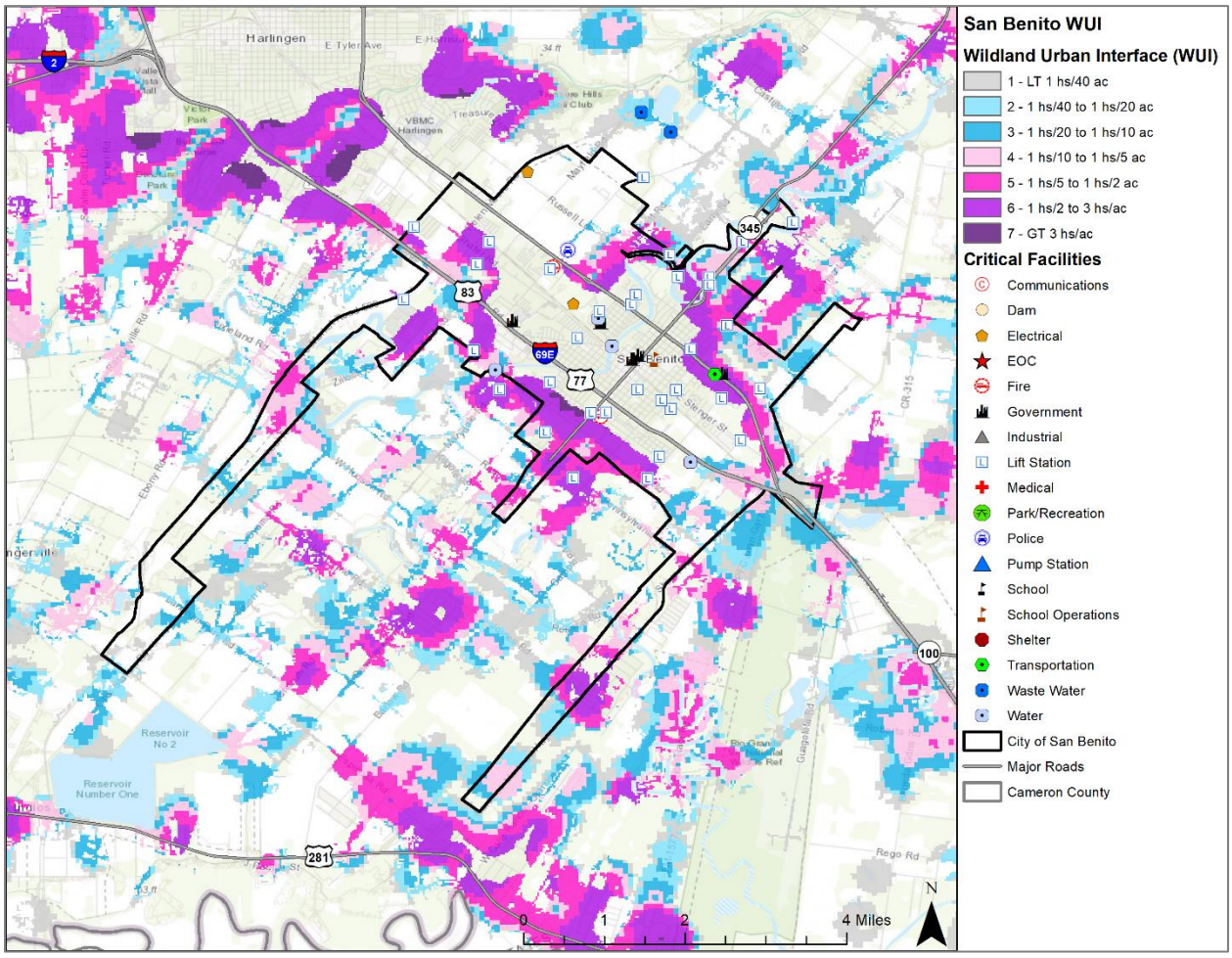
It is estimated that 17.7 percent of the total population in the Town of Rancho Viejo live within the WUI. However, the entire Tow of Rancho Viejo is at some risk for wildfires.

Figure 14-19. Wildland Urban Interface Map – City of Rio Hondo



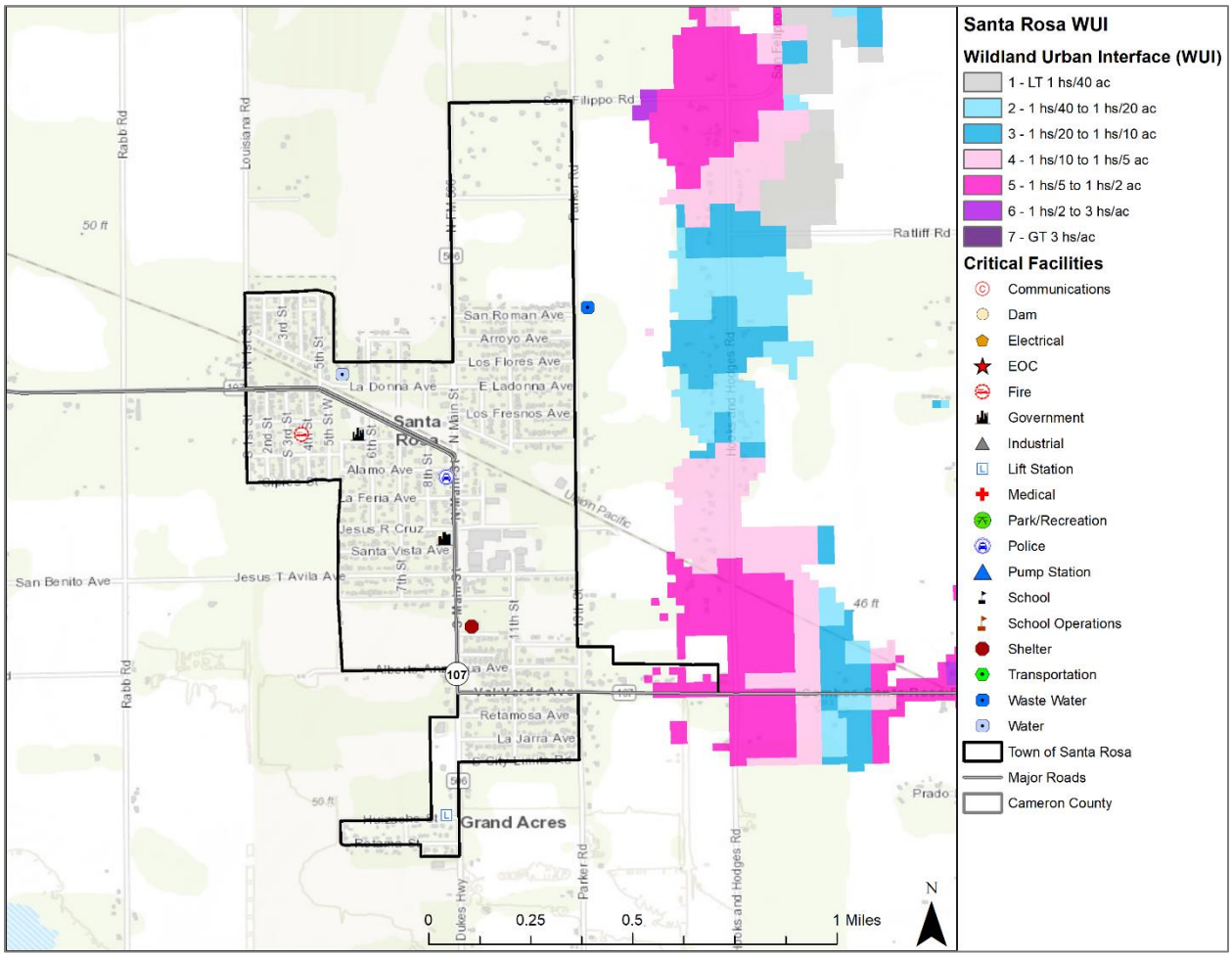
It is estimated that 29.5 of the total population in the City of Rio Hondo live within the WUI. However, the entire City of Rio Hondo is at some risk for wildfires.

Figure 14-20. Wildland Urban Interface Map – City of San Benito



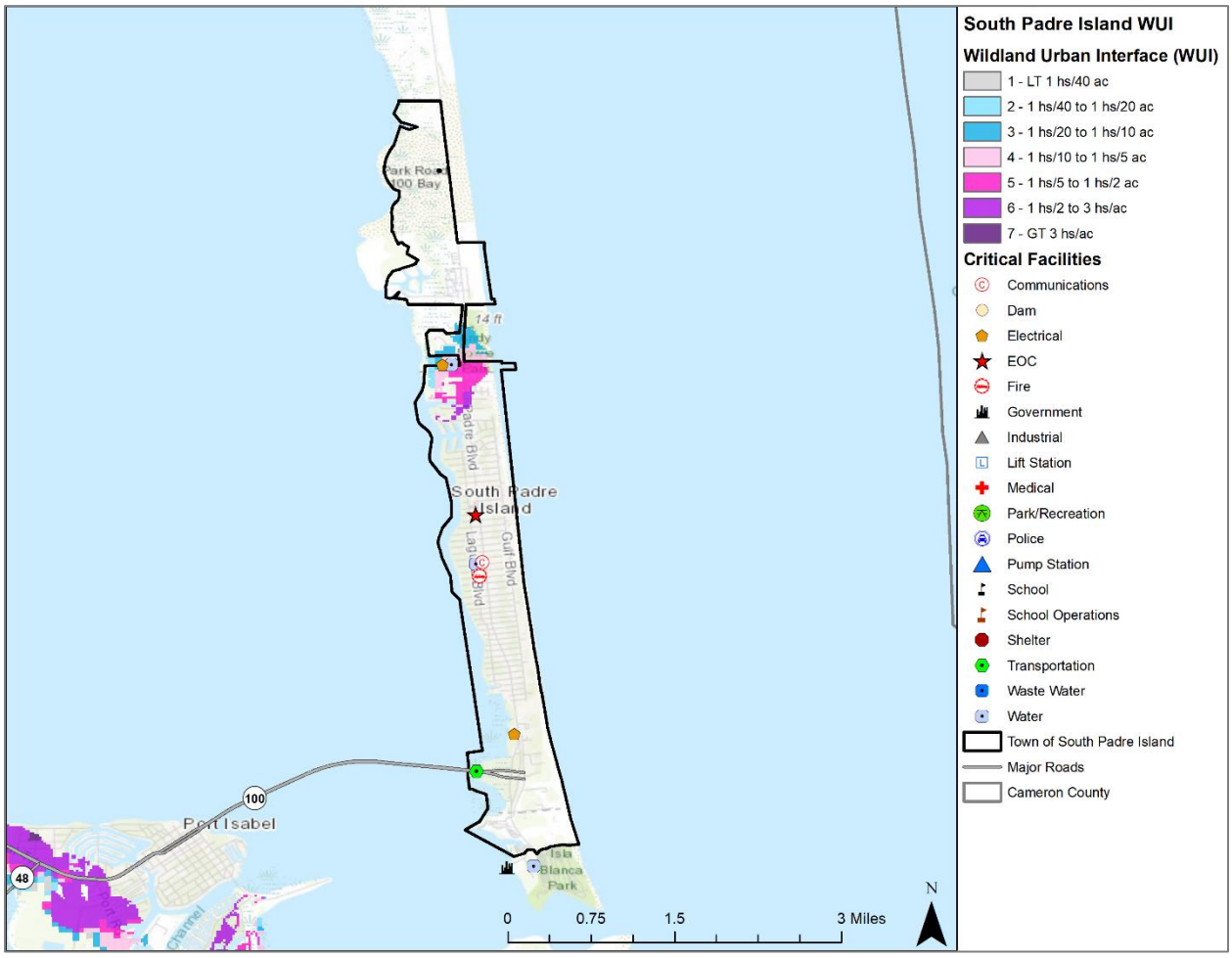
It is estimated that 21.1 percent of the total population in the Town of San Benito live within the WUI. However, the entire Town of San Benito is at some risk for wildfires.

Figure 14-21. Wildland Urban Interface Map – City of Santa Rosa



It is estimated that 0 percent of the total population in the City of Santa Rosa live within the WUI. However, the entire City of Santa Rosa is at some risk for wildfires.

Figure 14-22. Wildland Urban Interface Map – City of South Padre Island

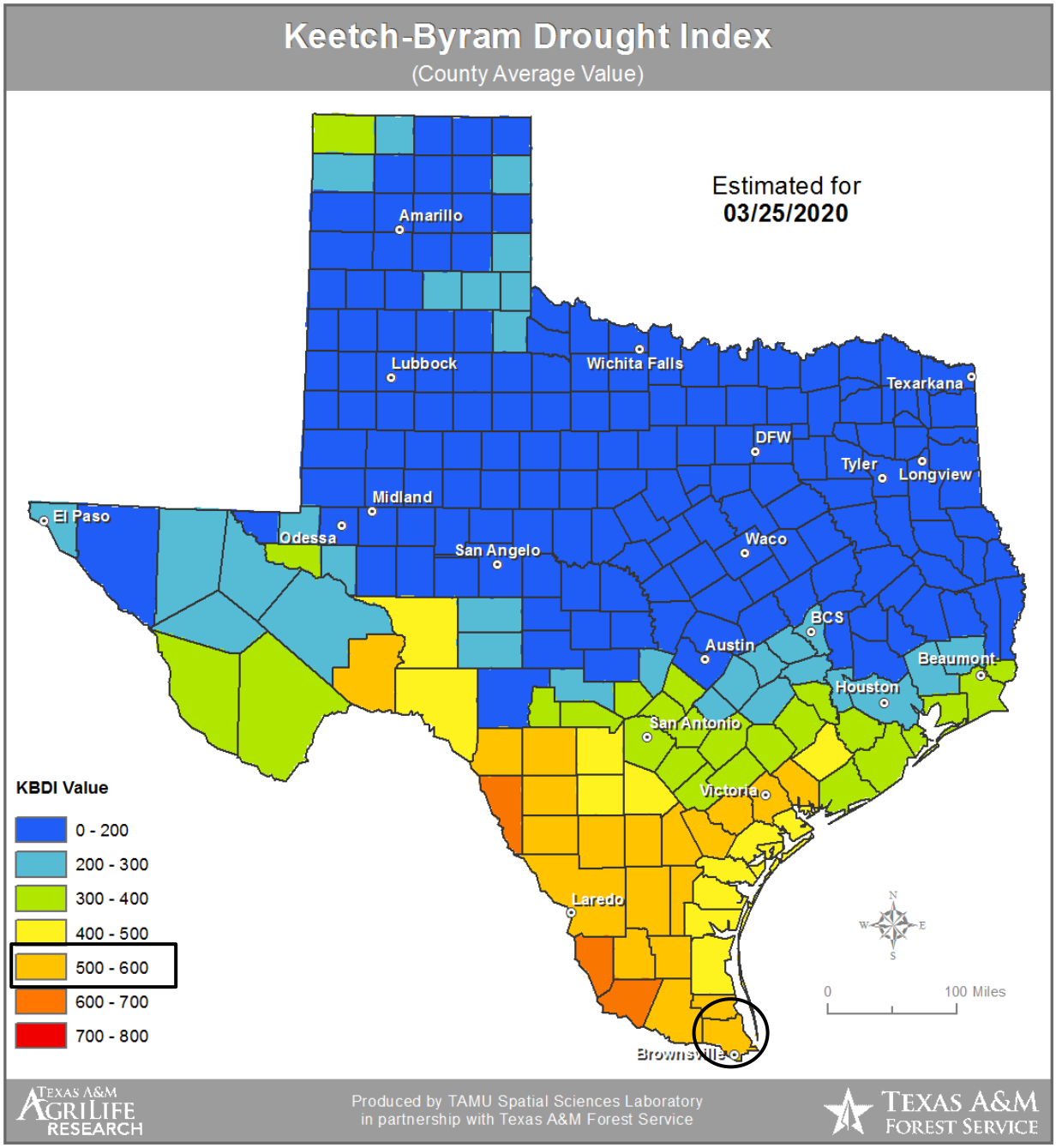


It is estimated that 2.5 percent of the total population in the City of South Padre Island live within the WUI. However, the entire City of South Padre Island is at some risk for wildfires.

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 14-4. Keetch-Byram Drought Index (KBDI) for the State of Texas, 2020[1]



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

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.
- **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 Cameron County planning area in a wildfire event is within 245 to 640. The average extent to be mitigated for the Cameron County planning area, including all participating jurisdictions, is a KBDI of 543. 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 640 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. Cameron County is between a potential limited to low wildfire intensities. Figures 14-5 through 14-7 identify the wildfire intensity for the Cameron County planning area. Figures 14-23 through 14-33 identify the wildfire intensity for the additional participating jurisdictions within the Plan Update 2021.

Figure 14-5. Fire Intensity Scale Map – Cameron County

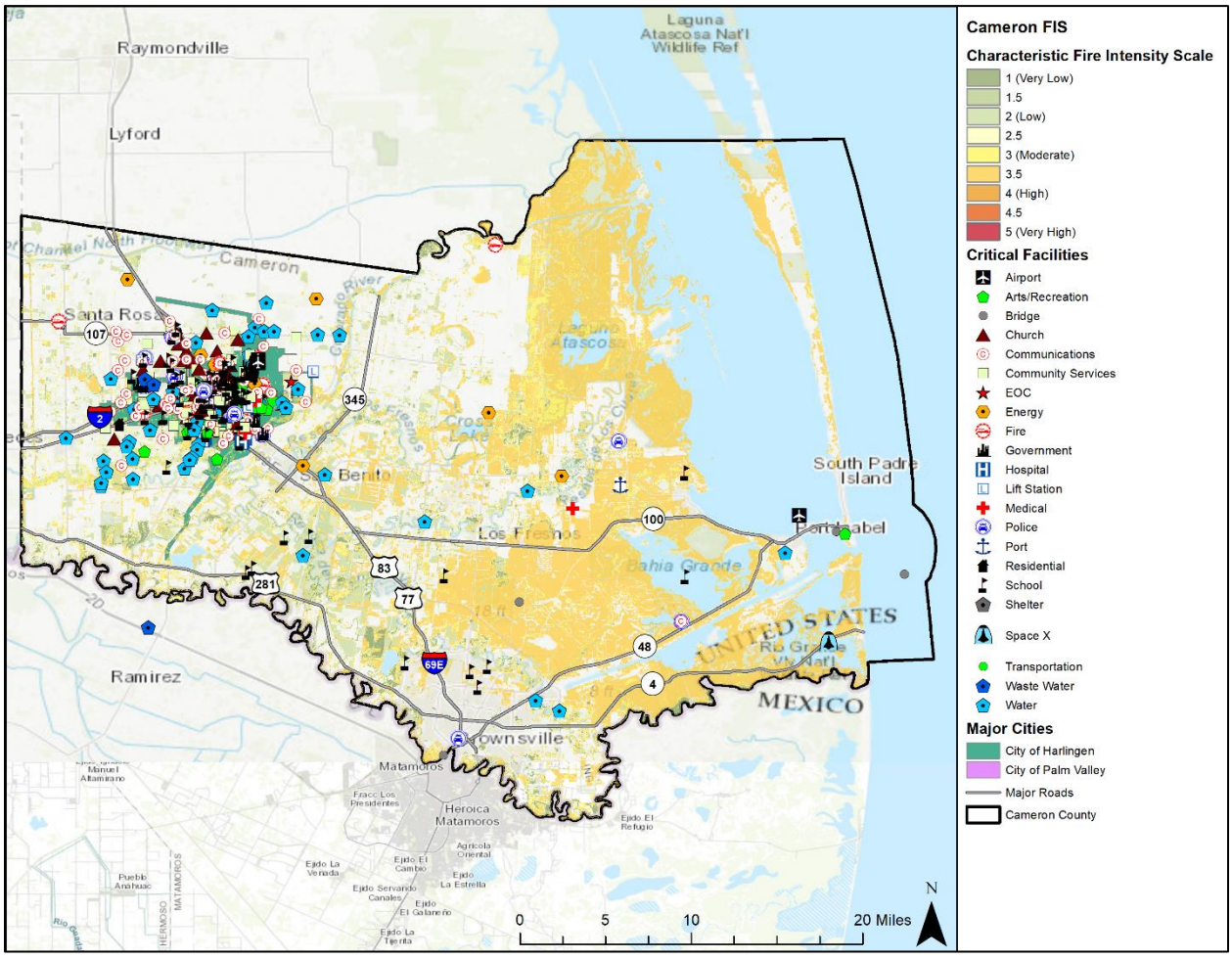


Figure 14-6. Fire Intensity Scale Map – City of Harlingen

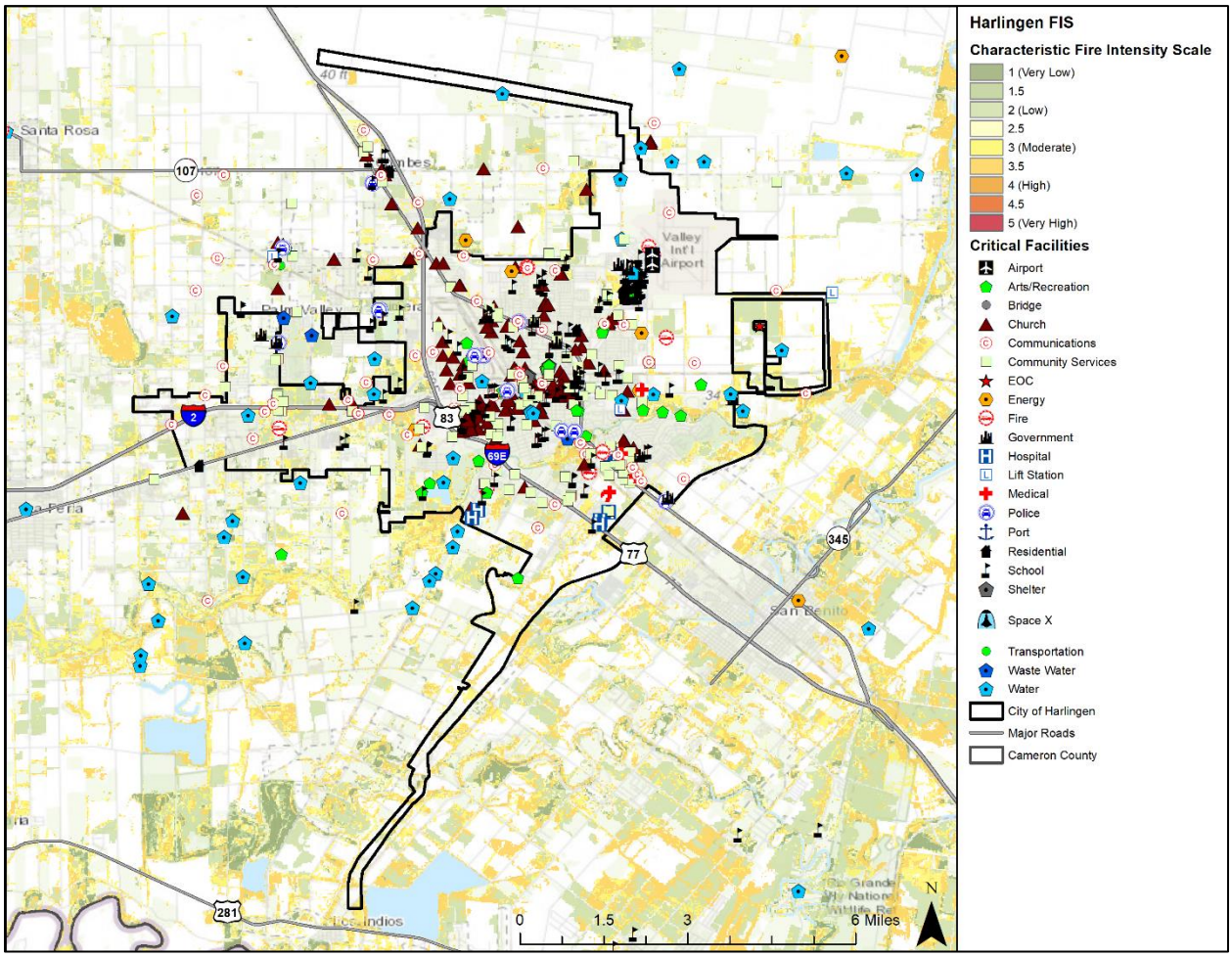


Figure 14-7. Fire Intensity Scale Map – City of Palm Valley

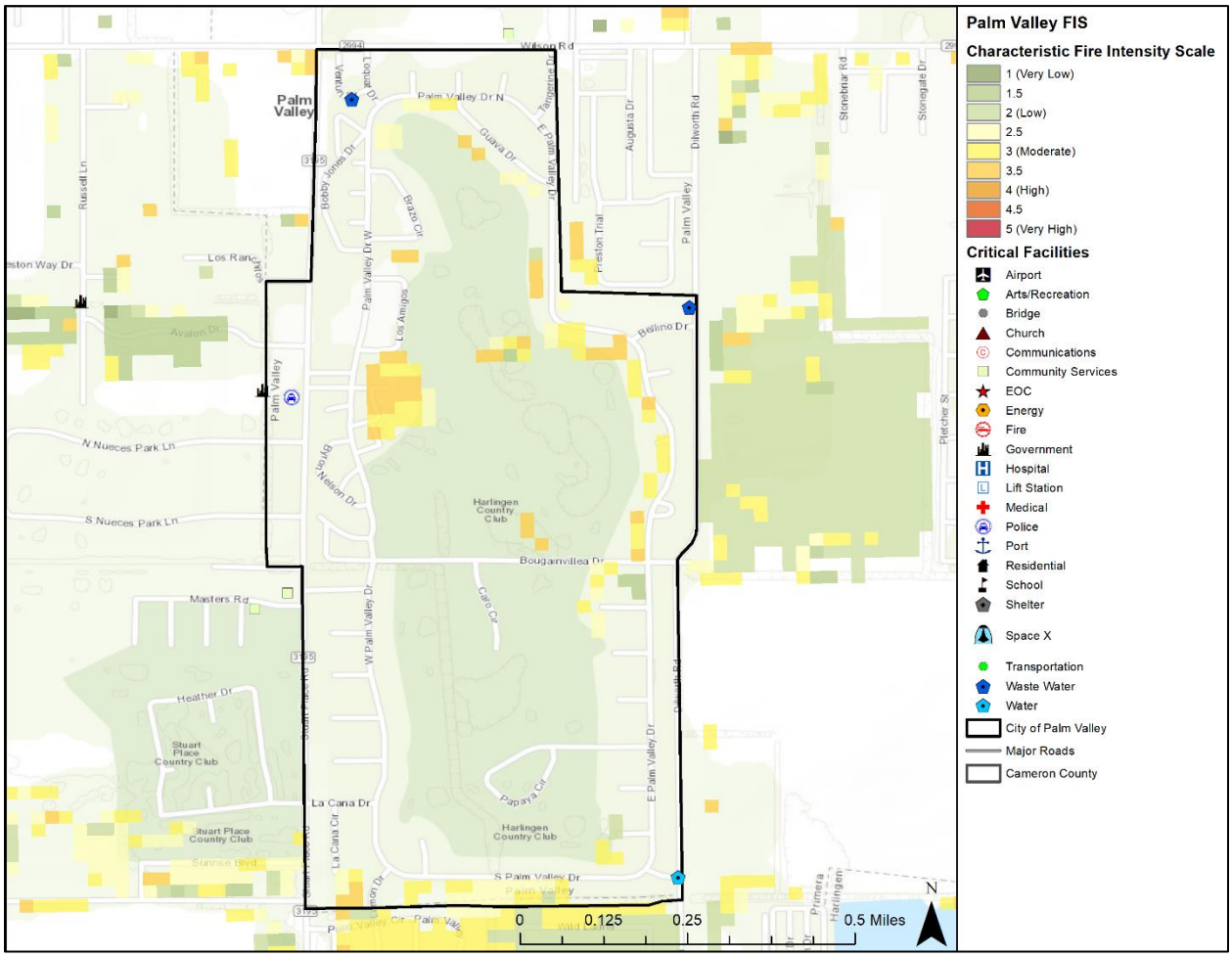


Figure 14-23. Fire Intensity Scale Map – Town of Indian Lake

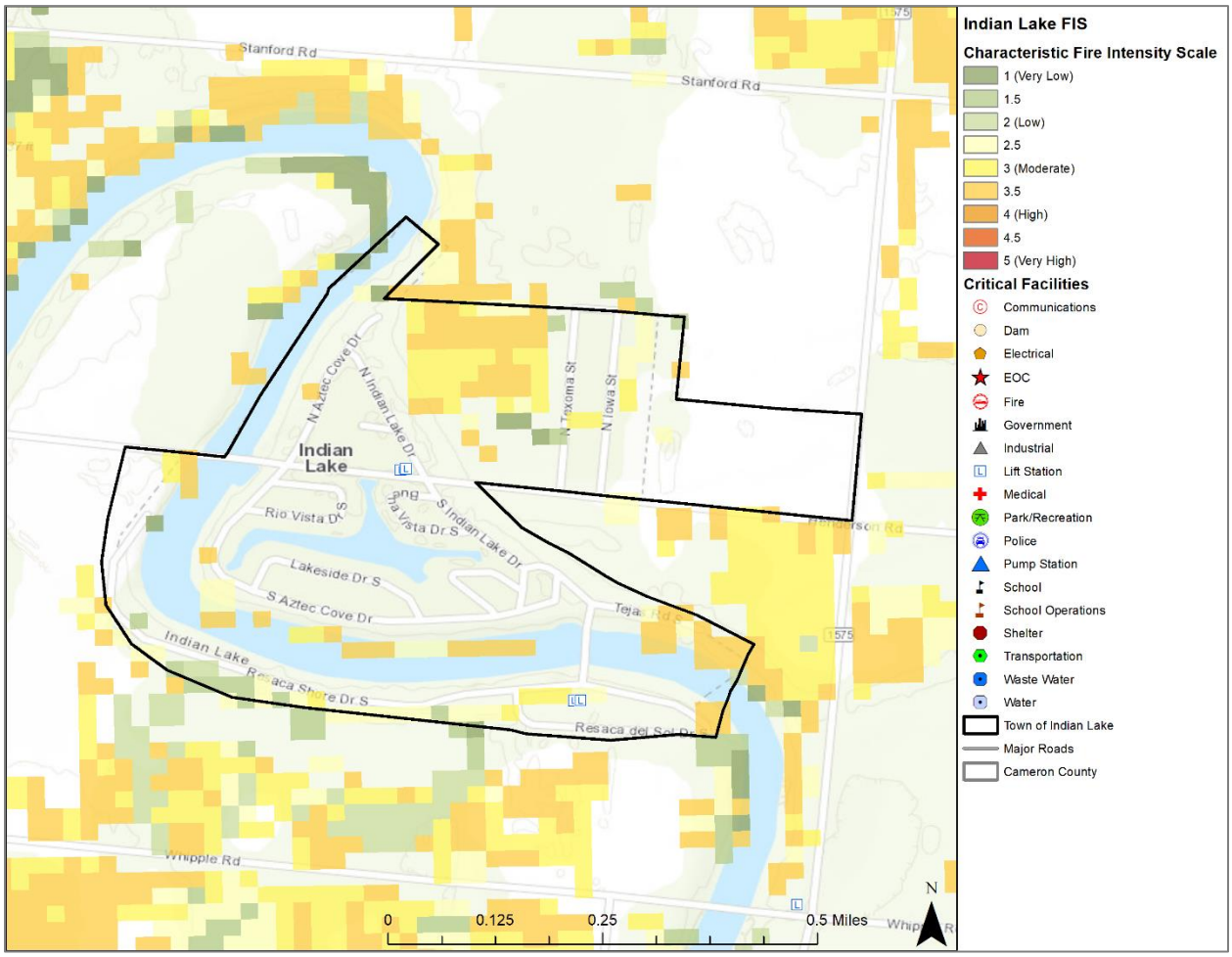


Figure 14-24. Fire Intensity Scale Map – City of La Feria

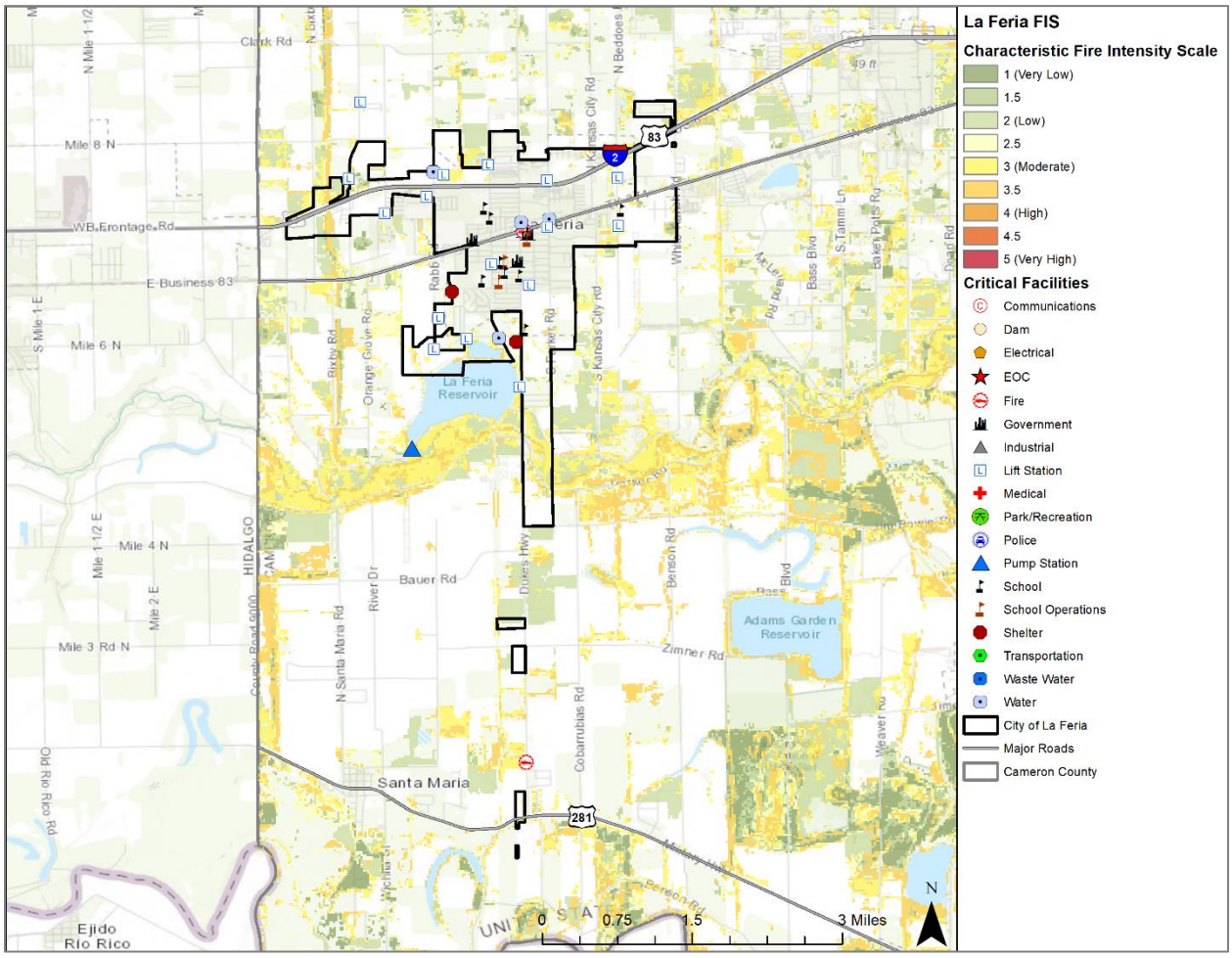


Figure 14-25. Fire Intensity Scale Map – Town of Laguna Vista

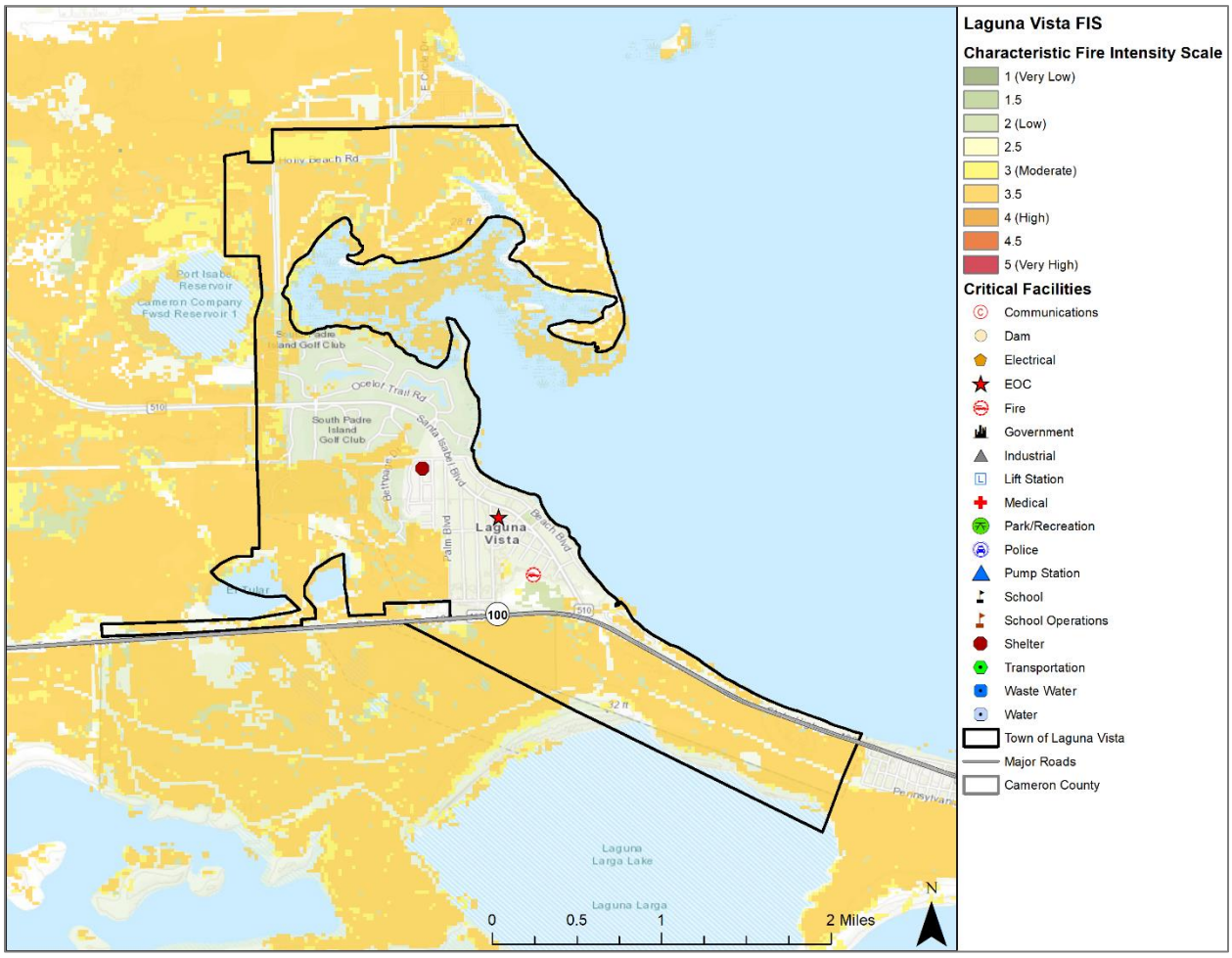


Figure 14-26. Fire Intensity Scale Map – City of Los Fresnos

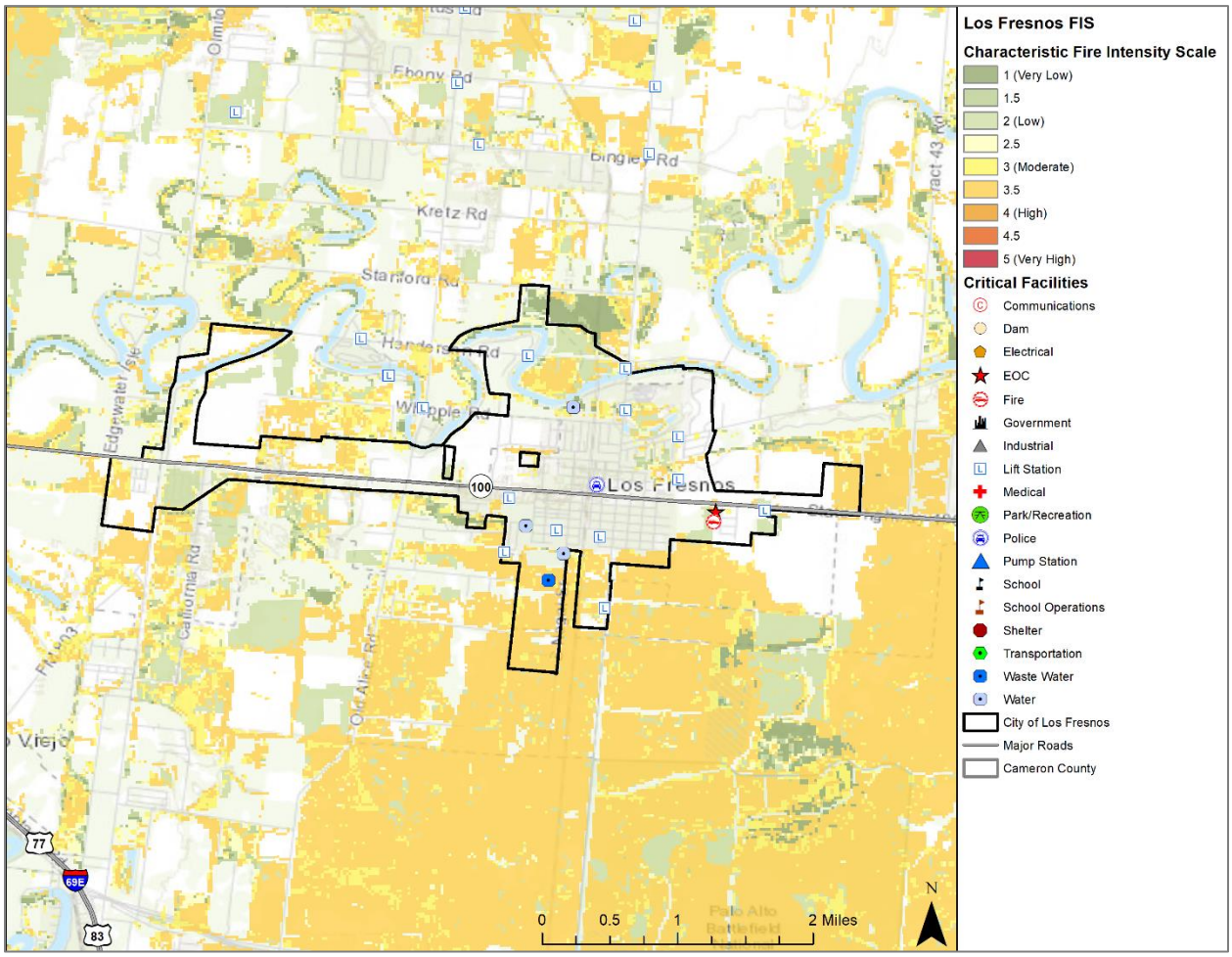


Figure 14-27. Fire Intensity Scale Map – City of Port Isabel

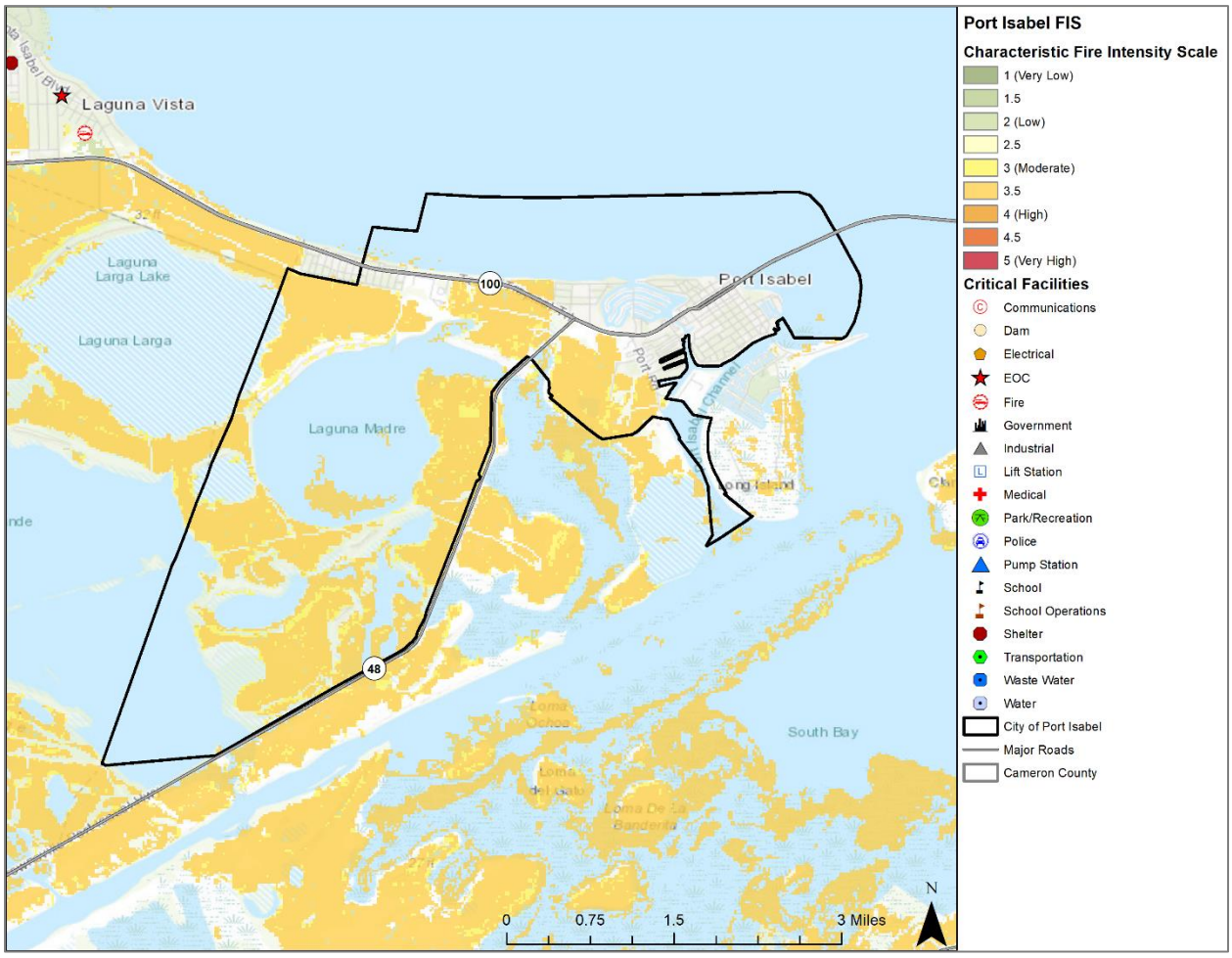


Figure 14-28. Fire Intensity Scale Map – City of Primera

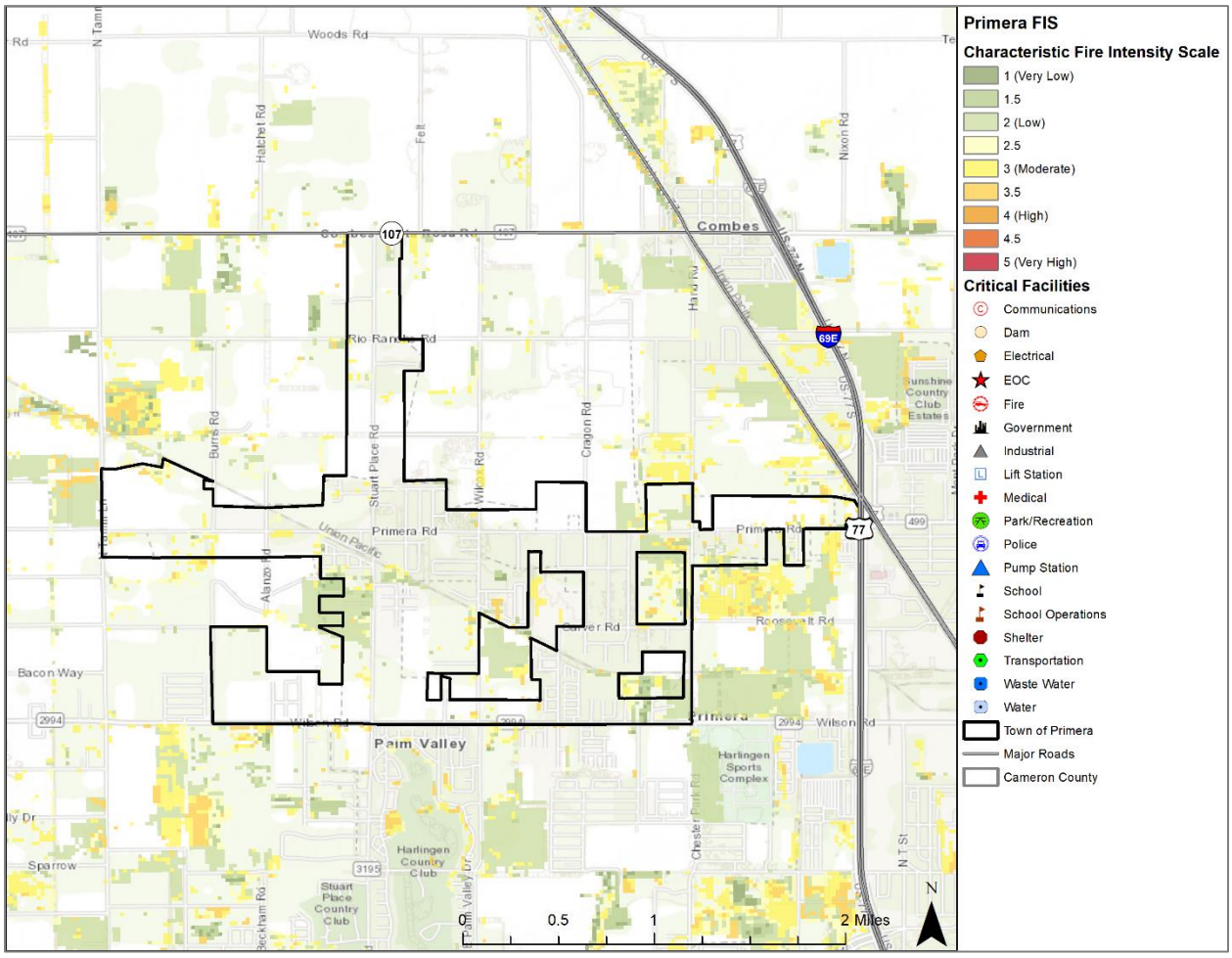


Figure 14-29. Fire Intensity Scale Map – Town of Rancho Viejo

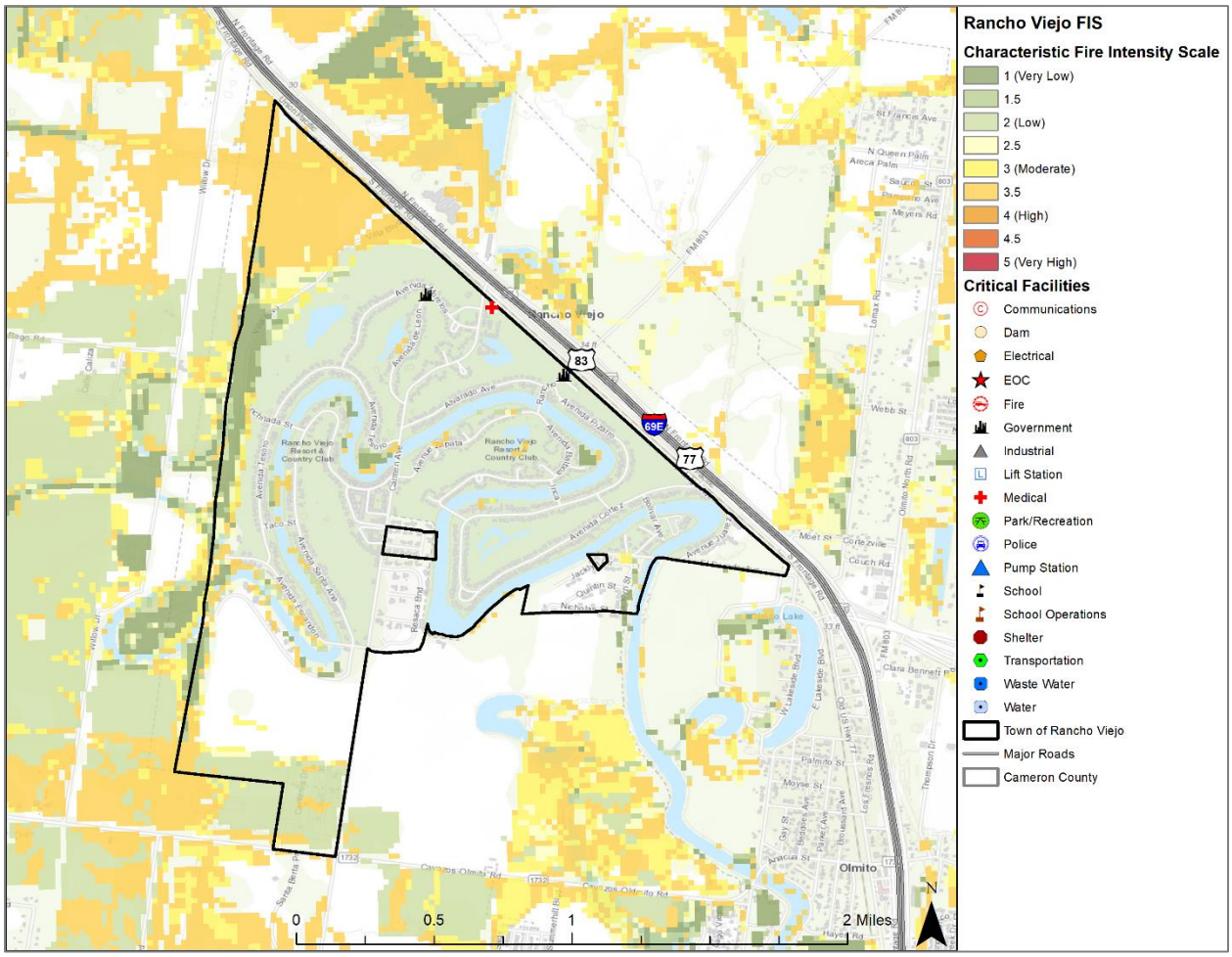


Figure 14-30. Fire Intensity Scale Map – City of Rio Hondo

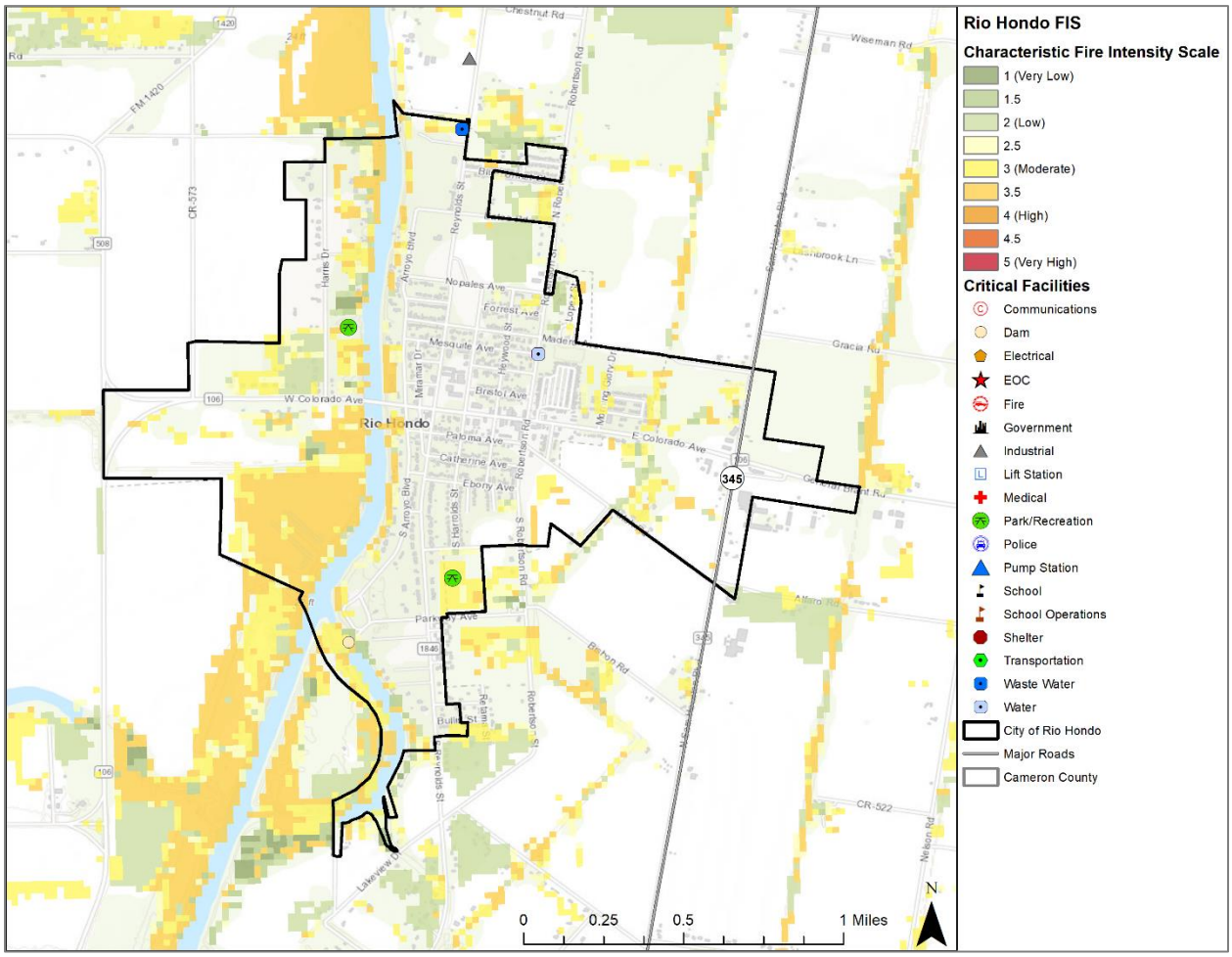


Figure 14-31. Fire Intensity Scale Map – City of San Benito

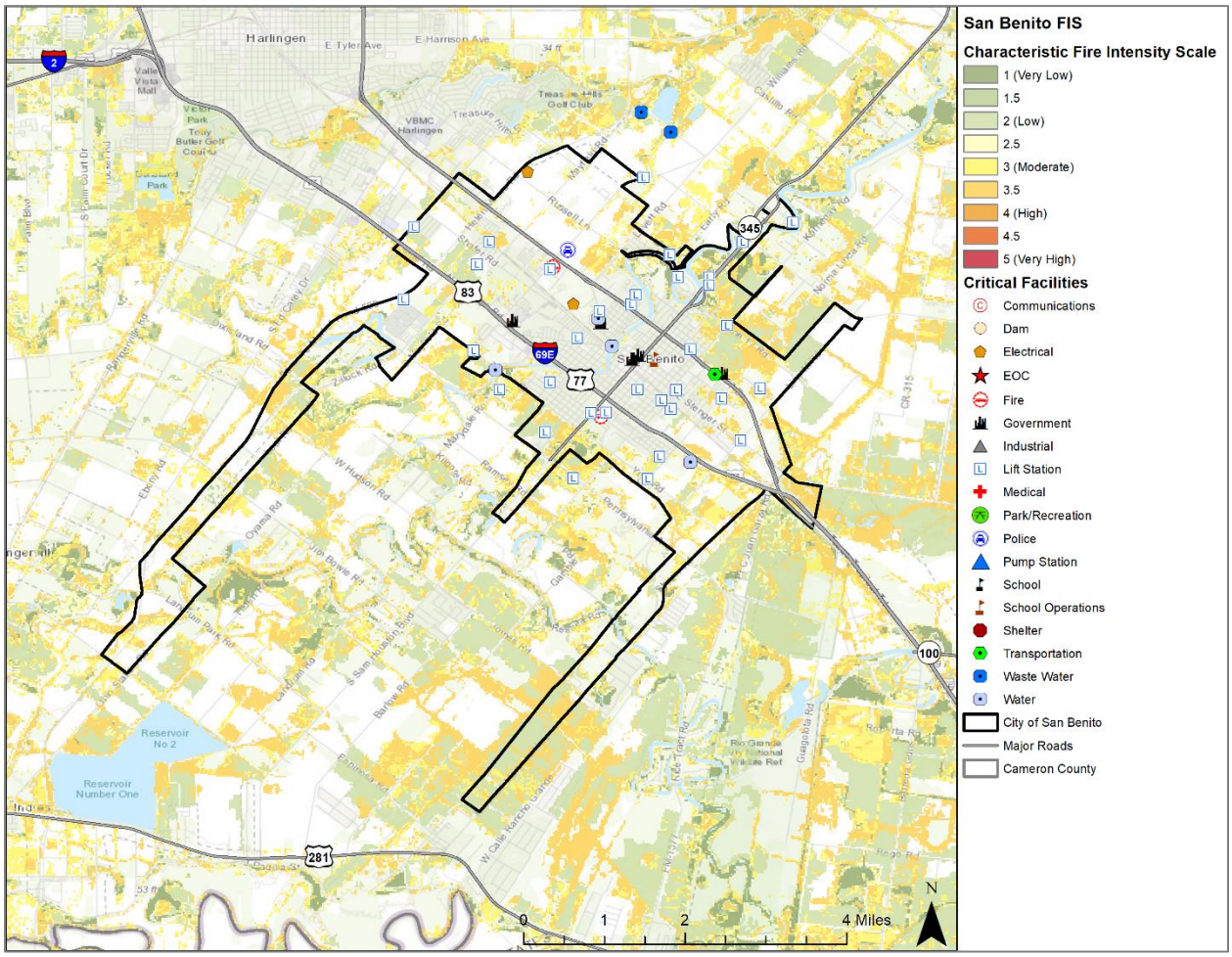


Figure 14-32. Fire Intensity Scale Map – City of Santa Rosa

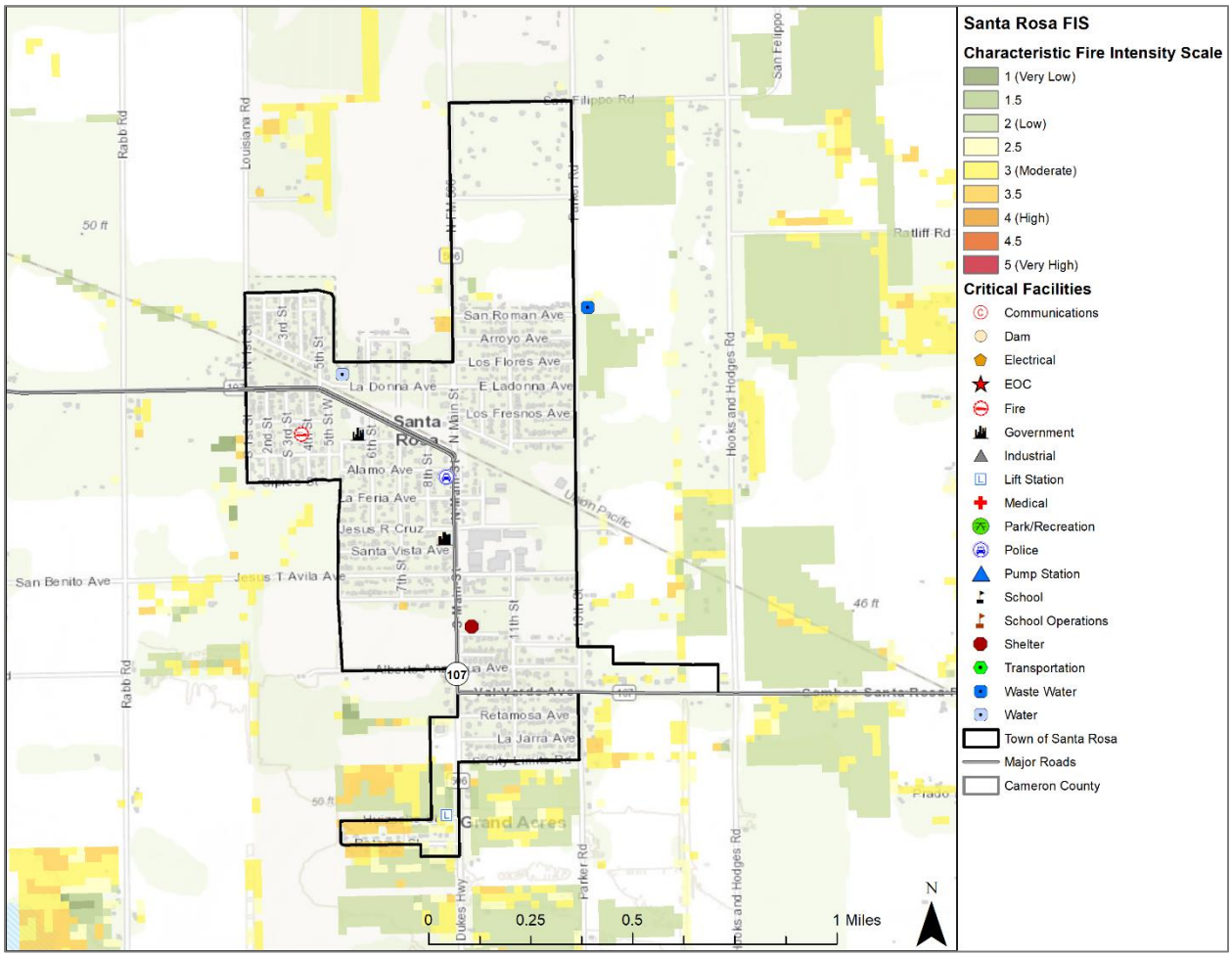
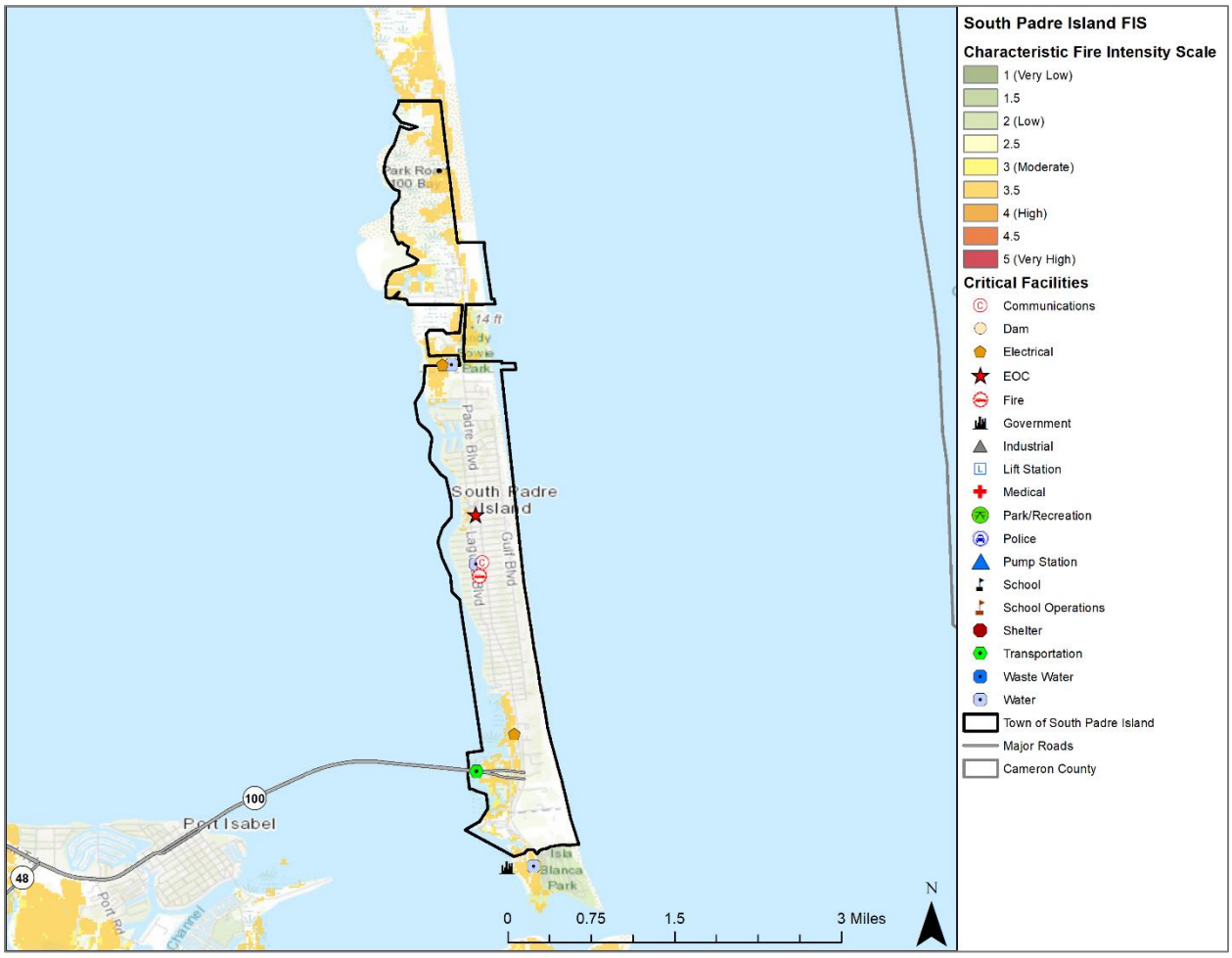


Figure 14-33. Fire Intensity Scale Map – City of South Padre Island



HISTORICAL OCCURRENCES

The Texas Forest Service reported 115 wildfire events between 2005 and 2015. The National Center for Environmental Information (NCEI) did not have any reported events from 1996 through November 2019. Due to a lack of recorded data for wildfire events prior to 2005 and after 2015[2], frequency calculations are based on an eleven-year period using only data from recorded years. The map below shows approximate locations of wildfires, which can be grass or brushfires of any size (Figure 14-8), while Figure 14-8A shows approximate locations of wildfires, which can be grass or brushfires of any size within the Cameron County area for the additional participating jurisdictions with the amended Plan Update. Table 14-1 identifies the number of wildfires by jurisdiction and total acreage burned, where Table 14-1A represents the number of wildfires and total acreage burned for the additional participating jurisdictions within Cameron County.

[2] The Texas Forest Service data is currently only available through 2015.

Figure 14-8. Location and Historic Wildfire Events for Cameron County Planning Area

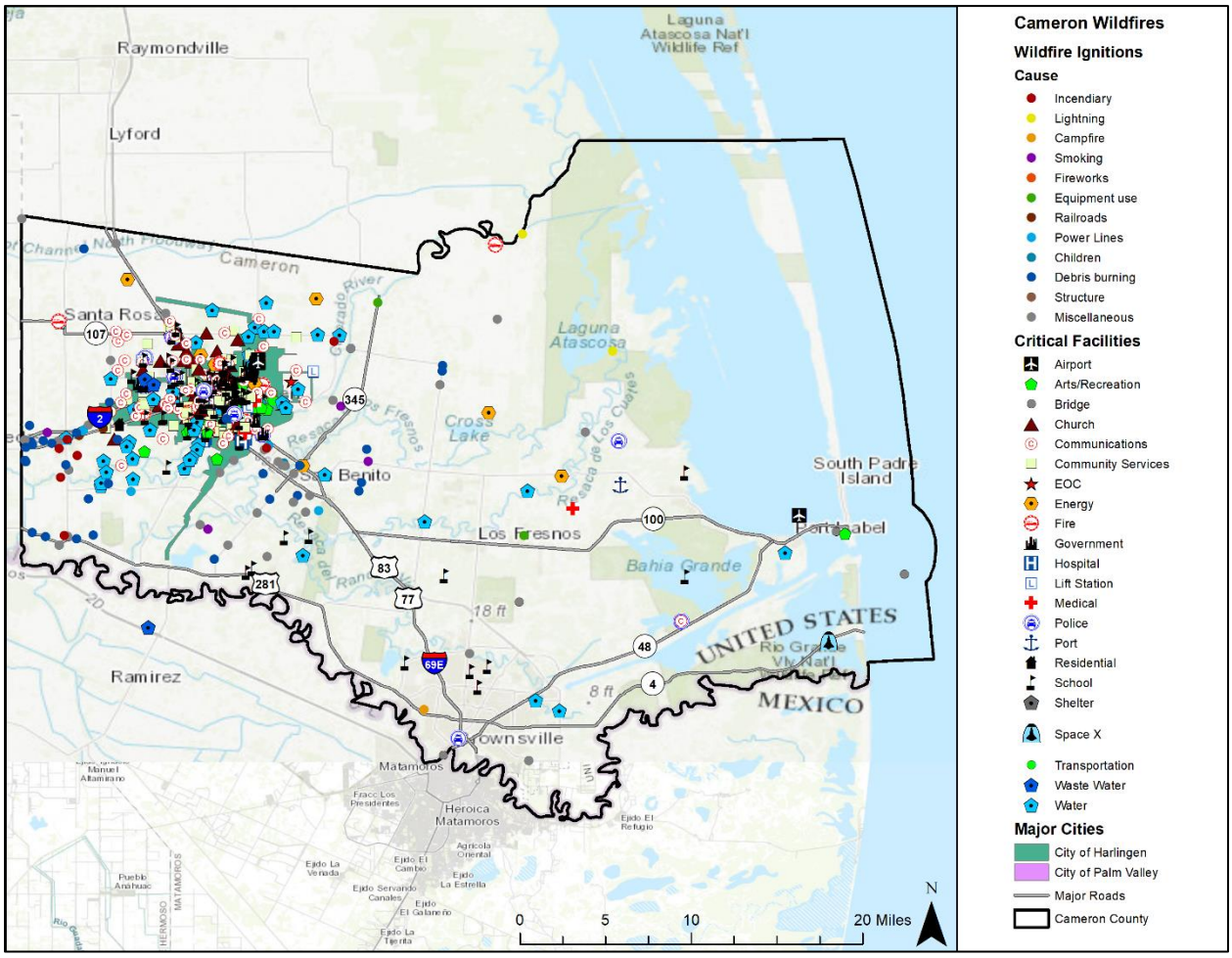


Figure 14-8A. Location and Historic Wildfire Events for the Additional Jurisdictions within the Cameron County Planning Area

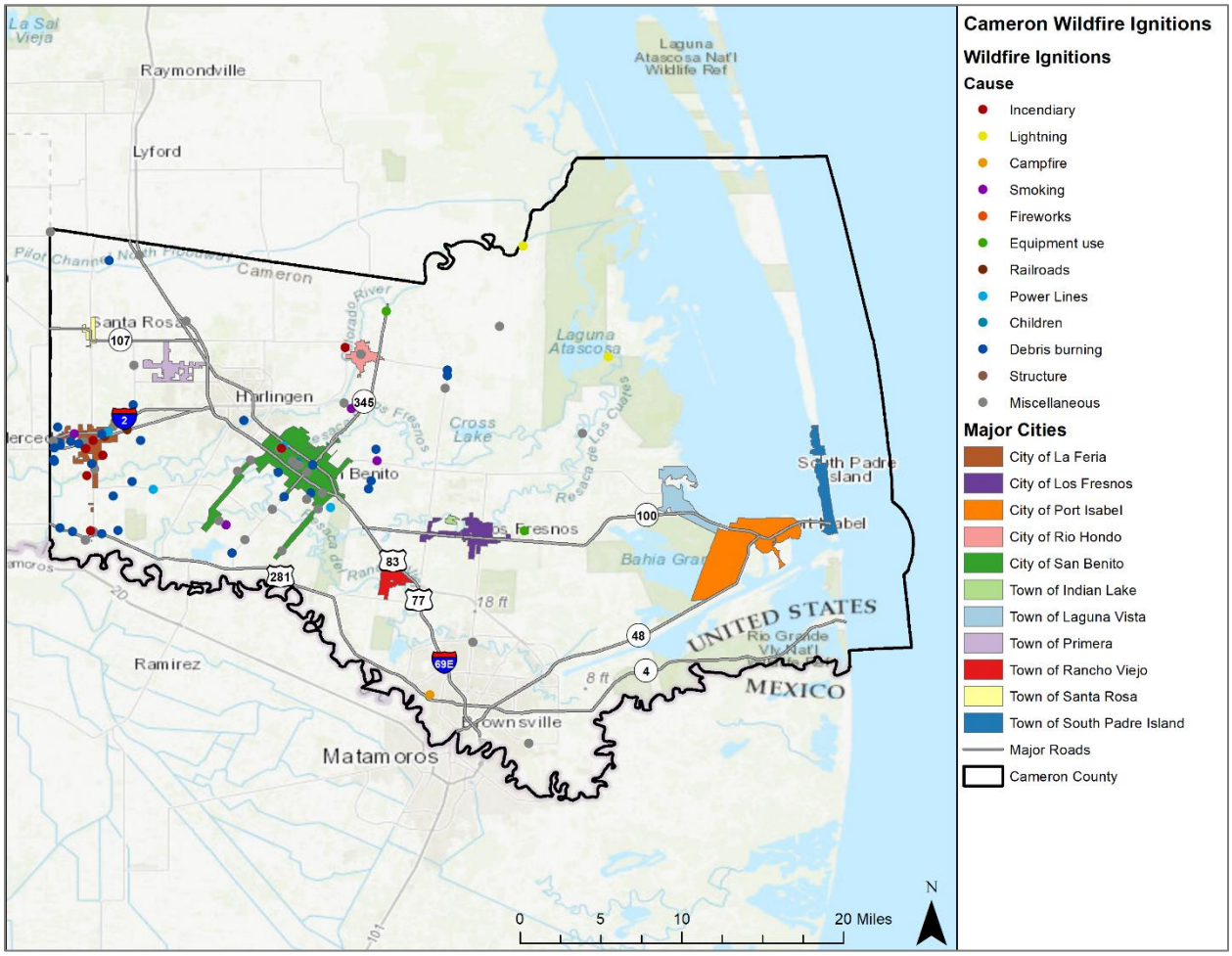


Table 14-1. Historical Wildfire Events Summary

JURISDICTION	NUMBER OF EVENTS	ACRES BURNED
Cameron County	112	809
City of Harlingen	3	9
City of Palm Valley	0	0

Table 14-1A. Additional Participating Jurisdictions Historical Wildfire Events Summary, 2005 - 2019

JURISDICTION	NUMBER OF EVENTS	ACRES BURNED
Town of Indian Lake	1	1
City of La Feria	7	106

JURISDICTION	NUMBER OF EVENTS	ACRES BURNED
Town of Laguna Vista	0	0
City of Los Fresnos	12	70
City of Port Isabel	0	0
City of Primera	4	4
Town of Rancho Viejo	0	0
City of Rio Hondo	23	84
City of San Benito	13	83
City of Santa Rosa	0	0
City of South Padre Island	3	2

Table 14-2. Acreage of Suppressed Wildfire by Year

JURISDICTION	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Cameron County	93	238	1	14	0	100	0	295	1	2	65
City of Harlingen	1	3	0	0	0	0	0	5	0	0	0
City of Palm Valley	0	0	0	0	0	0	0	0	0	0	0

Table 14-2A. Additional Participating Jurisdictions Acreage of Suppressed Wildfire by Year, 2005-2019

JURISDICTION	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Town of Indian Lake	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
City of La Feria	0	3	3	0	0	100	0	0	0	0	0	0	0	0	0
Town of Laguna Vista	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Los Fresnos	0	0	0	0	0	0	0	0	0	0	0	0	54	12	4
City of Port Isabel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Primera	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
Town of Rancho Viejo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

JURISDICTION	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
City of Rio Hondo	64	20	0	0	0	0	0	0	0	0	0	0	0	0	0
City of San Benito	0	6	0	0	0	0	0	35	0	0	0	0	42	0	0
City of Santa Rosa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of South Padre Island	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0

Based on the list of historical wildfire events for the Cameron County planning area (listed above), including all participating jurisdictions, 65 of the events have occurred since the 2015 Plan. Based on the list of historical wildfire events for the additional participating jurisdictions within the Cameron County planning area (listed above), 21 events have occurred since the 2015 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 115 events in an 11-year period, an event within Cameron County, including all participating jurisdictions, and 63 events in a 15-year period, within the additional participating jurisdiction, 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 Cameron County are not likely to experience large, sweeping fires. Areas in the unincorporated areas of Cameron County are vulnerable, including rural areas such as Interstate 69 north of Combes, and Highway 2 between La Feria and Harlingen. 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. Figures 14-1 through 14-3, and Figure 14-12 through 14-22 for the additional participating jurisdictions, 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 14-3. Critical Facilities Located in WUI by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Cameron County	9 Schools, 1 Space-X Port, 4 Water District Facilities

JURISDICTION	CRITICAL FACILITIES
City of Harlingen	1 EOC/Government Facility, 1 Police Station, Fire Stations, 1 Communication Tower, 7 Banks, 9 Churches, 5 Parks, 5 Medical Facilities/ Hospitals, 6 Nursing Homes, 26 Communication Towers,1 Constable Office, 13 Pump Stations, 1 Lift Station, 3 Government Facilities, 1 Power Company, 1 Power Plant, 1 Power Utility Station, 22 School Facilities (buildings, teaching facilities, warehouses, offices), 1 Sheriff's Office, 3 Water Towers, 2 Water/Wastewater Plants,
City of Palm Valley	1 Wastewater Treatment Facility, 1 Pump Station

Table 14-3A. Additional Participating Jurisdictions Critical Facilities Located in WUI by Jurisdiction

JURISDICTION	CRITICAL FACILITIES
Town of Indian Lake	2 Lift Stations
City of La Feria	1 Fire Station, 1 Pump Station, 5 Lift Stations, 1 Water Tower
Town of Laguna Vista	1 Library
City of Los Fresnos	1 Fire Station, 22 Lift Stations, 2 Water Treatment Facilities, 1 Water Tower, 1 Water Meter Station
City of Port Isabel	None
City of Primera	None
Town of Rancho Viejo	1 Town Hall/Police Station
City of Rio Hondo	1 Wastewater Treatment Facility, 1 Dam, 1 Boat Ramp
City of San Benito	2 Government Facilities, 15 Lift Stations, 1 Power Substation, 3 Water/Wastewater Treatment Facilities
City of Santa Rosa	None
City of South Padre Island	1 Power Substation, 1 Water Tower

Within Cameron County, a total of 115 fire events were reported from 2005 to 2015. All of these events were suspected wildfires. Historic loss and annualized estimates due to wildfires are presented in Table 14-4 below. Within the additional participating jurisdictions within the amended Cameron County Plan Update 2021, a total of 63 fire events were reported from 2005 to 2019 (Table 14-4A). The frequency is approximately 10 events every year.

Table 14-4. Potential Annualized Losses by Jurisdiction[3]

JURISDICTION	ACRES BURNED	ANNUAL ACRE LOSSES
Cameron County	809	73.5
City of Harlingen	9	0.8
City of Palm Valley	0	0
Planning Area	**818**	**74.4**

Table 14-4A. Additional Participating Jurisdictions Potential Annualized Losses by Jurisdiction[4]

JURISDICTION	ACRES BURNED	ANNUAL ACRE LOSSES
Town of Indian Lake	1	0.07
City of La Feria	106	7.07
Town of Laguna Vista	0	0
City of Los Fresnos	70	4.66
City of Port Isabel	0	0
City of Primera	4	0.27
Town of Rancho Viejo	0	0
City of Rio Hondo	84	5.60
City of San Benito	83	5.53
City of Santa Rosa	0	0
City of South Padre Island	2	0.13
Planning Area	**350**	**23.33**

Figures 14-9 through 14-11 show Cameron County and the threat of wildfire to the County and all participating jurisdictions, while Figures 14-34 through 14-44 show the threat of wildfire to the additional participating jurisdictions within the amended Plan Update.

[3] Events divided by 11 years of data.
[4] Events divided by 15 years of data.

Figure 14-9. Wildfire Ignition Density – Cameron County

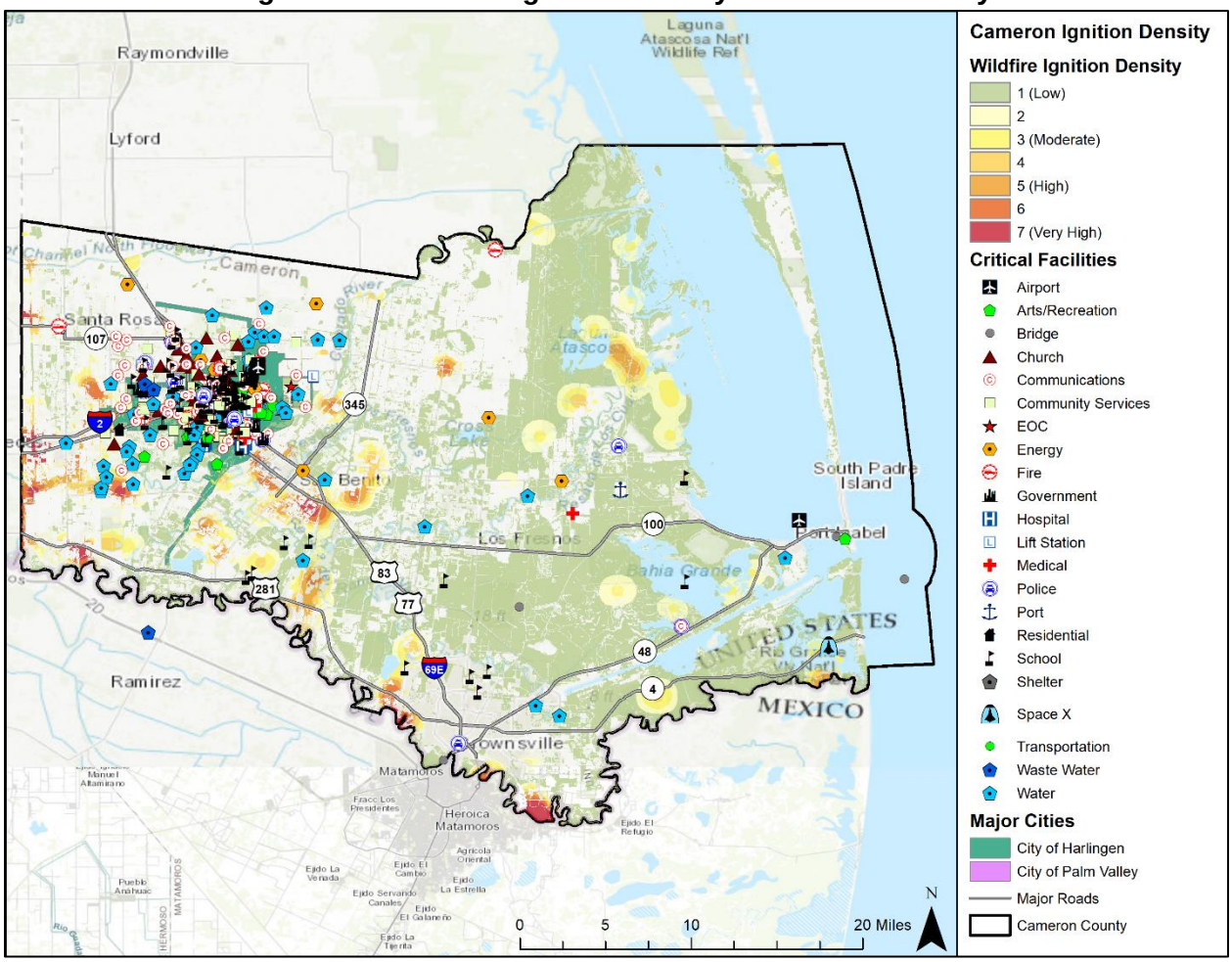


Figure 14-10. Wildfire Ignition Density – City of Harlingen

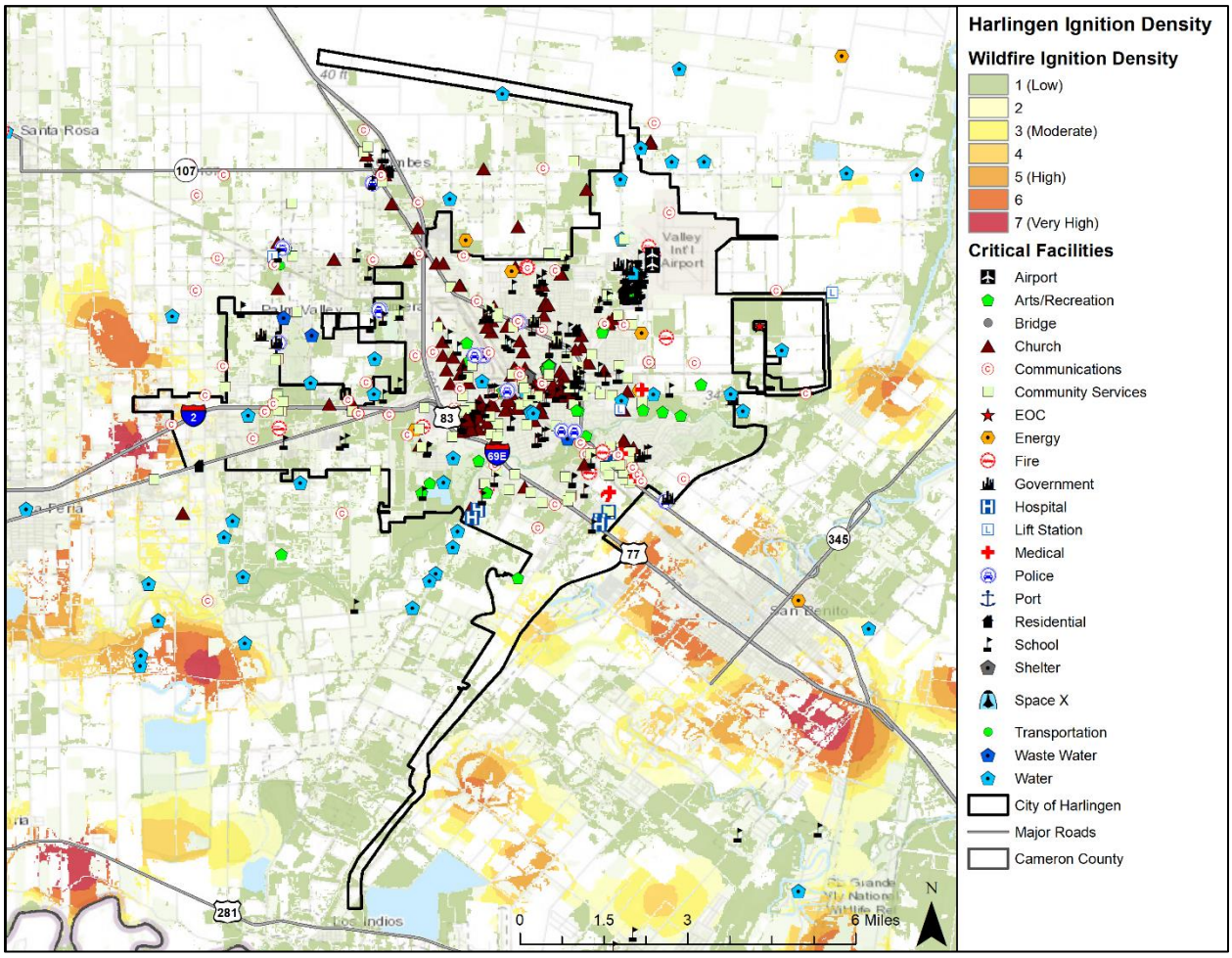


Figure 14-11. Wildfire Ignition Density – City of Palm Valley

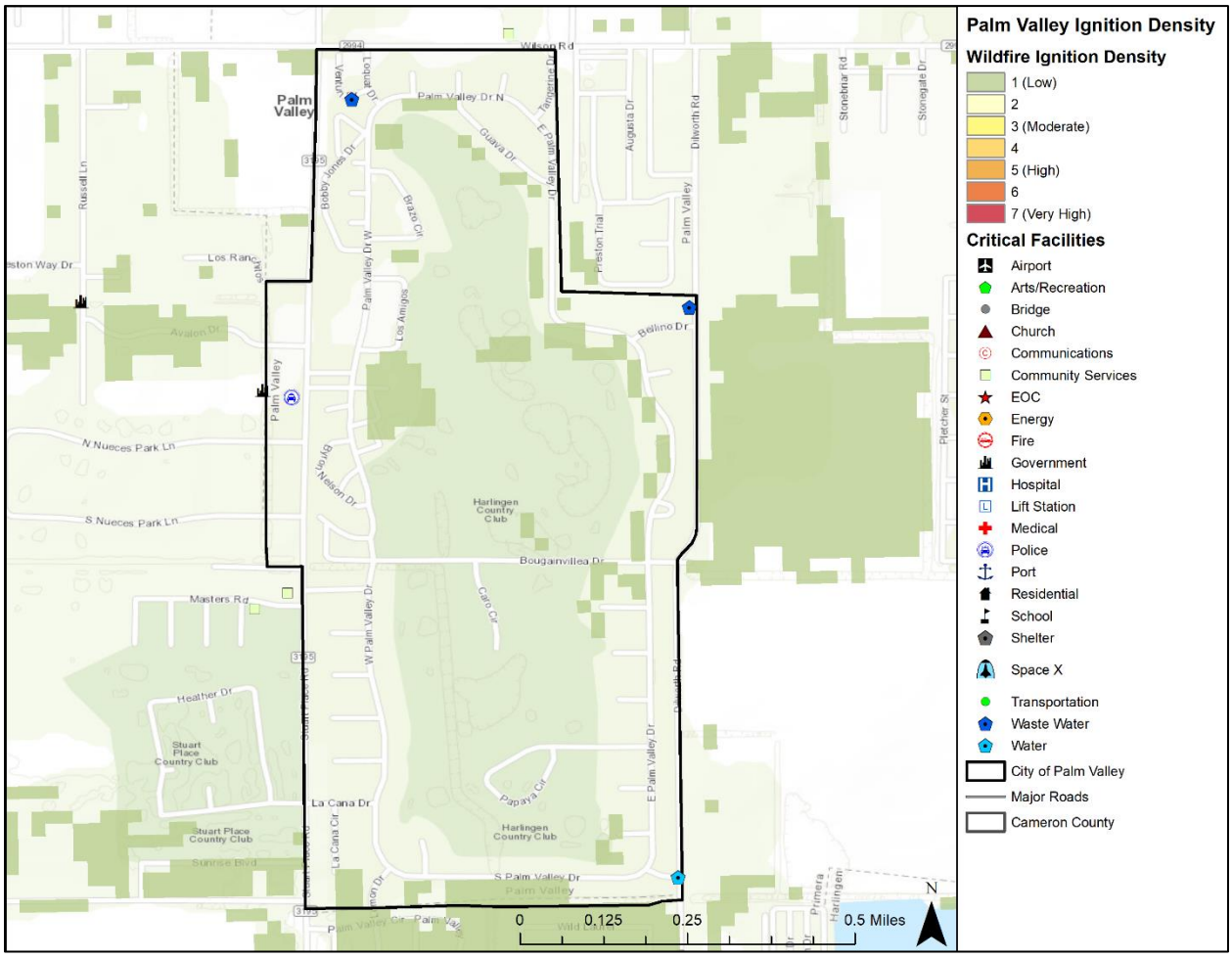


Figure 14-34. Wildfire Ignition Density – Town of Indian Lake

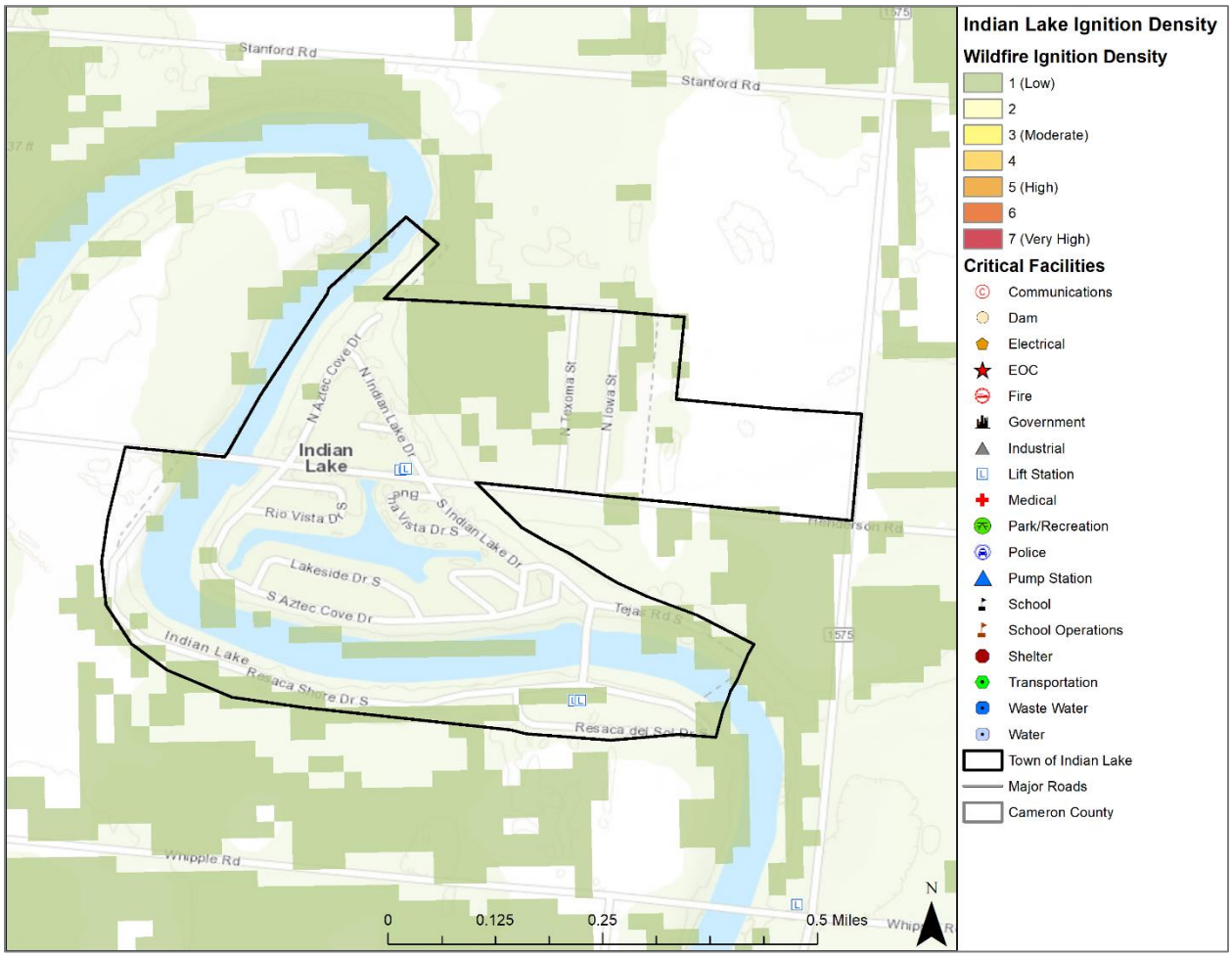


Figure 14-35. Wildfire Ignition Density – City of Lake Feria

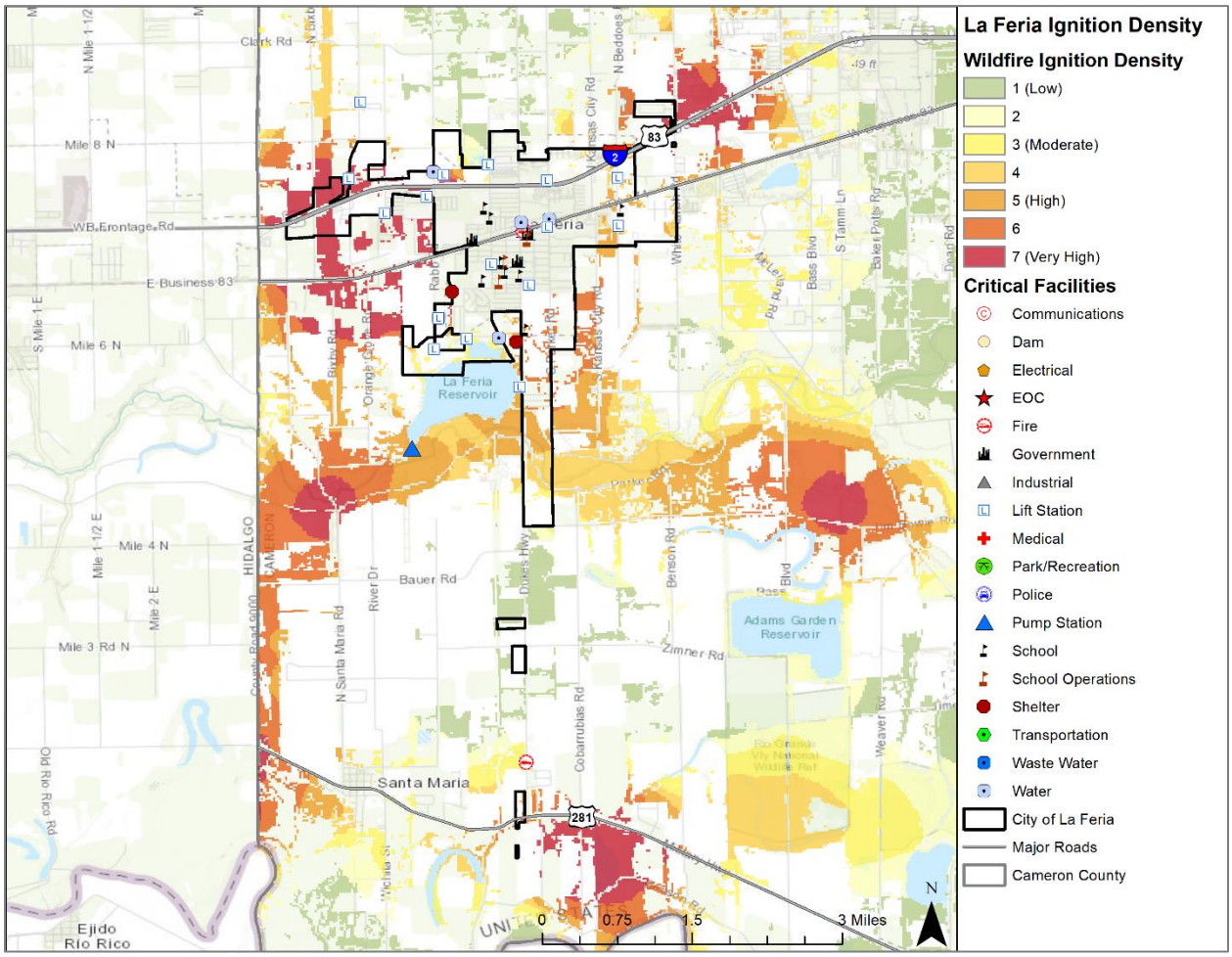


Figure 14-36. Wildfire Ignition Density – Town of Laguna Vista

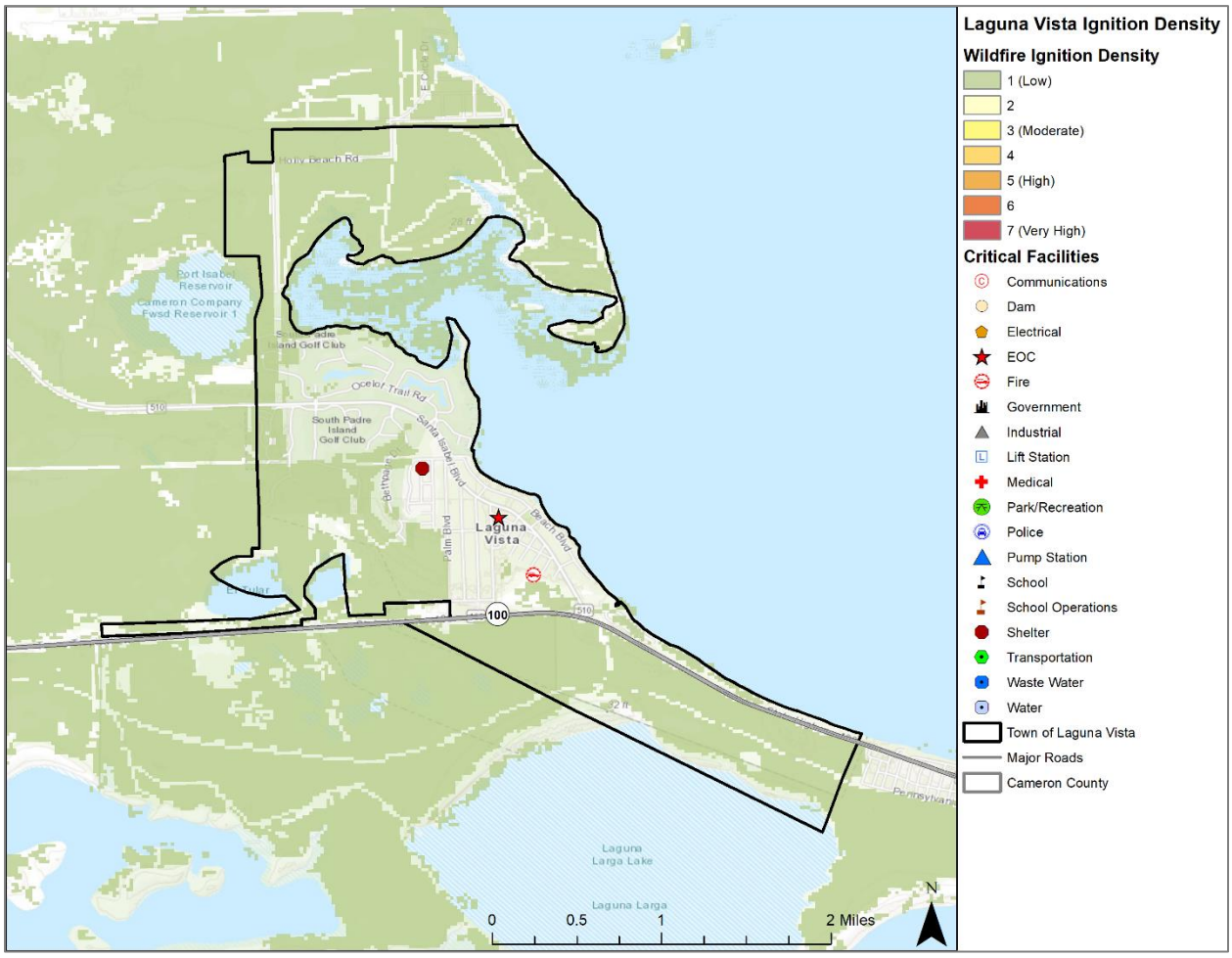


Figure 14-37. Wildfire Ignition Density – City of Los Fresnos

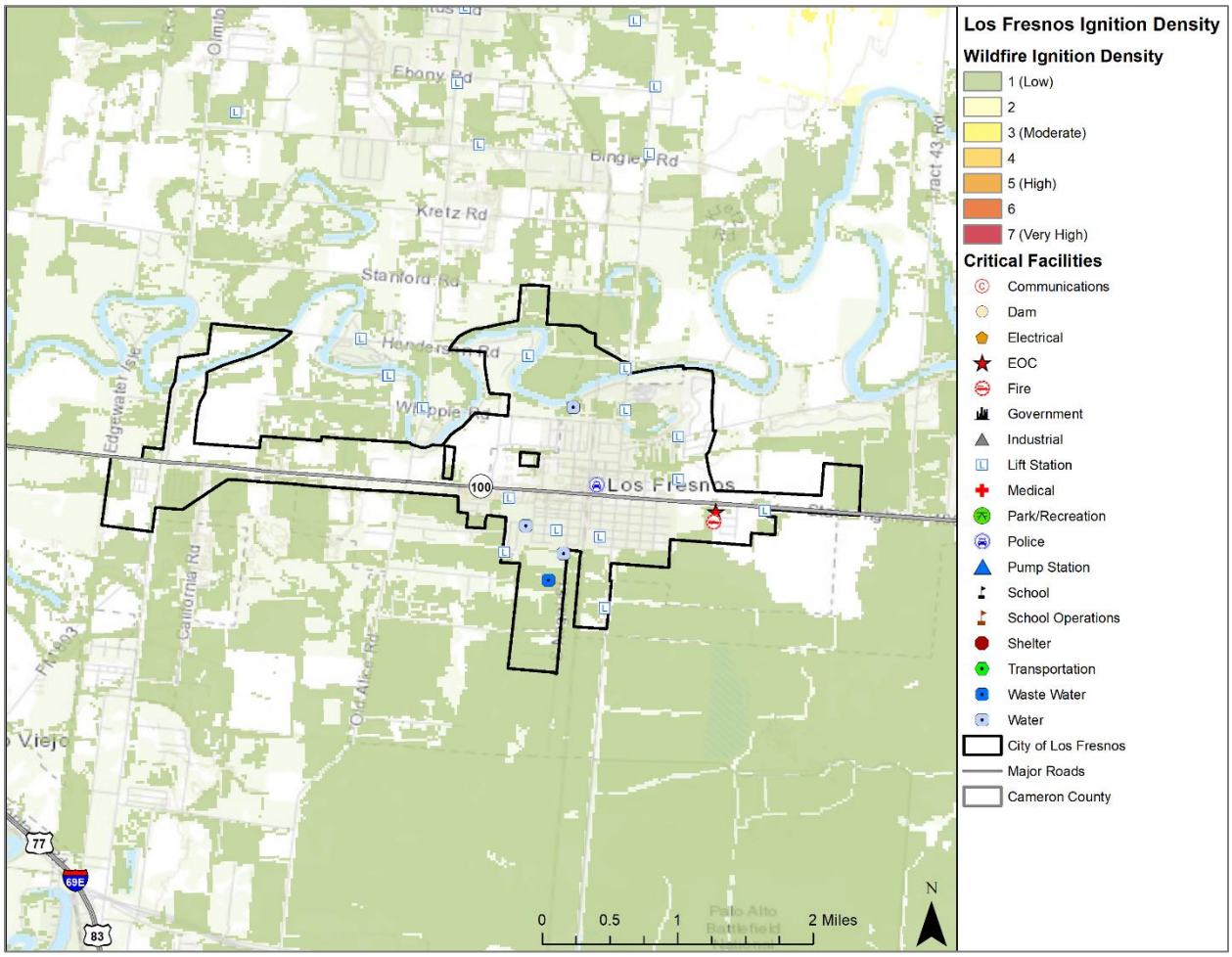


Figure 14-38. Wildfire Ignition Density – City of Port Isabel

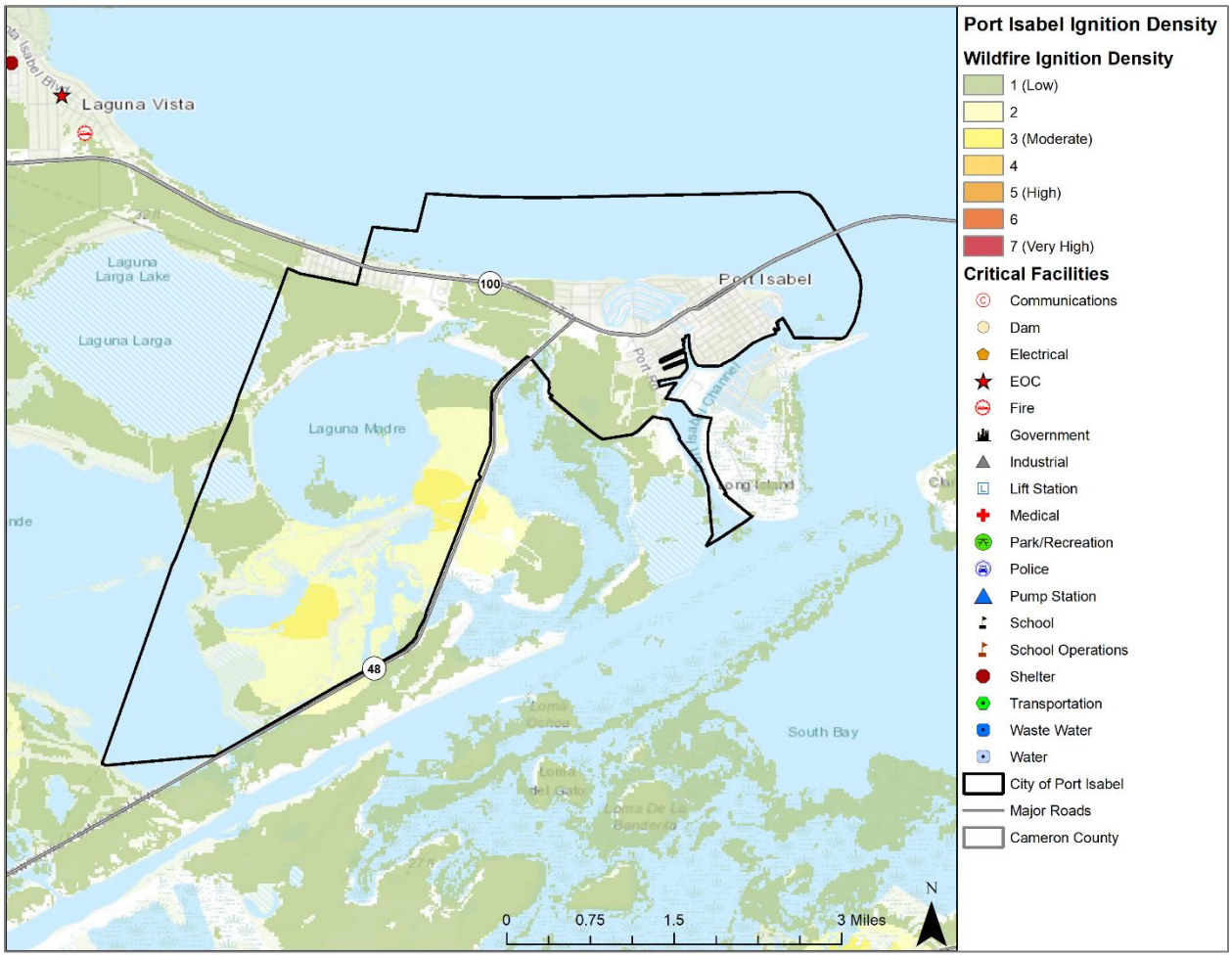


Figure 14-39. Wildfire Ignition Density – City of Primera

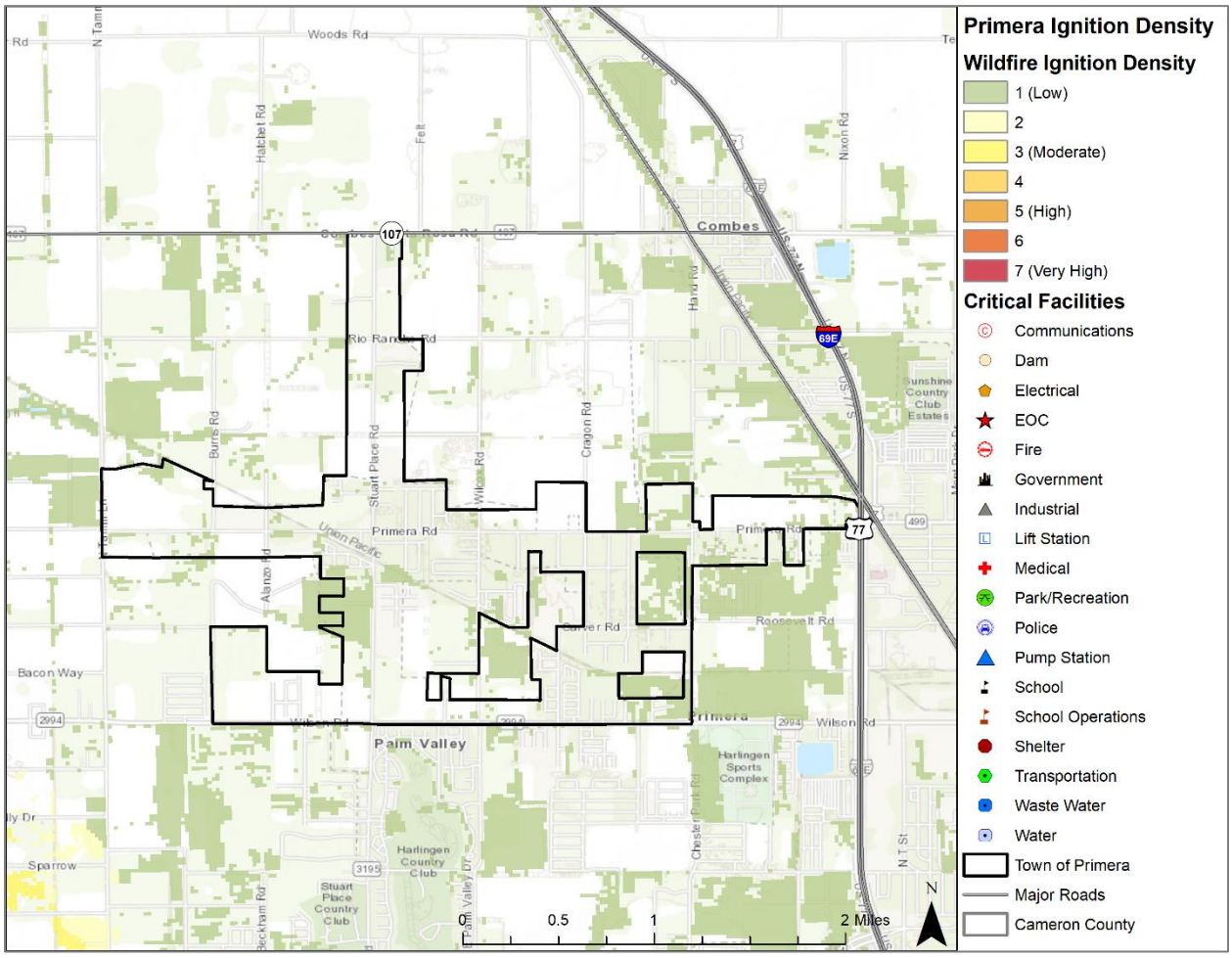


Figure 14-40. Wildfire Ignition Density – Town of Rancho Viejo

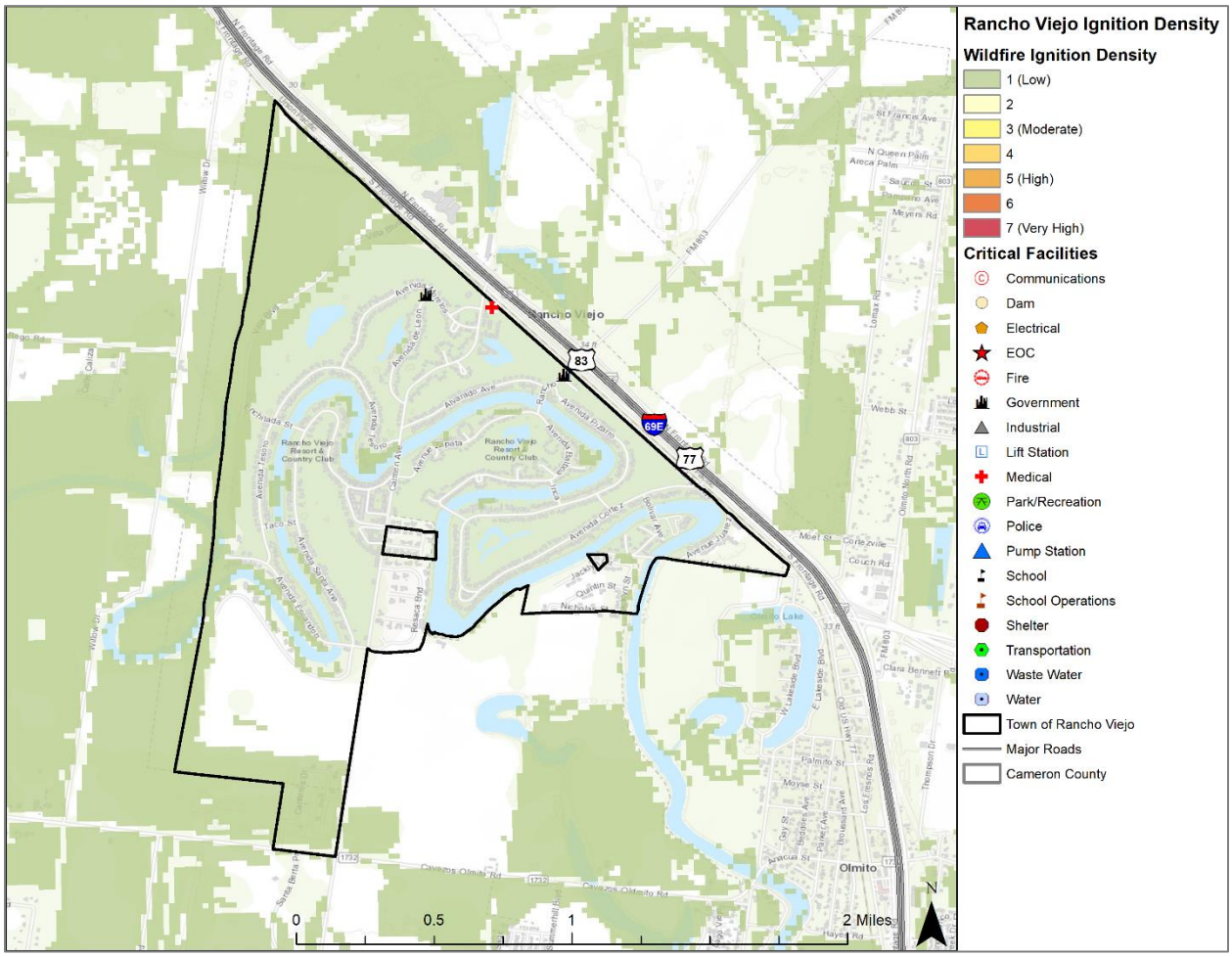


Figure 14-41. Wildfire Ignition Density – City of Rio Hondo

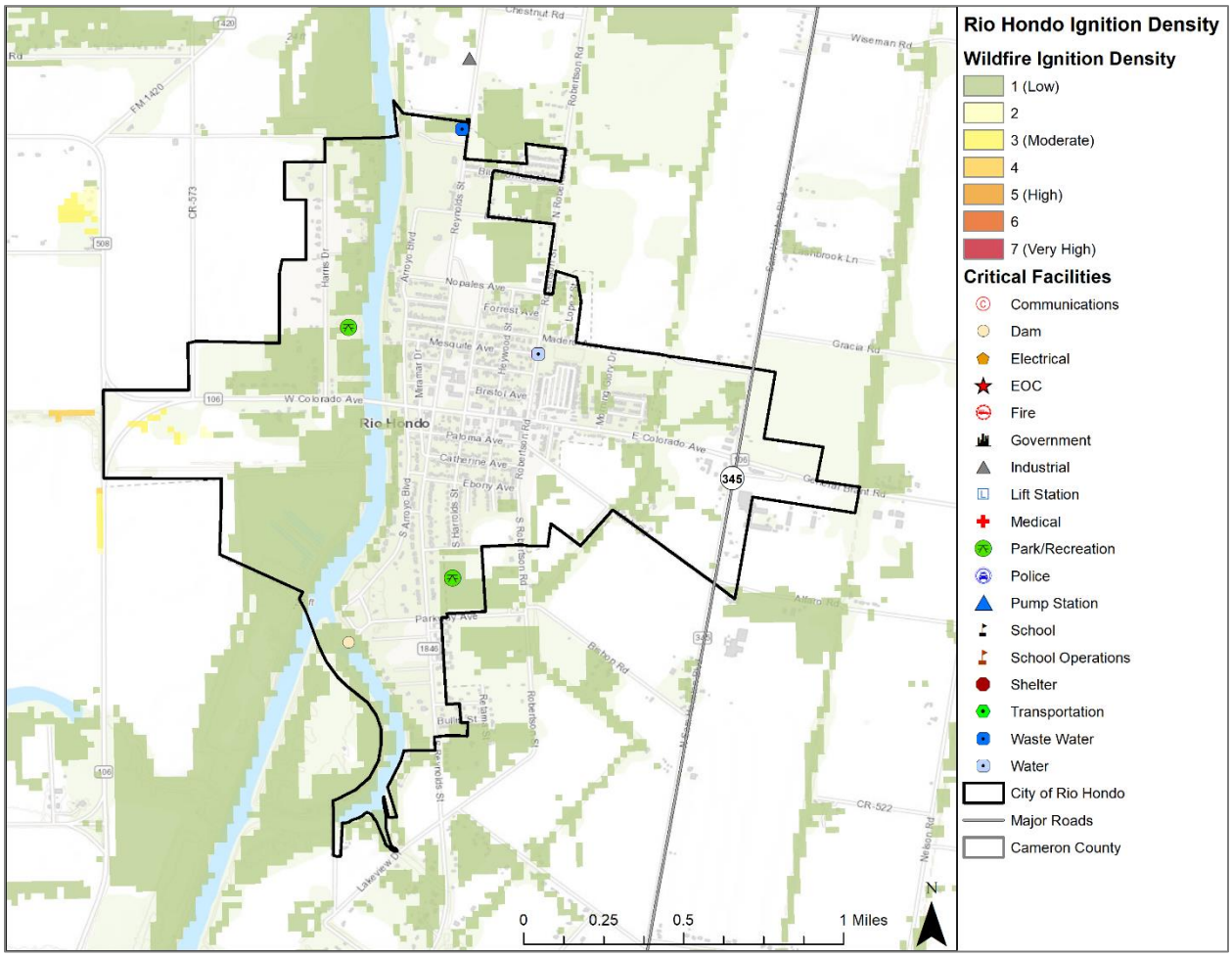


Figure 14-42. Wildfire Ignition Density – City of San Benito

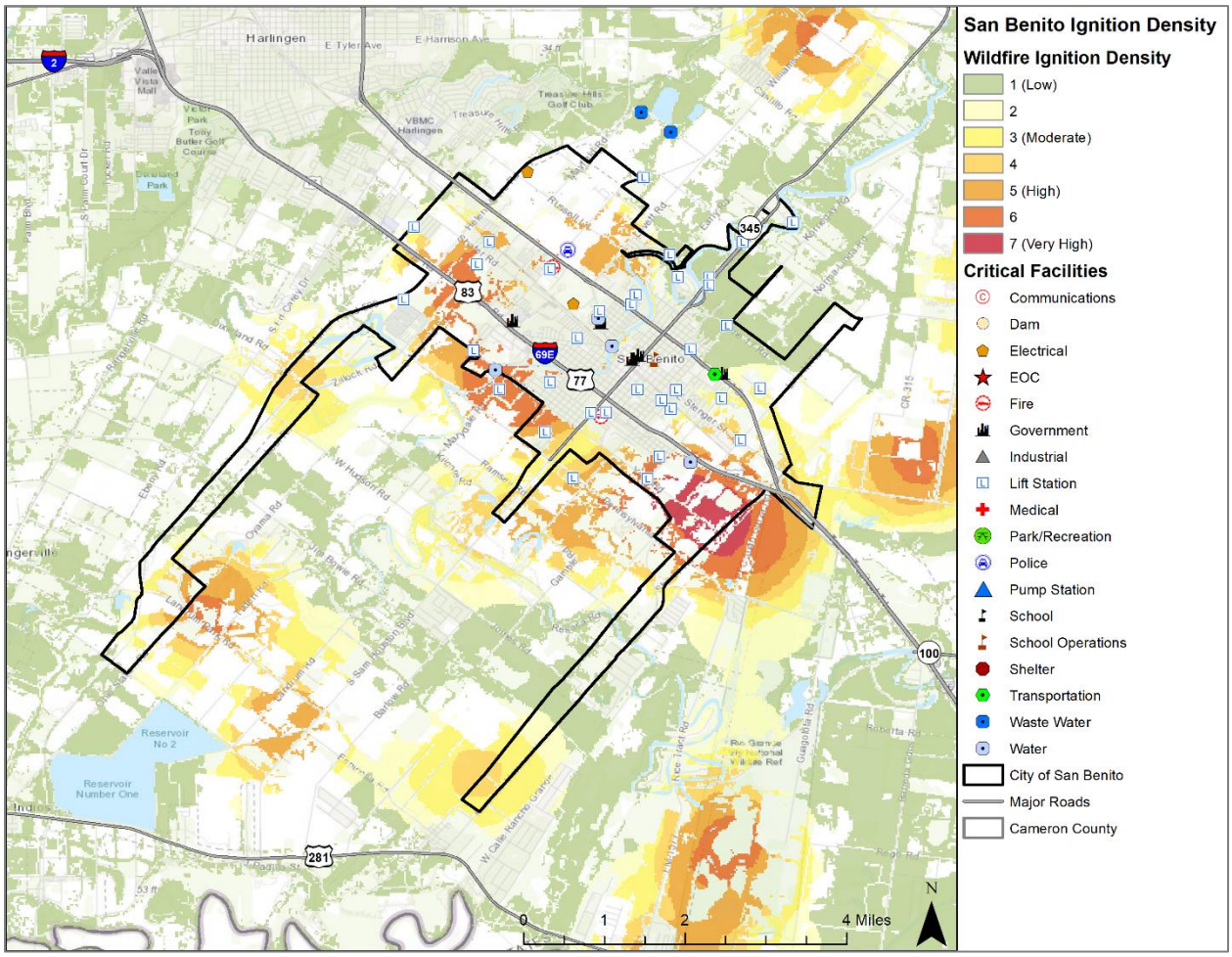


Figure 14-43. Wildfire Ignition Density – City of Santa Rosa

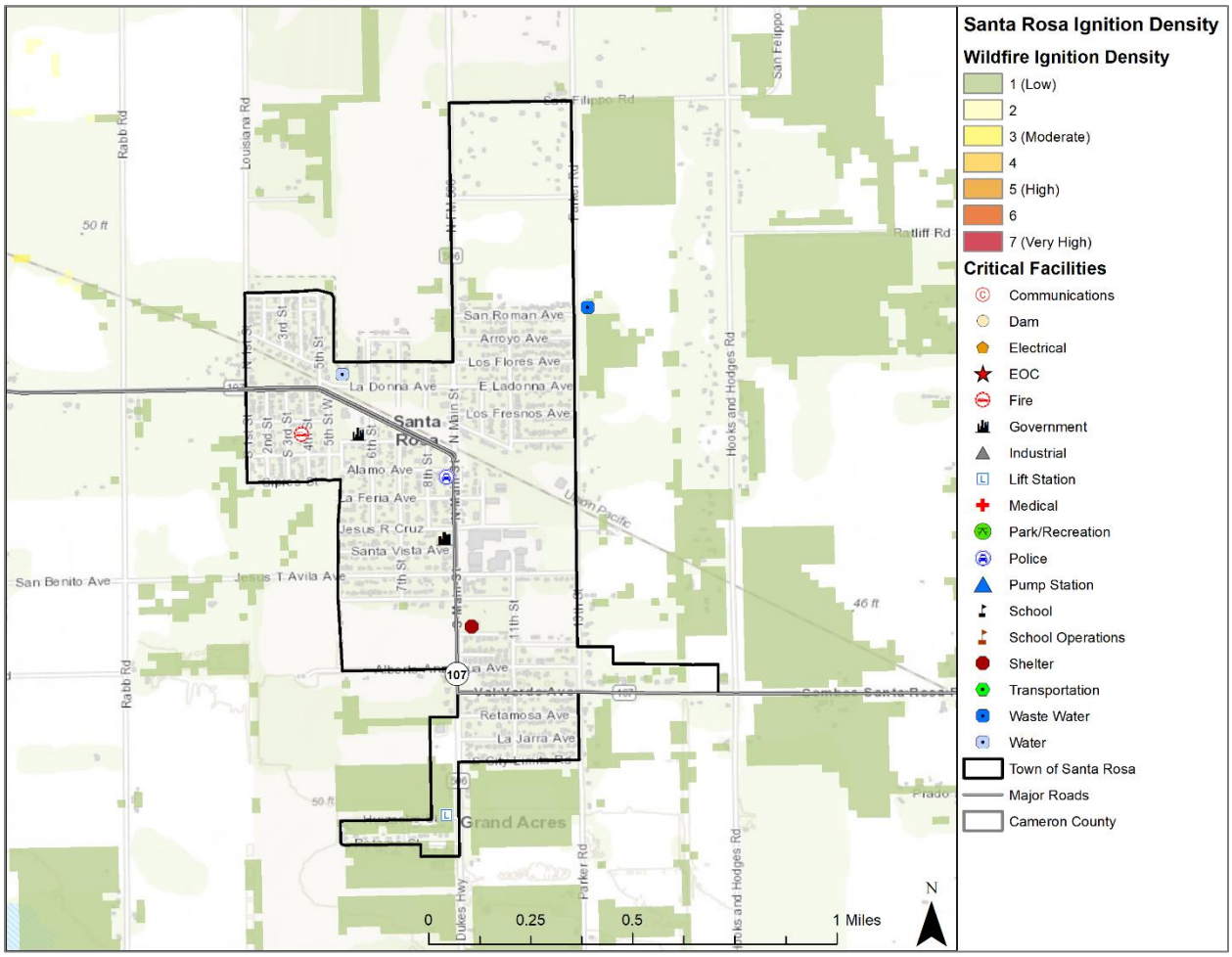
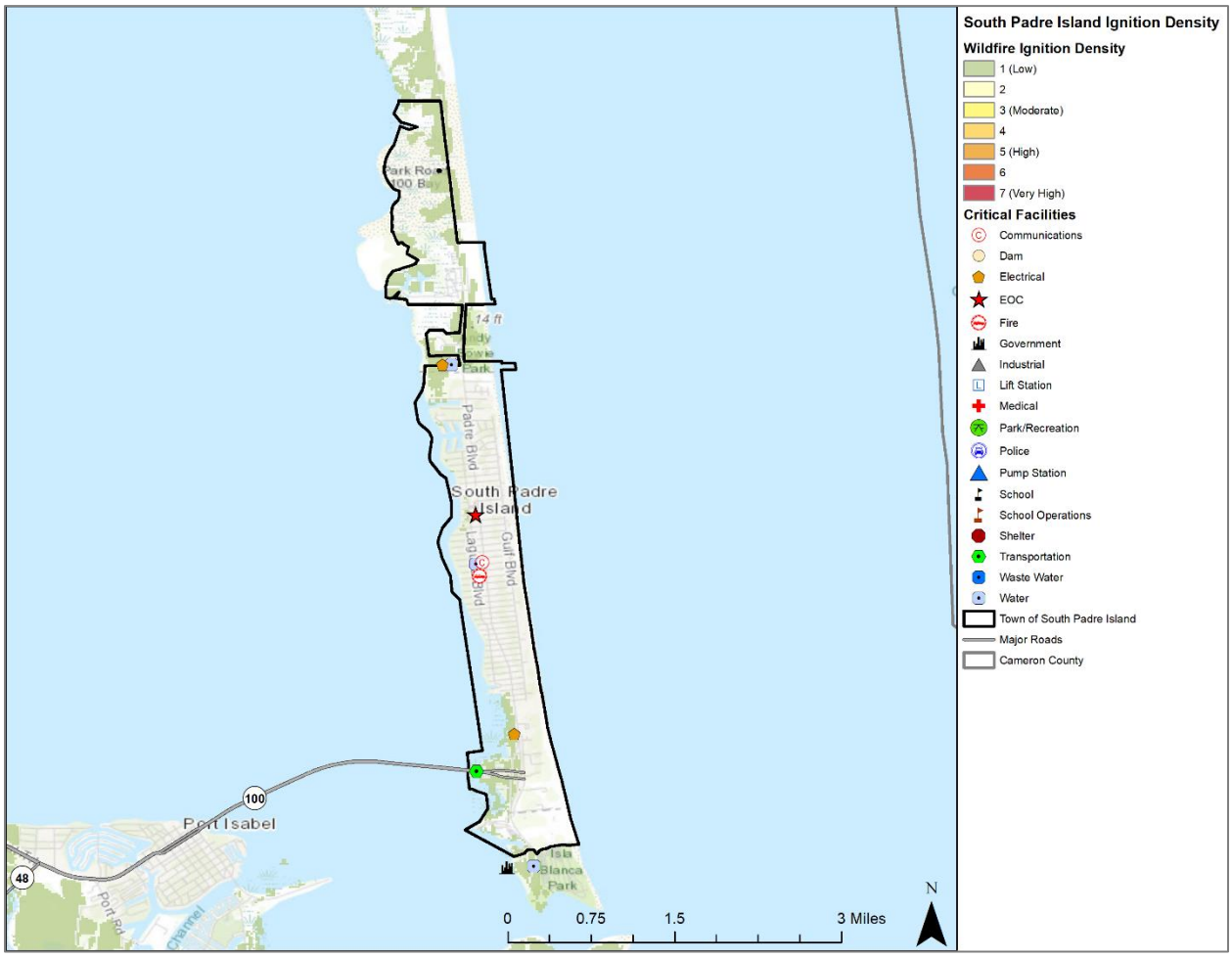


Figure 14-44. Wildfire Ignition Density – City of South Padre Island



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 Cameron County planning area, the impact from a wildfire event can be considered “Limited," meaning injuries and/or illnesses are treatable with first aid, shutdown of facilities and services for 24 hours or less, and less than 10 percent of property is destroyed or with major

damage. 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 14-5, and within Table-14-5A for the additional participating jurisdictions with Cameron County.

Table 14-5. Impact by Jurisdiction

JURISDICTION	IMPACT	DESCRIPTION
Cameron County	Limited	Cameron County has an estimated 143,321 people or 36.2 percent of the total population that live within the Wildland Urban Interface (WUI). Cameron 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 Harlingen	Limited	The largest population in the City of Harlingen 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 Palm Valley	Limited	The entire population in the City of Palm Valley 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.

Table 14-5A. Additional Participating Jurisdictions Impact by Jurisdiction

JURISDICTION	IMPACT	DESCRIPTION
Town of Indian Lake	Limited	The population in the Town of Indian Lake live in an area that is semi-dense (1-3 houses per 1 acre) in the WUI, and the Town 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 La Feria	Limited	The population in the City of La Feria 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
Town of Laguna Vista	Limited	The population in the Town of Laguna Vista live in an area that is semi-dense (1-3 houses per 1 acre) in the WUI, and the Town 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 Los Fresnos	Limited	The population in the City of Los Fresnos live in an area that is semi-dense to dense (1-3 houses per 1 acre or greater) 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 Isabel	Limited	The population in the City of Port Isabel 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 Primera	Limited	The population in the City of Primera 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.
Town of Rancho Viejo	Limited	The population in the Town of Rancho Viejo live in an area that is semi-dense (1-3 houses per 1 acre) in the WUI, and the Town 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 Rio Hondo	Limited	The population in the City of Rio Hondo 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 San Benito	Limited	The population in the City of San Benito 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 Santa Rosa	Limited	The City of Santa Rosa does not have any residents that live 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 South Padre Island	Limited	The population in the City of South Padre Island live in an area that has low-density (1 house per 5 acres to 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.

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.
- Area lakes such as Laguna Atascosa National Wildlife Preserve Rio Grande River, and Bahia Grande Tidal Basin, 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 15: DAM AND LEVEE FAILURE

Portions of the Cameron County Hazard Mitigation Plan are considered confidential and not for release to the public. The information in this section is covered under Privacy Act of 1974 (5 U.S.C. Section 552a).

SECTION 16: COASTAL EROSION

HAZARD DESCRIPTION

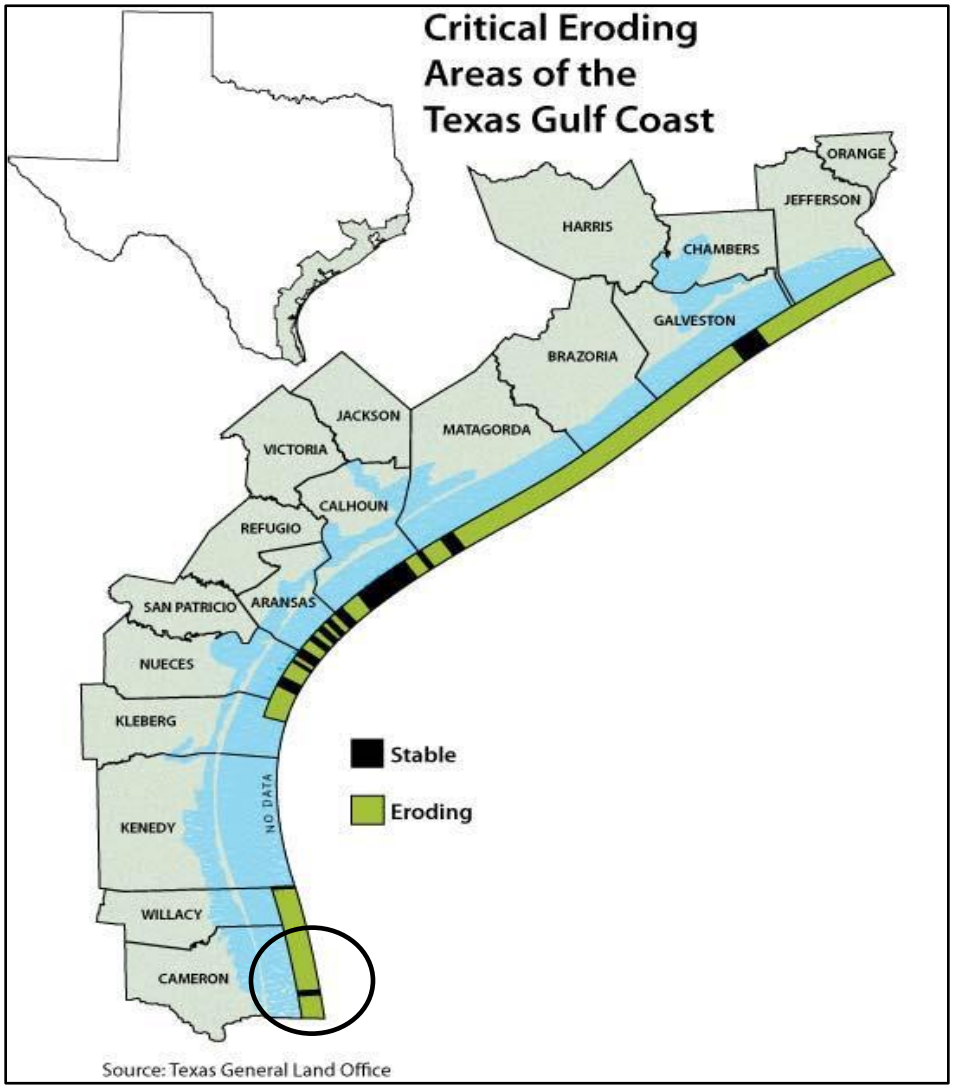
Coastal erosion is the wearing away of land and loss of beach, shoreline, or dune material because of natural coastal processes or manmade influences. Erosion is the process by which large storms, flooding, strong wave action, sea level rise, and human activities wear away beaches and bluffs along coastlines. 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 30 feet per year. Coastal erosion can have long-term economic and social consequences.

LOCATION

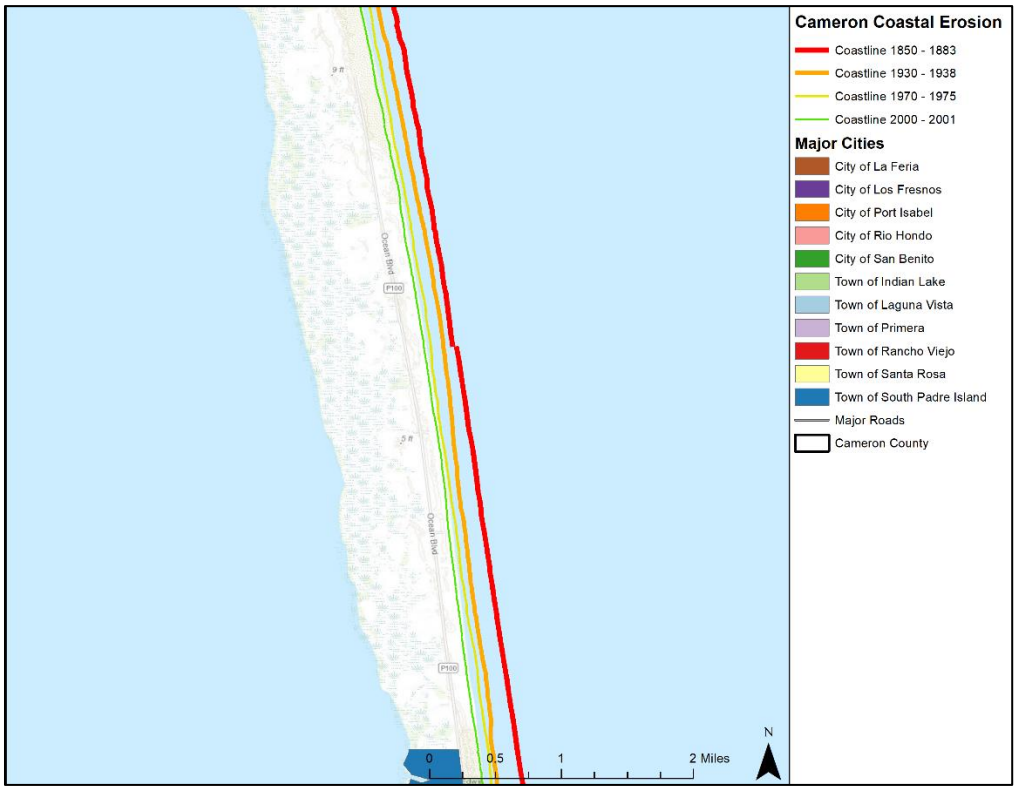
While the Cameron County planning area is considered a coastal community, only one of the participating jurisdictions is located directly on the coast and is subject to coastal erosion. Portions of Cameron County (South Padre Island) are vulnerable to threats directly related to coastal erosion resulting from extreme hazards such as hurricane and tropical storm 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 amended Cameron County Hazard Mitigation Plan Update 2021 includes the City of South Padre Island, which is also profiling coastal erosion. The additional participating jurisdictions are not profiling coastal erosion.

Figure 16-1. Location of Jurisdiction at Risk for Coastal Erosion



In the figure below, Figure 16-2, the location of coastal erosion is provided for the planning area showing an overview of eroded coastlines from 1850 to 2001.

Figure 16-2. Eroded Coastlines from 1850 – 2001

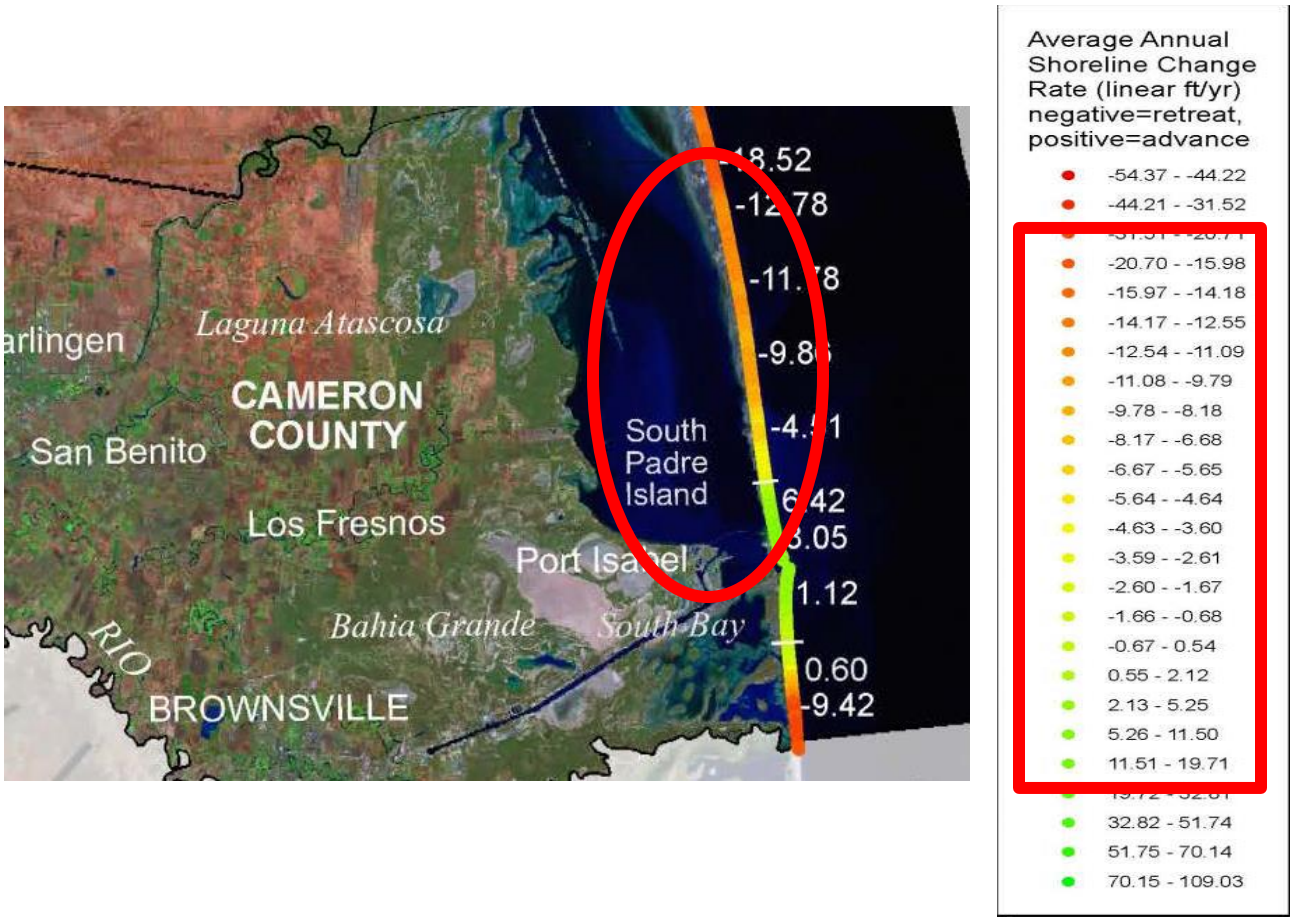


EXTENT

Cameron County, and the addition of South Padre Island with the amended Plan Update 2021, is vulnerable to the effects of coastal erosion from the Gulf of Mexico. The county's barrier island (South Padre 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 the South Padre 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 3 and 12 feet per year for the area according to the study for the Erosion Protection Dune System (EPDS)[1].

[1] Cameron County Erosion Analysis, Study of Future Shoreline Change and Public Cost Implications of Beachfront Development, Texas General Land Office, 2013

Figure 16-3. Critical Eroding Areas, South Padre Island



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 Cameron County planning area does not record historical coastal erosion rates per event, the 2013 Texas Hazard Mitigation Plan depicts coastal erosion occurrences for the Cameron County Planning Area, including the barrier island, South Padre Island (Table 16-2).

Table 16-2. Historical Coastal Erosion Rates, Cameron County[2]

JURISDICTION	GULF SHORELINE	BAY SHORELINE	CRITICAL EROSION	EROSION RATES
Cameron County	166,320 ft	1,145,760 ft	147,840 ft	-2 to -25 ft/yr

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

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 Cameron County, South Padre Island, is between 3 and 12 feet per year with an average of approximately 6 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 barrier island known as South Padre Island in Cameron County is continuously subject to coastal erosion, as all barrier islands are. While usually a slow-evolving hazard, coastal erosion presents a serious threat to this portion of Cameron County. As a densely-populated barrier island, any loss of land equates to an increase in the 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 rate of the coastal erosion for the island is typically offset by continuous and aggressive community planning to protect the island assets including critical structures and infrastructure. However, the very nature of a barrier island makes it prone to erosion as detailed in the sections above. While it is critical to employ mitigation techniques to protect the assets of the community, it is equally critical to regulate future development to reduce the risk of future losses. While erosion is a continuous threat, aggressive planning and regulations have ensured limited damages to the island structures and infrastructures resulting from erosion. Extreme building codes have been adopted along with restrictions on development to preserve open space and protect the barrier system while enhancing economic development and growth.

The vast majority of beachfront properties in Cameron County and South Padre Island are developed, including bulkheads along the historical building line. The area, including its public infrastructure and private property, is vulnerable to the effects of beach erosion. Protection of the built environment landward of the beach from damage caused by coastal storms is dependent upon the maintenance of a healthy, continuous dune system. The South Padre Island Erosion Response Plan provides and annual cost estimate of $400,000 for beach nourishment to protect structures and infrastructure from the effects of coastal erosion.

The potential severity of impact from coastal erosion for the Cameron County planning area, including South Padre Island, 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.

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:

- Structures and infrastructure can be damaged or destroyed. Extreme erosion, typically resulting from a significant storm event, may result in uninhabitable parcels where structures cannot be rebuilt.
- Coastal communities may suffer substantial damage, requiring immediate shelter and long term displacement assistance.

- Damaged bridges in and out of Bayview and South Padre Island (Causeway) 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 prohibit rebuilding and recovery efforts.
- Beaches may be less desirable, reducing tourism and 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 beach front properties 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 17: MITIGATION STRATEGY

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 2015 Plan. At the Mitigation Workshop in June 2020, Planning Team members reviewed the mitigation strategy from the previous 2015 Plan. The Additional Participating Jurisdictions Planning Team members reviewed the mitigation strategy from the 2017 Council of Cities Plan[1] and 2017 La Feria Plan[2] at the Mitigation Workshop in April 2022. The consensus among all members present was that the strategy developed for the 2015 did not require changes, as it identified overall improvements to be sought in the Plan Update, but the order of the goals has been altered.

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.

[1] The 2017 Council of Cities Plan includes the following additional participating jurisdictions: Town of Indian Lake, Town of Laguna Vista, City of Los Fresnos, Town of Primera, City of Port Isabel, Town of Rancho Viejo, City of Rio Hondo, City of San Benito, City of South Padre Island.

[2] The 2017 La Feria Plan includes the following additional participating jurisdiction: City of La Feria.

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 and city/town 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.

SECTION 18: PREVIOUS ACTIONS

SUMMARY

Planning Team members were given copies of the previous mitigation actions submitted in the 2015 Plan at the mitigation workshop. Participating jurisdictions within Cameron 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 2015 Plan are included in this section as they were written in 2015, with the exception of the "2021 Analysis" section. The City of Palm Valley was not a participant within the last plan, therefore there are no past actions for their review. The additional participating jurisdictions within the amended Cameron County Hazard Mitigation Plan Update reviewed the previous actions submitted in the 2017 Council of Cities Plan[1] and 2017 La Feria Plan[2] and provided an analysis as to whether the actions had been completed, should be deferred as an ongoing activity, or be deleted from the Plan Update. The City of Santa Rosa was not a participant within a previous plan, therefore there are no past actions for their review.

[1] The 2017 Council of Cities Plan includes the following additional participating jurisdictions: Town of Indian Lake, Town of Laguna Vista, City of Los Fresnos, Town of Primera, City of Port Isabel, Town of Rancho Viejo, City of Rio Hondo, City of San Benito, City of South Padre Island.

[2] The 2017 La Feria Plan includes the following additional participating jurisdiction: City of La Feria.

CAMERON COUNTY – COUNTY WIDE ACTIONS

	Cameron County-Wide (Previous Action) #1
Proposed Action:	Secure Memorandum of Understanding (MOU) with Lower Rio Grande Flood Control agency regarding potential dam and levee failure of upstream flood control system.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County and City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce potential dollar losses and loss of life from Dam Failure from Anzalduas Dam and Falcon Reservoir.
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:	Dam Failure, Flood
Effect on New/Existing Buildings:	Prevent or minimize flood damage to structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Lower Rio Grande Water User fee
Lead Agency/Department Responsible:	LRGFC, Cameron County Emergency Management
Implementation Schedule:	2014-2019
Incorporation into Existing Plans:	Emergency Response Plan, Emergency Management Plan, Partnering agreements

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County-Wide (Previous Action) #2
	Proposed Action:	Develop and implement a public education program for evacuating residents downstream of the Lower Rio Grande Flood Control system in the event of dam or levee failure.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and City of Harlingen
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of life from Dam Failure from Anzalduas Dam and Falcon Reservoir.
	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:	Dam Failure, Flood
Effect on New/Existing Buildings:	Prevent or minimize flood damage to structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000
Potential Funding Sources:	Lower Rio Grande Water User fee
Lead Agency/Department Responsible:	LRGFC, Cameron County Emergency Management
Implementation Schedule:	2014-2019
Incorporation into Existing Plans:	Emergency Response Plan, Emergency Management Plan, Partnering agreements

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County-Wide (Previous Action) #3
	Proposed Action:	Construct a regional retention facility to reduce runoff and flooding for City of Harlingen and Cameron County, and capture secondary water supply for future drought events.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	South of Hickory Hills subdivision, White Ranch, and Mariposa area
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Mitigate flooding and damage/displacement of residents.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Projects

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm, Drought
Effect on New/Existing Buildings:	Reduce potential flooding of adjacent structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	Grants, HMGP
Lead Agency/Department Responsible:	County Engineering Dept.
Implementation Schedule:	3-5 years
Incorporation into Existing Plans:	Stormwater Management Plan, Floodplain Mgmt. Plan, partnering agreements

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County-Wide (Previous Action) #4
	Proposed Action:	Develop and implement a Master Flood Protection Plan for Cameron County Drainage District No. 5 to construct drainage features to mitigate flooding such as levees, widening, constructing channels, and detention ponds.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Encompassing most of the cities of Harlingen, Primera, and Combes
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood risk to people and parcels
	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 Wind, Dam Failure
Effect on New/Existing Buildings:	Reduction of damage to new and existing buildings
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Revenue, Drainage fees
Lead Agency/Department Responsible:	Cameron County Drainage District No. 5
Implementation Schedule:	2014
Incorporation into Existing Plans:	Stormwater Management Plan, Comprehensive Land Use, Flood Management Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County-Wide (Previous Action) #5
	Proposed Action:	Conduct an NFIP public education program regarding availability of flood insurance, and promoting NFIP flood insurance protection.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and City of Harlingen
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduction of lives lost in the event of a levee failure, flood insurance protection of structures
	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, Thunderstorm
Effect on New/Existing Buildings:	Financial protection in the event of flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000 - $50,000
Potential Funding Sources:	General Revenues and Grants
Lead Agency/Department Responsible:	Cameron/Harlingen Floodplain Coordinator
Implementation Schedule:	2014-2015
Incorporation into Existing Plans:	Flood Ordinance, Flood Management Plan, Community Rating System

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	Cameron County-Wide (Previous Action) #6
Proposed Action:	Conduct a public information campaign regarding hurricane and flood preparedness.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County and City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduction of lives and property lost during flood and hurricane 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 Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	410,000 - $20,000
Potential Funding Sources:	Grants, General Revenues
Lead Agency/Department Responsible:	County/City of Harlingen Emergency Management
Implementation Schedule:	2014
Incorporation into Existing Plans:	Flood Management Plan, Emergency Operation Plan, Emergency Response Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	Cameron County-Wide (Previous Action) #7
Proposed Action:	Join the FIREWISE program.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County and City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce fire fuels and mitigate wildfire and urban fire potential.
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
Effect on New/Existing Buildings:	Protect structures by reducing fire fuels around structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Texas Forest Service
Lead Agency/Department Responsible:	Fire Departments
Implementation Schedule:	2014
Incorporation into Existing Plans:	Emergency Management Plan

2021 ANALYSIS
Completed.

SECTION 18: PREVIOUS ACTIONS

		Cameron County-Wide (Previous Action) #8
	Proposed Action:	Work with South Padre Island to implement an evacuation plan for the proposed bridge connecting the mainland to South Padre Island.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Site of bridge undetermined
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of lives during evacuation, particularly during a hurricane event and peak season.
	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 Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000
Potential Funding Sources:	HMGP, Local Revenue
Lead Agency/Department Responsible:	County/City of Harlingen Emergency Management
Implementation Schedule:	2016-2017
Incorporation into Existing Plans:	Emergency Management Plan, Emergency Response Plan, Evacuation Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County-Wide (Previous Action) #9
	Proposed Action:	Construct a bridge connecting the mainland to South Padre Island.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Site of bridge undetermined
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of lives during evacuation, particularly during a hurricane event and peak season.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	Portion of proposed $16 - $20 million project
Potential Funding Sources:	HMGP, Local Revenue
Lead Agency/Department Responsible:	County/City of Harlingen Emergency Management
Implementation Schedule:	2016-2017
Incorporation into Existing Plans:	Emergency Management Plan, Emergency Response Plan, Evacuation Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update. Increase estimated cost to $40 million.

SECTION 18: PREVIOUS ACTIONS

	Cameron County-Wide (Previous Action) #10
Proposed Action:	Install color-coded street signs in evacuation zones throughout Cameron County, Harlingen, and other participating communities.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County and City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Assist in expediting evacuation of residents in the event of natural disaster, dam failure, reduce loss of lives.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Wildfire, Dam Failure
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	General Revenues and Grants
Lead Agency/Department Responsible:	Cameron/Harlingen Floodplain Coordinator
Implementation Schedule:	2014-2015
Incorporation into Existing Plans:	Annual Budget, Emergency Response Plan, Evacuation Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County-Wide (Previous Action) #11
	Proposed Action:	Conduct an educational program for residents on evacuation zones and location of shelters in conjunction with installing color-coded street signs.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and City of Harlingen
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Assist in expediting evacuation of residents in the event of natural disasters; reduce loss of lives.
	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, Wildfire, Dam Failure
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	General Revenues and Grants
Lead Agency/Department Responsible:	Cameron/Harlingen Floodplain Coordinator
Implementation Schedule:	2014-2015
Incorporation into Existing Plans:	Emergency Response Plan, Evacuation Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County-Wide (Previous Action) #12
	Proposed Action:	Upgrade building codes and ordinances to require increased freeboard for new construction in areas of flood inundation as a result of dam failure and levee breach upstream of the Cameron County planning area.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Unincorporated Cameron County and City of Harlingen
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood risk to people and parcels by elevating new construction.
	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, Wind, Dam Failure
Effect on New/Existing Buildings:	Reduction of damage to new buildings
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Revenue, Drainage fees
Lead Agency/Department Responsible:	Building Code and Inspection Dept.
Implementation Schedule:	2016
Incorporation into Existing Plans:	Stormwater Management Plan, Comprehensive Land Use, Flood Management Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

CAMERON COUNTY

	Cameron County (Previous Action) #1
Proposed Action:	Flood proof basement of the County Emergency Management Office by incorporating Floodproofing components that my include floodwalls, small localized levees, pumps, berms around buildings, or a combination thereof.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Dancy Bldg. 1100 E. Monroe, Brownsville, TX 78520
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce impact of flooding on first responder and emergency operations, ensure continuance of critical operations during flood event; reduce cost to repair and maintain structure following a flood event.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce cost to repair and maintain structure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Emergency Management office
Implementation Schedule:	2014-2020
Incorporation into Existing Plans:	Emergency Operations Plan, Floodplain Mgmt. Plan, Flood Response Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update. $200,000 EOC upgrades for equipment and technological equipment upgrades.

SECTION 18: PREVIOUS ACTIONS

	Cameron County (Previous Action) #2
Proposed Action:	Install temporary cooling stations at county facilities to aid low income and elderly residents during extreme heat events.
BACKGROUND INFORMATION	
Jurisdiction/Location:	County facilities: San Benito Annex (Health Dept.), Isla Blanca Park/Recreation Center, Dancy Building, Lucio Clinic, and possible other sites
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce health risk, loss of life to a segment of population without air-conditioning
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000
Potential Funding Sources:	HUD grant/CDBG/HMGP
Lead Agency/Department Responsible:	County Health and Hospital Authority
Implementation Schedule:	1-3 Years
Incorporation into Existing Plans:	Emergency Operations Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update. Increase estimated cost to $50,000.

SECTION 18: PREVIOUS ACTIONS

		Cameron County (Previous Action) #3
	Proposed Action:	Install hail guards on A/C units for all Cameron County critical facilities.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	County critical facilities
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Increase efficiency of units by minimizing debris damage, reduce electrical costs, reduce health risk from overheating units unable to properly cool buildings.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail
Effect on New/Existing Buildings:	Retrofit and protect all buildings
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	County maintenance dept.
Implementation Schedule:	2014
Incorporation into Existing Plans:	Emergency Operations, Continuity of Operations Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County (Previous Action) #4
	Proposed Action:	Relocate the Emergency Operations Center (EOC) to an existing county structure at a higher elevation and retrofit with enhanced wind protection.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	County facility
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Ensure essential operations continue and protect residents from all natural hazard and disaster events.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Effect on New/Existing Buildings:	Secure EOC structure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	HMGP, Homeland Security grants
Lead Agency/Department Responsible:	Cameron County Emergency Management
Implementation Schedule:	2015-2019
Incorporation into Existing Plans:	Emergency Operations Plan

2021 ANALYSIS
Completed.

SECTION 18: PREVIOUS ACTIONS

		Cameron County (Previous Action) #5
	Proposed Action:	Install permanent and mobile back-up generators on county critical facilities.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Critical facilities in county
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Ensures vital services continue to function in an emergency.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind, Flood, Tornado, Thunderstorm, Extreme Heat
Effect on New/Existing Buildings:	Provide back-up power for new and existing buildings in the event of a disaster
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	General Revenue, Grants
Lead Agency/Department Responsible:	Cameron County Emergency Management
Implementation Schedule:	2014-2015
Incorporation into Existing Plans:	Emergency Operations, Continuity of Operations Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update. Increase estimated cost to $600,000

SECTION 18: PREVIOUS ACTIONS

		Cameron County (Previous Action) #6
	Proposed Action:	Work with General Land Office to develop and implement a dune restoration plan to protect roads and minimize washouts from flooding and tidal surge.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Coastal areas of county
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Prevent County, State, and Federal agencies from having to continually incur repair costs and prevent loss of life 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 Wind
Effect on New/Existing Buildings:	Continue essential services to structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	State and Federal Grants
Lead Agency/Department Responsible:	Cameron County Parks and Recreation, GLO
Implementation Schedule:	24 months after start date
Incorporation into Existing Plans:	Flood Response Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update. Increase estimated cost to $4 million.

SECTION 18: PREVIOUS ACTIONS

		Cameron County (Previous Action) #7
	Proposed Action:	Update the existing Regional Mobility Authority Plan (RMA) to include long-range planning mechanisms.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	The RMA would provide a mechanism for long-range planning, administration and implementation of structural projects to mitigate hazards.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Response Action not funded under federal grant programs

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Hail, Thunderstorm, Tornado, Drought
Effect on New/Existing Buildings:	Reduction of damage for new and existing buildings
Priority (High, Moderate, Low):	High
Estimated Cost:	$16,000,000
Potential Funding Sources:	General Revenues
Lead Agency/Department Responsible:	County Administrator
Implementation Schedule:	2014
Incorporation into Existing Plans:	Annual Budget, Stormwater Plan, Floodplain Management Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County (Previous Action) #8
	Proposed Action:	Remove debris from beaches that may act as projectiles and damage and exacerbate erosion on shorelines.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Coastal areas of County
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Removing hazardous debris from the beaches will make recreational areas safer and cleaner for the residents of Cameron County
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Preparedness Action not eligible under federal grant programs

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Coastal Erosion, Hurricane Wind, Thunderstorm, Flood, Tornado
Effect on New/Existing Buildings:	Minimize debris that can damage/destroy structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$85,000
Potential Funding Sources:	State or Federal funds, GLO
Lead Agency/Department Responsible:	Parks and Recreation
Implementation Schedule:	2014
Incorporation into Existing Plans:	Emergency Response Plan

2021 ANALYSIS
Completed. Continuous effort.

	Cameron County (Previous Action) #9
Proposed Action:	Survey structures and implement a FEMA buyout for repetitive loss flood prone structures.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Green Valley Farms, Kendall Street, Tio Cano Lake & White Ranch Road area, Iowa Gardens, Laureles Subdivision
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Restore natural flood prone areas, reduce loss to NFIP Program, remove unsafe structures from flood prone areas, reduce loss of lives from flooding.
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:	Flood
Effect on New/Existing Buildings:	Remove repetitive loss structures from floodplain
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$15,000,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Floodplain Administrator
Implementation Schedule:	2017
Incorporation into Existing Plans:	Annual Budget, Flood Ordinance, Flood Management Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County (Previous Action) #10
	Proposed Action:	Work with General Land Office to develop a living coastline constructed from natural materials derived from regional materials such as rock and seagrass.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Laguna Madre area
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk of dune washout.
	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
Effect on New/Existing Buildings:	Protect coastal properties
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5 Million
Potential Funding Sources:	State land office grants, HMGP
Lead Agency/Department Responsible:	County Parks & Recreation, TX Parks & Recreation, GLO
Implementation Schedule:	2015-2020
Incorporation into Existing Plans:	Dune Restoration Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County (Previous Action) #11
	Proposed Action:	Create and implement a wildfire recovery plan to address soil erosion control and vegetative recovery.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Unincorporated areas in county
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk to public health, safety, and welfare; protect natural habitat area.
	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:	Wildfire
Effect on New/Existing Buildings:	Minimize wildfire damage to area structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$20,000
Potential Funding Sources:	Grant, General Fund, Texas Forest Service
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	FireWise, Fire Code

2021 ANALYSIS
Delete Action.

SECTION 18: PREVIOUS ACTIONS

		Cameron County (Previous Action) #12
	Proposed Action:	Conduct a Public Education Campaign to address extreme heat.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	County-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Provides education to the public on the dangers of extreme heat; reduces the risk to public health and welfare.
	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
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$30,000
Potential Funding Sources:	Grant, General fund, CDBG
Lead Agency/Department Responsible:	Health Department, CDBG
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Emergency Operations Plan, County Health Dept. Regs

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County (Previous Action) #13
	Proposed Action:	Conduct a public education campaign through social media regarding relocating or elevating HVAC and utility systems in and around the home in the event of dam failure.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	County-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to public health, safety, and welfare.
	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:	Dam Failure
Effect on New/Existing Buildings:	Educate residents on protecting structures/evacuation
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Public Information Officer
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Emergency Operations, Evacuation Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County (Previous Action) #14
	Proposed Action:	Conduct a public education campaign for drought.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	County-wide
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Provide an increase level of preparedness to reduce risk to public health, safety, and welfare, reduce risk to agricultural and wildlife; ensure continued essential water supply.
	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
Effect on New/Existing Buildings:	Xeriscape plantings protect exposure of buildings to extreme heat temperatures and drought conditions
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$30,000
Potential Funding Sources:	Grants, General funds
Lead Agency/Department Responsible:	VFD, County Fire Depts.
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	FireWise Plan, County Health Dept. Regs.

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County (Previous Action) #15
	Proposed Action:	Improve Animal Shelter capability during and following disaster events by expanding capacity, and upgrading and reinforcing county shelter.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County Animal Shelter, 26957 FM 510, San Benito, TX 78586
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to public health, safety, and general welfare to animals and the general public; eliminate displaced animals due to an event.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project not eligible under federal grant programs

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm, Hurricane
Effect on New/Existing Buildings:	Expand and upgrade facility
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500,000
Potential Funding Sources:	Grants
Lead Agency/Department Responsible:	Cameron County Dept. of Health and Human Services
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	FireWise Plan, County Health Dept. Regs; Emergency Plan

2021 ANALYSIS
Completed.

SECTION 18: PREVIOUS ACTIONS

		Cameron County (Previous Action) #16
	Proposed Action:	Upgrade codes and regulations to require burying power lines in conjunction with new construction in coastal areas.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and incorporated boundaries along coastline
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to public health, safety, and general welfare.
	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 Wind, Tornado, Flood Thunderstorm
Effect on New/Existing Buildings:	Expand and upgrade existing lines
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500,000
Potential Funding Sources:	Grants
Lead Agency/Department Responsible:	Cameron County Electric Utility
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Emergency Plan, Comprehensive Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

		Cameron County (Previous Action) #17
	Proposed Action:	Upgrade existing wooden power poles to concrete along coastal areas.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and incorporated boundaries along coastline
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to public health, safety, and general welfare.
	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, Tornado, Flood
Effect on New/Existing Buildings:	Expand and upgrade existing lines
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500,000
Potential Funding Sources:	Grants
Lead Agency/Department Responsible:	Cameron County Electric Utility Services
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Emergency Plan, Comprehensive Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	Cameron County (Previous Action) #18
Proposed Action:	Work with General Land Office to implement beach nourishment activities to sustain dune protection from storm surge and erosion.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Laguna Madre area and coastal areas of county
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk of dune washout.
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
Effect on New/Existing Buildings:	Protect coastal properties
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5 Million
Potential Funding Sources:	State land office grants, HMGP
Lead Agency/Department Responsible:	County Parks & Recreation, TX Parks & Recreation, GLO
Implementation Schedule:	2015-2020
Incorporation into Existing Plans:	Dune Restoration Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	Cameron County (Previous Action) #19
Proposed Action:	Develop and implement a Drought Emergency Plan to protect new and existing buildings during wildfire events.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Unincorporated county areas
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Ensure essential water supplies to protect structures during extreme drought conditions.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	Reduce potential fire danger to structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Texas Forest Service, FireWise
Lead Agency/Department Responsible:	Parks & Recreation
Implementation Schedule:	2016
Incorporation into Existing Plans:	FireWise Plan, Fire Protection Plan

2021 ANALYSIS
Delete Action.

	Cameron County (Previous Action) #20
Proposed Action:	Install shutters on glass windows and doors to protect critical facilities during severe hail and thunderstorm events, hurricane wind, and tornado.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Key critical facilities within county area
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce continued glass replacement and repairs; reduce possible injury to county staff and residents due to flying glass during severe weather events.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Hurricane Wind, Tornado, Thunderstorm
Effect on New/Existing Buildings:	Reduce damage to structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$350,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	2015-2016
Incorporation into Existing Plans:	Emergency Management Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		Cameron County (Previous Action) #21
	Proposed Action:	Become a "StormReady" community to reduce risk and damage caused by hail, tornado, and thunderstorm events.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Unincorporated county
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Assist residents in preparing, mitigating risk to hail, tornado, and thunderstorms.
	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:	Hail, Tornado, Thunderstorm
Effect on New/Existing Buildings:	Reduce damage to structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	2015-2016
Incorporation into Existing Plans:	Emergency Management Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	Cameron County (Previous Action) #22
Proposed Action:	Remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Unincorporated county areas
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Natural landform protection and reduce risk of loss of property due to wildfire.
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:	Wildfire, Drought
Effect on New/Existing Buildings:	Reduce potential fire danger to structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000
Potential Funding Sources:	Texas Forest Service, FireWise
Lead Agency/Department Responsible:	Parks & Recreation
Implementation Schedule:	2016
Incorporation into Existing Plans:	FireWise Plan, Fire Protection Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	Cameron County (Previous Action) #23
Proposed Action:	Install hail guards on HVAC systems supporting critical facilities and to protect against severe Hail in excess of ½ inch diameter.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Key critical facilities within county area
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce repairs and replacement of costly systems and continue essential service to facilities.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail
Effect on New/Existing Buildings:	Reduce damage to structure/HVAC systems
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	2015-2016
Incorporation into Existing Plans:	Emergency Management Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	Cameron County (Previous Action) #24
Proposed Action:	Add protective cover to parking areas to reduce damage to county-owned vehicles in the event of hail and thunderstorm events.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Parking facilities within county area
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce repairs and replacement of costly vehicles
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Thunderstorm
Effect on New/Existing Buildings:	Reduce damage to structures/HVAC systems
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	2015-2016
Incorporation into Existing Plans:	Emergency Management Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update. Increase estimated cost to $6 million.

CITY OF HARLINGEN

	City of Harlingen (Previous Action) #1
Proposed Action:	Improve drainage systems by expanding capacity through an increase in channel size and culvert size (13th Street Drainage Ditch Improvements).
BACKGROUND INFORMATION	
Jurisdiction/Location:	On the west side of 13th Street from Alcott Avenue north to the North Main Drain outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$750,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Annual Budget, Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Completed.

	City of Harlingen (Previous Action) #2
Proposed Action:	Improve drainage systems by expanding capacity through an increase in channel size and culvert size (Dixieland Drainage Ditch Improvements).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From Lincoln Avenue, between Dixieland Road and Tucker Road, to the outfall at the Arroyo Colorado
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,100,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #3
Proposed Action:	Improve drainage systems by expanding capacity through an increase in culver size (Lipscomb Drainage Ditch Improvements).
BACKGROUND INFORMATION	
Jurisdiction/Location:	Culvert crossing on Louisiana, south of Calle Reina
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses)
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Completed.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #4
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 001).
BACKGROUND INFORMATION	
Jurisdiction/Location:	On New Combs Avenue between Pitman and B Street; On First Street between Brentwood and Austin
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$252,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #5
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 002).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From Lincoln and 3rd Street north to Buchanan, west on Buchanan to A Street; from Buchanan and 1st Street, south to Grant; From Grant and A Street to 3rd Street, south to the Arroyo Colorado (outfall)
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,400,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #6
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 004).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From 9th and Grimes, west on Grimes to 77 Sunshine Strip, west on 77 Sunshine Strip to outfall (3rd Street Ditch); from Marshall and 7th Street, south on 7th to 77 Sunshine Strip; Bowie and 7th Street, north on 7th Street to 77 Sunshine Strip
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,068,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #7
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 005).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From 9th and Monroe, south on 9th to Pierce, east on Pierce to 11th Street, south to canal and east along canal to tie into existing system; from 13th and Tyler south to Pierce, west to 11th Street to tie into system
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,920,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Under Construction.

	City of Harlingen (Previous Action) #8
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 007).
BACKGROUND INFORMATION	
Jurisdiction/Location:	Along 21st St North of Theresa south tying into Washington then west about 750'; from that same tie in on Washington south to Jefferson outfall; from Van Buren along 21st St North to Jefferson outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,212,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #9
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 008).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From intersection of Haine and Treasure Hills running northward along 25th slightly north of Becky; from Treasure Hills and 25th fork east along Treasure Hills slightly past Treasure Hills Cir then NW crossing over into outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$780,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #10
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 012).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing 30: on Alcott St eastward onto 13th St outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$162,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		City of Harlingen (Previous Action) #11
	Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 013).
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	South of Arroyo Vista Cir heading North to opposite curve then NW to outfall
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$180,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #12
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 017).
BACKGROUND INFORMATION	
Jurisdiction/Location:	Along Beck from New Combes outfall west about 250’
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$90,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #13
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 021).
BACKGROUND INFORMATION	
Jurisdiction/Location:	Adams from A St to 3rd St; Jefferson from A St to 3rd St then south on 3rd to Madison; A street from Monroe Ave to Van Buren then along Commerce about 200'; 5th from Van Buren south to Commerce; 7th from Polk south to Commerce
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,680,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		City of Harlingen (Previous Action) #14
	Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 022).
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	1st St from existing on Davis south to Williamson
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$156,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #15
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 023).
BACKGROUND INFORMATION	
Jurisdiction/Location:	Marjory from Kelly to Dennis; Kelly from existing on Davis north about 600'; Davis from existing about 750' eastward then south about 270' then eastward about 60' to outfall; On Pickens from the corner east of Kelly about 800' to the outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$780,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #16
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 027).
BACKGROUND INFORMATION	
Jurisdiction/Location:	Buchanan from A St westward past F St; Lincoln from D St eastward to B St; Grant Ave from E St to A St; Roosevelt from D St to B St then North slightly past Cleveland
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,560,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #17
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 100).
BACKGROUND INFORMATION	
Jurisdiction/Location:	South side of Ed Carey from existing south of Haine north 1,875' cross over NW about 200' to tie into existing then north 1,750' to tie into 77 Sunshine , branch off SE about 200' to cross over Ed Carey then north about 500' to tie into existing. From previous existing on 77 head north about 3,500' then cross over NE and tie into existing; from existing on Benwood about 150' north to Hiane drive
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,868,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #18
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 102).
BACKGROUND INFORMATION	
Jurisdiction/Location:	About 3660' west from emerald lake and Ted St intersection; from the same intersection north along emerald lake about 270; then east about 150' to outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$516,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #19
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 103).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From intersection of Encino and Regency about 720' east to out fall; from intersection of Euno and Hoogland east about 600' to tie into existing
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$276,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #20
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 105).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing north of U St east about 1,020' to tie into existing then south then south about 1,100' to tie into existing; then east about 660'to tie into existing; from existing of Fair Park Blvd and O St SW about 720' the west about 300'
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,320,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		City of Harlingen (Previous Action) #21
	Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 112).
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	To replace existing 24” pipe with 36” pipe on Haine Drive North of Whalen to outfall
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$264,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #22
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 113).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing north of Haine drive and FM 509 intersection west about 240' crossing over FM 509 the SW about 120' then west along Haine Drive about 240'
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$138,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #23
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 115).
BACKGROUND INFORMATION	
Jurisdiction/Location:	North side of Houston St about 80'west of Falcon heading south about 80' then east to out fall; branch off that pipe at about 360' NW about 80' crossing over Houston; starting about 120' west of Falcon on Hale heading east to outfall; From NW corner of Sesame Circle heading NW about 120' then north about 160' then east about 20' to outfall; From NE corner of Live Oak heading SW about 120' then east 240' then NW about 240' to outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$792,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #24
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 122).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing MH on NW corner of Jacaranda and Willowicke SE about 70' then SW about 550'
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$138,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #25
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (System 123).
BACKGROUND INFORMATION	
Jurisdiction/Location:	Starting about 150' from the back of curb on Monroe near 25th St then north about 60' then West to outfall; on North side of Jackson near 25th from existing west to outfall; starting about 150' from the back of curb on Van Buren near 25th St then north about 60' then West to outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$108,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

City of Harlingen (Previous Action) #26	
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 124).
BACKGROUND INFORMATION	
Jurisdiction/Location:	On 5th from Monroe to Van Buren; on 13th from existing on Jefferson to Harrison Ave then east about 450'; from existing on Jefferson at intersection of Jefferson and 10th heading west along Jefferson to existing slightly east of 3rd St; from existing on Jefferson at the intersection of Jefferson and 6th north along 76 drive to existing east of Sul Ross
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,280,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #27
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (System 127).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing on the NW of Estrellita heading SW about 340' crossing Lamb then slightly NW about 180' then SW to outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$156,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #28
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 132).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing on Calle Princesa about 450' behind the houses then slightly SW about 300' then about 210' then slightly SW to outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$480,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #29
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 135).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing at the intersection of Matz and Breedlove heading west about 1,300' slightly past Rose; from the intersection of Matz and Breedlove north about 650' then east about 550'
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$660,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

City of Harlingen (Previous Action) #30	
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 139).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing on Marshall heading west about 240' then SW to south corner of Marshal and 13th then south 1,020' then east 120' then south about 300' then to follow 77 Sunshine curve till corner south of Washington then SE about 120' then south to Jefferson outfall; From intersection on Crockett Ave and && Sunshine Strip along && to Austin then east to 13th St; from existing at the intersection of Morgan Blvd and Chaparral west about 900' to tie into the proposed following along 77 Sunshine Strip curve
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,280,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #31
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 141).
BACKGROUND INFORMATION	
Jurisdiction/Location:	Start on Warren St then to follow Morgan Blvd heading south slightly to tie into existing storm sewer east of Morgan, High St east to Morgan Blvd Grimes south on 21st St to run along Citrus Terrace to Bowie, On Austin St from 25th St west half the street distance towards 21st St Susan St from 25th St to Whitehouse 25th St from Washington to Jefferson (existing)
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,560,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #32
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 142).
BACKGROUND INFORMATION	
Jurisdiction/Location:	Along 77 Sunshine Strip NW slightly past Markowsky to tie into existing, then north to cross 77, then SE to G St then North along G St two-thirds of the street distance. On Orange Heights from existing Eastward to tie into existing on 1St St. On 77 from existing on intersection of 1St and 77 NW to tie into existing on 77
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$960,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #33
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 145).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing on the intersection of Jones St and Sam Houston in between the houses to run slightly NW along alley way crossing Lamar till the alley ends
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$360,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #34
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 148).
BACKGROUND INFORMATION	
Jurisdiction/Location:	New Hampshire Rd south of Bus 77 from the halfway point south to railroad tracks, from one safety end treatment to the other, then north on the opposite side of New Hampshire Rd to water entrance
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$300,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #35
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 149).
BACKGROUND INFORMATION	
Jurisdiction/Location:	End of Oregon St from the existing storm sewer north 2/3 length of the street towards Bus 77
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$252,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #36
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 153).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing storm sewer West of Rose St running through the subdivision North to tie into the existing on Loop 499
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$132,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #37
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 154).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing on Dilworth south about 500 ft.
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$120,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #38
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 157).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing located across Quail Run to cross Emerald Lake and end south of Quail Run opening the run across Quail Run opening
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$30,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #39
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 158).
BACKGROUND INFORMATION	
Jurisdiction/Location:	Along La Vaca from Colorado to Rangerville then turn north along Rangerville Rd to tie into existing south of Knox
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$516,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #40
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 159).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing on Rangerville Rd and Ponderosa intersection south 900 ft. from that same intersection west to Arroyo Colorado(outfall), from existing across Rangerville in front of Ponderosa straight through Outpatient clinic to back parking lot then run through across parking lot to field
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$180,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #41
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 161).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing on Davis and 7th St intersection to run south along 7th St and tie into existing in front of Calvary Baptist Church
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 240,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #42
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 200).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From outfall to run in between houses crossing Ebony Rd and Cenizo Rd to the alley between Cenizo Rd and Lantana Rd
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$ 240,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #43
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 204).
BACKGROUND INFORMATION	
Jurisdiction/Location:	250ft east of Hand Rd from the outfall north of Roosevelt Rd north across Lazy Palms Drive S then NE about 50ft
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$ 480,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #44
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 206).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing on S Sesame Cir cross about 60ft then south about 300 feet the head west to outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 180,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

		City of Harlingen (Previous Action) #45
	Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 207).
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	From existing east of Kratzer St north about 300ft to tie into the existing east of Burke Ct
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$ 120,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

City of Harlingen (Previous Action) #46	
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 216).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing north of Harrison on the intersection of Harrison and Bus 77 crossing Bus 77 westward to tie into existing manhole From existing MH on the intersection of Tyler (west of 77) and Bus 77 to head south to the intersection of Filmore Ave and 77 then 80ft west then south to the outfall near Little Creek
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$ 600,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #47
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 224).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing off US Highway 77east 300' along north side of Fair Park Blvd then south about 200' then east about 300' to cross T St then north crossing over Fairpark Blvd to the corner
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 276,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #48
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 227).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing safety end treatment located in front of L&F Distributers headed east about 270' to tie into existing storm sewer
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$ 60,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #49
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 229).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From Tamm Lane N of USH 83 to run east about 700' to tie into existing, opposite of that existing to start proposed along US Highway 83 past Stuart Place Rd about 1000' then NE to outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$ 3,000,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #50
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 230).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing on US Bus 83 and Harrison Ave 240'west to existing across US 77 Frontage then south about 380' then east about 380' to tie into existing
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$ 276,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #51
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 233).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From corner block of the intersection on north side of Vinson and 77 Sunshine Strip following 77 Sunshine southward to existing sewer system
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses)
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$ 372,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #52
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 234).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing on Austin Ave (west of Ed Carey, north of the fields) 500' to the west slightly past Sonesta Drive
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	Low
Estimated Cost:	$ 138,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #53
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 237).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing on Beck St east of 3rd heading east to about 275' to the outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 72,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #54
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 244).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing MH on Adam's Crossing between Karis Drive and Gabriel's Landing about 550' east then north about 500' to cross Christian Drive
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 360,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #55
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 245).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing on the north side of Summerfield at the intersection of Summerfield and 13th street heading NW crossing 13th St to the outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 48,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #56
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 247).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing 30“ on Mark Cir east of Thomas about 330’ east crossing E Mark Cir then heading south about 150’; from existing 36” pipe North of Leggett about 1,000’ to outfall tying into each 18” pipe along the way; off the opposite end of the same 36” pipe North of Leggett about 210’ west to tie into existing 30” sewer system
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 660,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #57
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 248).
BACKGROUND INFORMATION	
Jurisdiction/Location:	East of Country Drive on 7th St from existing 36" pipe south about 80' to tie into existing; opposite end of that existing south about 140' to tie into existing 30" pipe coming off Tumbleweed; from that point about 200' south to tie into existing 42" pipe; opposite end of that 42" pipe about 220' south to the corner on Matz Ave; then west along Matz about 1,000' then cross over NW about 400' to outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 900,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #58
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 251).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From Breedlove straight across from Hoogland about 1500' north towards Loop 499 then across Breedlove behind the homes about 1,350' to the outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 840,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #59
Proposed Action:	Improve the existing drainage systems by increasing the capacity of the drainage pipes and replacing the inlets and manholes (Drainage System 252).
BACKGROUND INFORMATION	
Jurisdiction/Location:	From existing 18" pipe south of Sun Chase Drive east about 420' to tie into existing MH then about 60' NE crossing Sunnyside Drive then about 660' NE to Stuart Place Main Drain (outfall)
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	Reduce drainage problems and potential flooding
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #60
Proposed Action:	Develop and implement a Public Education Campaign to address extreme heat. Develop a city web page with information regarding location of cooling stations, develop and distribute brochures in English and Spanish. Create and give presentations at local schools, daycares (adult and child), mobile home parks, public housing, boys & girls clubs. Involve care for pets in extreme heat and drought conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Provides education to the public on the dangers of extreme heat; reduces the risk to public health and welfare.
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
Effect on New/Existing Buildings:	None
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$30,000
Potential Funding Sources:	Grant, General fund, CDBG
Lead Agency/Department Responsible:	Health Department, CDBG
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Partnering agreements with city depts.

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #61
Proposed Action:	Expand artificial grass project in landscaped medians to include other areas within public right-of-ways.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations throughout the city
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Product has 15 year life span without need to irrigate medians; product is fire retardant, drought and heat-resistant, eliminates city personnel replacing grass following hurricane, tornado, or flood.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project not eligible for federal grant programs

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Wildfire, Hurricane Wind, Tornado, Flood
Effect on New/Existing Buildings:	None
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$7,230,000
Potential Funding Sources:	Grants, general funds, partnerships
Lead Agency/Department Responsible:	Public Works, Engineering Department
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Water District Plan, Harlingen Proud Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #62
Proposed Action:	Join the Community Rating System Program.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City Wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to public health, safety, and welfare; increase awareness and regulations.
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:	Promote flood insurance and minimize flooding through higher regulatory standards
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Flood Plan, NFIP Ordinance

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #63
Proposed Action:	Increase drainage capacity of the retention ponds in the Treasure Hills area.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Treasure Hill area within Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to critical infrastructure (streets and drainage system); reduce risk to public health, safety, and welfare.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #64
Proposed Action:	Develop and implement a plan to construct Cooling Centers throughout the City of Harlingen.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Community centers, shelters, public buildings, library
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Provides an implementation method(s) for reducing and educating the public on the dangers of extreme heat and drought; reduces the risk to the public health and safety.
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
Effect on New/Existing Buildings:	None
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$30,000
Potential Funding Sources:	Grants, donations, CDBG
Lead Agency/Department Responsible:	Health Department, Public Buildings
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Emergency Operations, Partnering Agreements with city depts.

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #65
Proposed Action:	Develop and implement a Drought Mitigation Plan.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City limits and surrounding communities for implementation
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Provides an increase level of preparedness to reduce risk to public health, safety, and welfare, reduce risk to agricultural and wildlife; ensure continued essential water supply.
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:	Xeriscape plantings protect exposure of buildings to extreme heat temperatures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$30,000
Potential Funding Sources:	Grants, General funds
Lead Agency/Department Responsible:	Public Works, Planning Department
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	FireWise, Water Utilities

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #66
Proposed Action:	Upgrade and expand access roads used during wildfire events.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City wide with primary focus on the area around the Arroyo Colorado and birding centers
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk to public health, safety, and welfare; reduce damage to wildlife habitats when responding to emergencies.
Type of Action *(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:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$20,000
Potential Funding Sources:	Grant, General Fund, Texas Forest Service
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	FireWise, Wildfire Recovery Plan, Emergency Mgmt. Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #67
Proposed Action:	Improve Baker Potts roadway for access into subdivisions in all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Baker Potts from Business 83 to Drury Lane
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of caliche/dirt roadway to a 37' B-B curb & gutter road to allow all weather access of emergency response vehicles and allow for evacuations, eliminate ongoing roadway repairs due to flooding.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm
Effect on New/Existing Buildings:	Reduce threat of flooding for new/existing construction
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #68
Proposed Action:	Implement bi-annual or annual program to remove overgrown and dead brush from undeveloped/vacant land, city parkland.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk to public health, safety, and welfare; reduce fuel for wildfire on vacant land or ranch land.
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:	Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$80,000
Potential Funding Sources:	Grant, General Fund, Texas Forest Service
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	FireWise, Wildfire Response Plan, Parks/Rec. Regs.

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #69
Proposed Action:	Improve Dilworth Bridge crossing for access into subdivisions in all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of bridge crossing to ensure safety for vehicles crossing drainage ditch; ensures access of responding vehicles to areas; provides for evacuation route.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm
Effect on New/Existing Buildings:	Minimize flooding to area structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$800,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update. Increase estimated cost to $1.4 million.

	City of Harlingen (Previous Action) #70
Proposed Action:	Improve Drury Lane roadway for access into subdivisions in all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Drury Lane from Beckham Road to Tamm Lane
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of caliche/dirt roadway to a 37' B-B curb & gutter road to allow all weather access of emergency response vehicles and allow for evacuations, eliminate ongoing roadway repairs due to flooding.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm
Effect on New/Existing Buildings:	Minimize flooding to area structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #71
Proposed Action:	Improve and upgrade the Emergency Operations Building.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Fire Station #3 on Loop 499
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Provides for continuation of critical operations during emergency events.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm, Tornado, Hail, Wildfire, Dam Failure
Effect on New/Existing Buildings:	Reduce impact on critical facility in natural disasters
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,500,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Emergency Operation Plan

2021 ANALYSIS
Completed.

	City of Harlingen (Previous Action) #72
Proposed Action:	Conduct a public education campaign in the event of a necessary evacuation.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to public health, safety, and welfare.
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:	Dam Failure, Flood, Hurricane Wind, Tornado, Wildfire
Effect on New/Existing Buildings:	Educate residents on protecting structures pre-disaster
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Grant, General fund
Lead Agency/Department Responsible:	Public Works, Engineering, Public Information Officer
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Emergency Operations Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #73
Proposed Action:	Work with area agencies to develop and implement evacuation / shelter-in-place plan (pre & post) to address multiple hazards.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to public health, safety, and welfare.
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:	Dam Failure, Flood, Hurricane Wind, Tornado, Wildfire
Effect on New/Existing Buildings:	Retrofit and protect structures for shelter in place
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$30,000
Potential Funding Sources:	Grant, General fund
Lead Agency/Department Responsible:	Public Works, Engineering Department, Emergency Management Coordinator,
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Emergency Operations Plan, Evacuation Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #74
Proposed Action:	Install mobile and permanent generators at critical facilities.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Critical facilities within the City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Services will continue to function in the event of an emergency.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Tornado, Thunderstorm, Hail
Effect on New/Existing Buildings:	Would provide backup power to existing building used for city services, evacuation centers, and/or staging areas
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000 - $300,000 each generator
Potential Funding Sources:	Grant, General funds
Lead Agency/Department Responsible:	Public Works, Public Buildings, Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Emergency Operations Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #75
Proposed Action:	Install hail guards on HVAC systems supporting critical facilities and to protect against severe Hail in excess of ½ inch diameter.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Key critical facilities within city
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce repairs and replacement of costly systems and continue essential service to 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:	Hail
Effect on New/Existing Buildings:	Reduce damage to structures/HVA C systems
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	2015-2016
Incorporation into Existing Plans:	Emergency Management Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #76
Proposed Action:	Improve Hughes Road roadway for access into subdivisions in all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Hughes Road from Tamm Lane west to F.M. 800 Bass Boulevard
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of caliche/dirt roadway to a 37' B-B curb & gutter road to allow all weather access of emergency response vehicles and allow for evacuations, eliminate ongoing roadway repairs due to flooding.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm
Effect on New/Existing Buildings:	Minimize flooding to area structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #77
Proposed Action:	Improve Lipscomb Road roadway for access into subdivisions in all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Lipscomb Road from Rangerville Road (F.M. 1479) east to Ed Carey (F.M. 801)
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of roadway from caliche/dirt to 37' B-B curb & gutter to allow all weather access of emergency response vehicles and allow for evacuations, eliminate ongoing roadway repairs due to flooding.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm
Effect on New/Existing Buildings:	Minimize flooding to area structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,600,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #78
Proposed Action:	Improve Morris Road roadway for access into subdivisions in all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Morris Road from Rangerville Road (F.M. 1479) to Ed Carey (F.M. 801)
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of roadway from 18' asphalt rural section roadway to 37' B-B- curb & gutter rural section to allow all weather access of emergency response vehicles and allow for evacuations, eliminate ongoing roadway repairs due to flooding.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm
Effect on New/Existing Buildings:	Minimize flooding to area structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,600,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #79
Proposed Action:	Purchase NOAA "all hazards" radios for early warning and post –event information and place in schools, critical facilities.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk to public health, safety, and welfare.
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, Dam Failure, Hurricane Wind, Hail, Tornado, Thunderstorm, Wildfire
Effect on New/Existing Buildings:	Protect area structures with warning
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$30,000
Potential Funding Sources:	Grant, General Fund, CDBG, Private and Public partnerships
Lead Agency/Department Responsible:	Emergency operations
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Emergency Operations Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #80
Proposed Action:	Improve North Tamm Lane for access into subdivisions in all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	North Tamm Lane from the frontage road on Expressway 83 north to Hick Hill Road
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of roadway from caliche/dirt road to a 37' B-B curb & gutter section to allow all weather access of emergency response vehicles and allow for evacuations, eliminate ongoing roadway repairs due to flooding.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm
Effect on New/Existing Buildings:	Minimize flooding to area structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,500,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #81
Proposed Action:	Install pump station at the North Floodway.
BACKGROUND INFORMATION	
Jurisdiction/Location:	East of Expressway 77 along Ballenger Road. Location of pump will be along the south bank of the floodway
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the damage to critical infrastructure and reduce the risk to public health, safety, and welfare, and reduce the damage to structures (residential and commercial).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm, Hurricane Wind
Effect on New/Existing Buildings:	Would create a building to house the pump
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Grants, General Funds, Partnerships
Lead Agency/Department Responsible:	Public Works, Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Flood Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update. Include ‘increase site of outfall boxes’ to the action. Increase estimated cost to $1.5 million.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #82
Proposed Action:	Install an area-wide telephone emergency notification system (Reverse 911).
BACKGROUND INFORMATION	
Jurisdiction/Location:	City wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk to public health, safety, and welfare; provide better communication for evacuations or instructions to the public in the event of an emergency.
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, Thunderstorm, Tornado, Hail, Wildfire, Dam Failure, Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$150,000
Potential Funding Sources:	Grant, General Fund, CDBG
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Emergency Operations Plan, coordination with other depts.

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #83
Proposed Action:	Install a stream gauge monitoring station at the spillway.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Treasure Hills spillway located on Clifford Street
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to critical infrastructure (drainage system).
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam failure, Flood, Hurricane Wind, Thunderstorm
Effect on New/Existing Buildings:	Minimize flooding to area structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Flood plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update. Increase estimated cost to $150,000.

	City of Harlingen (Previous Action) #84
Proposed Action:	Improve Teege Road Bridge crossing for access into subdivisions in all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Teege Road and Brazil Road
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of bridge crossing to ensure safety for vehicles crossing drainage ditch; ensures access of responding vehicles to areas; provides for evacuation route.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm
Effect on New/Existing Buildings:	Minimize flooding to area structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$800,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations; Cameron County
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

	City of Harlingen (Previous Action) #85
Proposed Action:	Improve Traxler Way roadway for access into subdivision in all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Traxler Way from the frontage on Expressway 83 west to F.M. 800
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of roadway from 16' asphalt/caliche rural section to 37' B-B curb & gutter rural section to allow all weather access of emergency response vehicles and allow for evacuations and eliminate ongoing roadway repairs due to flooding.
Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural Systems Protection, or Education and Awareness)*	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm
Effect on New/Existing Buildings:	Minimize damage to area structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

		City of Harlingen (Previous Action) #86
	Proposed Action:	Create and implement a wildfire recovery plan to address soil erosion control and vegetative recovery.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	City wide with primary focus on the area around the Arroyo Colorado
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk to public health, safety, and welfare; protect natural habitat area.
	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:	Wildfire
Effect on New/Existing Buildings:	Minimize wildfire damage to area structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$20,000
Potential Funding Sources:	Grant, General Fund, Texas Forest Service
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	2014 or upon funding
Incorporation into Existing Plans:	FireWise, Land Use Plans

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #87
Proposed Action:	Remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Natural landform protection and reduced risk of loss of property due to wildfire.
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:	Wildfire, Drought
Effect on New/Existing Buildings:	Reduce potential fire danger to structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000
Potential Funding Sources:	Texas Forest Service, FireWise
Lead Agency/Department Responsible:	Parks & Recreation
Implementation Schedule:	2016
Incorporation into Existing Plans:	FireWise Plan, Fire Protection Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

SECTION 18: PREVIOUS ACTIONS

	City of Harlingen (Previous Action) #88
Proposed Action:	Develop and implement a Drought Emergency Plan to include rainwater harvesting, water conservation measures and promoting drought-tolerant landscaping.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City-wide
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Conserve water for long-term availability for 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
Effect on New/Existing Buildings:	Reduce potential fire danger to structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Texas Forest Service, FireWise
Lead Agency/Department Responsible:	Parks & Recreation
Implementation Schedule:	2016
Incorporation into Existing Plans:	FireWise Plan, Fire Protection Plan

2021 ANALYSIS
Defer Action – Action will be included in the 2021 Plan Update.

TOWN OF INDIAN LAKE

		Town of Indian Lake– Action #1
	Proposed Action:	Elevate and harden S Resaca Shore Drive bridge to reduce risk of damages and maintaining critical access route.
	BACKGROUND INFORMATION	
	Site and Location:	S Resaca Shore Drive Bridge
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to bridge. Reduce risk to life and property caused by disruption in response; Preserve access, evacuation route and emergency response to isolated streets; The approximate value of property within Indian Lake is $10,000,000; The US DOT value of a life is $9,400,000.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane; Flood; Extreme Wind; Tornado, Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Update cost updated to $800,000.

		Town of Indian Lake– Action #2
	Proposed Action:	Educate property owners about residential mitigation measures for all natural hazards such as the need to elevate structures, implementing residential mitigation measures, install retaining walls, and avoid building in high hazard areas.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property caused by disruption in response; The approximate value of property within Indian Lake is $10,000,000; The US DOT value of a life is $9,400,000.
	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, Extreme Wind
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update.

		Town of Indian Lake– Action #3
	Proposed Action:	Encourage the planting of native and drought-resistant plants, and the use of low-flow fixtures and appliances.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce effect of drought through water conservation 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:	Drought
Effect on new/existing buildings:	Reduce impact of drought on existing and future structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500
Potential Funding Sources:	General Fund, HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update.

		Town of Indian Lake– Action #4
	Proposed Action:	Construct elevated water storage tank to provide independent water source.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	The city is dependent on purchases of treated water from other providers and is thus vulnerable to a disruption of treated water supply during a drought. Independent water source would prevent potential disruption of water service during extreme drought.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought; Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,250,000
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan, CWPP

2022 ANALYSIS:
Defer to Plan Update.

		Town of Indian Lake– Action #5
	Proposed Action:	Upgrade secondary water connection to reduce risk of water service disruption in the event of pipe breakage caused by expansive soils.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property caused by disruption in water service and associated fire response. Reduce risk of repairs to lines.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire; Expansive Soils
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Water Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		Town of Indian Lake– Action #6
	Proposed Action:	Require public works projects to include materials resistant to soil expansion, such as flexible base material instead of concrete.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of repetitive repairs to 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:	Expansive Soils
Effect on new/existing buildings:	Reduce Risk to existing facilities and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Local ordinance, Building Codes

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	Town of Indian Lake– Action #7
Proposed Action:	Conduct public education on dangers of extreme heat and measures residents can take to reduce risk of injury or illness.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life 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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update.

	Town of Indian Lake– Action #8
Proposed Action:	Establish cooling center at Town Hall for residents without access to air condition; the building's air conditioner will be upgraded, and fans will be installed; a generator will be installed to ensure that the air conditioner works during power interruptions, including following a disaster; education residents on the availability of cooling center during extreme events.
BACKGROUND INFORMATION	
Site and Location:	Town Hall
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to vulnerable residents 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 Project; 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:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		Town of Indian Lake– Action #9
	Proposed Action:	Prepare and advertise local evacuation plan and procedures.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property; the approximate value of property within Indian Lake is $10,000,000; the US DOT value of a life it $9,400,000.
	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 Wind; Hurricane; Flood; Terrorism; Hazardous Materials; Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	General Fund; HMGP; FEMA AFG
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Evacuation Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Indian Lake– Action #10
Proposed Action:	Adopt building codes that provide for protection against extreme weather, including anchors and tie- downs for structures and mobile homes, hail resistant materials, and fire-resistant materials.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property through stronger building techniques and materials.
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 Wind; Hurricane; Flood; Terrorism; Hazardous Materials; Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	General Fund; HMGP; FEMA AFG
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Evacuation Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Indian Lake– Action #11
Proposed Action:	Adopt revised floodplain ordinance to include model ordinance language and higher NFIP standards such as freeboard.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to structures through higher building standards in high hazard flood zones.
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 Wind; Hurricane; Flood; Terrorism; Hazardous Materials; Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	General Fund; HMGP; FEMA AFG
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Evacuation Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Indian Lake– Action #12
Proposed Action:	Upgrade/Elevate Henderson Road bridge over Resaca to remove from potential floodway, reduce the risk of damages, and maintain critical access route.
BACKGROUND INFORMATION	
Site and Location:	Henderson Road
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages and/or potential loss of bridge and preserve access route for emergency response and evacuation.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood; Hurricane; Extreme Wind
Effect on new/existing buildings:	Reduce damages to existing structures accessed by bridge
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Indian Lake– Action #13
Proposed Action:	Construct canopy in Town Hall parking lot to protect city vehicles.
BACKGROUND INFORMATION	
Site and Location:	Town Hall
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to emergency response vehicles and equipment. The value of city vehicles is approximately $250,000.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$200,000
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

		Town of Indian Lake– Action #14
	Proposed Action:	Require roofing products with UL 2218 Hail Resistant Listing.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residential structures through more stringent building 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:	Hail
Effect on new/existing buildings:	Reduce risk of damages to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Building Codes, Local Ordinance

2022 ANALYSIS:
Defer to Plan Update.

	Town of Indian Lake– Action #15
Proposed Action:	Educate citizens about procedures for evacuation and shelter in place in the event of a hazardous materials release.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property caused by hazardous materials release through educating 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:	Hazardous Materials
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	Town of Indian Lake– Action #16
Proposed Action:	Expand early warning system currently in use.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property caused by hazardous materials release through educating 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:	Hazardous Materials; Tornado; Extreme Wind; Wildfire; Hail, Flood
Effect on new/existing buildings:	Reduce risk to existing structures through early warning
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Indian Lake– Action #17
Proposed Action:	Upgrade shoulders and provide turnouts along Henderson Road to support evacuation route.
BACKGROUND INFORMATION	
Site and Location:	Henderson Road
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project; Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail; Extreme Wind; Hurricane; Flood; Terrorism; Hazardous Material, Tornado
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Public Works; Evacuation Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Indian Lake– Action #18
Proposed Action:	Harden critical facilities, to include the Town Hall/Police Station, to reduce or eliminate wind, hail, and flood damage and ensure continuity of emergency services.
BACKGROUND INFORMATION	
Site and Location:	Town Hall/Police Station; Critical Facilities
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property caused by disruption in response; Avoid damage to Town Hall; Approximate replacement value is $750,000; Avoid loss of life or injury to town employees.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail; Extreme Wind; Hurricane; Flood; Terrorism; Hazardous Material; Tornado
Effect on new/existing buildings:	Reduce risk to existing public facilities
Priority (High, Moderate, Low):	High
Estimated Cost:	$150,000
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Indian Lake– Action #19
Proposed Action:	Install permanent hard-wired generators at Town Hall/Police Station and wastewater facility.
BACKGROUND INFORMATION	
Site and Location:	Town Hall/Police Station; Lift Station
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property caused by disruption in response or services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail; Extreme Wind; Hurricane; Flood; Extreme Heat; Tornado
Effect on new/existing buildings:	Reduce risk to existing structures from sewer contaminated flood water
Priority (High, Moderate, Low):	High
Estimated Cost:	$150,000
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan; Wastewater Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		Town of Indian Lake– Action #20
	Proposed Action:	Install surveillance cameras at strategic locations in town.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property cause by disruption in response.
	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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Counter Terrorism

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	Town of Indian Lake– Action #21
Proposed Action:	Distribute flyers and put-up signs encouraging residents to report suspicious activity.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property caused by disruption in response.
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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$500
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Counter Terrorism

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	Town of Indian Lake– Action #22
Proposed Action:	Purchase NOAA radios and distribute to critical facilities.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property through early warning.
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:	Hail; Extreme Wind; Hurricane; Flood; Terrorism; Hazardous Material; Tornado
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		Town of Indian Lake– Action #23
	Proposed Action:	Build Safe Room Shelter for first responders and vulnerable populations.
	BACKGROUND INFORMATION	
	Site and Location:	Site location TBD
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property from hazardous events.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Wind; Hurricane; Flood; Terrorism; Hazardous Material; Tornado
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,500,000
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Evacuation Plan; Shelter and Mass Care Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Indian Lake– Action #24
Proposed Action:	Dredge South Aztec Cove Lake and install pump system and dry hydrants to North and South Aztec Cove Lake and the Resaca.
BACKGROUND INFORMATION	
Site and Location:	South Aztec Cove Lake, North and South Aztec Cove Lake, Resaca
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property caused by wildfire by increasing suppression capability.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	General Fund; HMBP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	CWPP

2022 ANALYSIS:
Defer to Plan Update.

		Town of Indian Lake– Action #25
	Proposed Action:	Conduct an education program on fire safety.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property caused by fire 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:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500
Potential Funding Sources:	General Fund; HMGP
Lead Agency/Department Responsible:	City Secretary
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	CWPP

2022 ANALYSIS:
Defer to Plan Update.

CITY OF LA FERIA

City of La Feria– Action #1	
Proposed Action:	Install rainwater harvesting systems at public buildings to water landscaping or groundwater recharge.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces water use at public buildings and benefits groundwater recharge.
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:	Drought
Effect on new/existing buildings:	Reduce impacts of drought on new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TBD
Potential Funding Sources:	Texas Water Development Board; Region M Water Planning Group; HMGP; Local Budgets
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #2
Proposed Action:	Educate citizens on the benefits of rainwater harvesting to water yards and landscaping.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces water use at residential structures.
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
Effect on new/existing buildings:	Reduce impacts of drought on existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500
Potential Funding Sources:	Texas Water Development Board; Region M Water Planning Group; HMGP; Local Budgets
Lead Agency/Department Responsible:	Special Projects Department
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #3
Proposed Action:	Modify current regulations to include additional water restrictions during extreme drought.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Restrict water usage throughout the city during drought; protect water supply.
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:	Reduce impacts of drought on new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	Texas Water Development Board; Region M Water Planning Group; HMGP; Local Budgets
Lead Agency/Department Responsible:	Code Enforcement
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #4
Proposed Action:	Partner with local businesses and community organizations to collect and distribute fans to vulnerable populations during extreme heat events.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect vulnerable citizens by providing fans for relief from extreme heat 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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local businesses; Fund Drive; Local Budgets
Lead Agency/Department Responsible:	Special Projects Division
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #5
Proposed Action:	Educate citizens regarding the dangers of extreme heat and the steps they can take to protect themselves when extreme heat events occur.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect health of citizens through education programs on extreme heat.
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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local businesses; Fund Drive; Local Budgets
Lead Agency/Department Responsible:	Special Projects Division
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #6
Proposed Action:	Install canopy covers in public parks for shade and relief from heat during extreme temperatures.
BACKGROUND INFORMATION	
Site and Location:	City-wide, public parks
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect health of citizens by providing shaded areas in public parks.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	HMGP; Local Budgets
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #7
Proposed Action:	Increase capacity of drainage system throughout the city to reduce or eliminate repetitive flooding caused by undersized drainage system.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce or eliminate damages to structures and infrastructure due to flooding caused by undersized and inadequate drainage.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
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:	HMGP; Local Budgets; Texas Water Development Board; Texas General Land Office
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #8
Proposed Action:	Partner with Cameron County to implement drainage improvements at city limit borders to prevent bottleneck flooding in the city from undersized drainage lines in the county.
BACKGROUND INFORMATION	
Site and Location:	City-wide along limits; Cameron County along La Feria city limits
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce or eliminate damages to structures and infrastructure due to flooding caused by undersized and inadequate drainage or bottleneck, backwater flooding along city borders.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Projects

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	HGMP; Local Budgets; Texas Water Development Board; Texas General Land Office; Cameron County
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #9
Proposed Action:	Revise and enforce local flood damage prevention ordinance to include higher standards such as freeboard and floodplain development restrictions.
BACKGROUND INFORMATION	
Site and Location:	City-wide floodplains
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce or eliminate damages to structures and infrastructure due to flooding through construction practices and development 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:	Flood
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budgets
Lead Agency/Department Responsible:	Code Enforcement
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Flood Damage Prevention Ordinance

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #10
Proposed Action:	Educate citizens on mitigation measures they can take to protect residential structures from flood damages such as installation of backflow valves and elevating utilities.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce or eliminate damages to residential structures through education on implementing mitigation measures.
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 new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budgets; HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #11
Proposed Action:	Expand the fuels reduction and maintenance program to include the entire WUI including recently annexed areas.
BACKGROUND INFORMATION	
Site and Location:	Annexed Areas; WUI
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce or eliminate wildfire threat in newly annexed areas of the city through fuels reduction.
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:	Wildfire
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Budgets; HMGP; Texas Forestry Service
Lead Agency/Department Responsible:	Public Works; Fire Department
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	CWPP

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #12
Proposed Action:	Educate property owners on actions they can take to reduce risk to property, such as installation of sprinkler systems, disposal of combustibles, and defensible space.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce or eliminate wildfire threat in residential neighborhood 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:	Wildfire
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budgets, HMGP; Texas Forestry Service
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	CWPP

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #13
Proposed Action:	Install ignition-resistant roofing materials at all critical facilities in or near the WUI.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities in or near the WUI
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce or eliminate wildfire threat to critical facilities.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	Varies per site
Potential Funding Sources:	Local Budgets; HMGP; Texas Forestry Service
Lead Agency/Department Responsible:	Fire Department; Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	CWPP

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #14
Proposed Action:	Educate citizens about natural hazard event risks, how to mitigate damages and when to take cover or evacuate.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to citizens 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:	Tornado; Thunderstorm Wind; Hurricane Wind; Lightning
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budgets; HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #15
Proposed Action:	Adopt newer building codes that include natural disaster resistant construction practices.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through stronger disaster resistant construction techniques.
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:	Tornado; Thunderstorm Wind; Hurricane Wind; Flood; Hail; Wildfire; Drought
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Budgets; HGMP
Lead Agency/Department Responsible:	Code Enforcement
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Local Building Codes

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #16
Proposed Action:	Construct and utilize shelter for vulnerable populations during severe weather storms.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or loss of life due to severe winter storms.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Winter Storm
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	TBD
Potential Funding Sources:	Local Budgets; HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #17
Proposed Action:	Adopt standards from International Code Council (ICC)-600 Standard for Residential Construction in High-Wind Regions.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through stronger, disaster resistant building codes and construction techniques.
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 Wind; Thunderstorm Wind; Tornado
Effect on new/existing buildings:	Reduce risk to new structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budgets
Lead Agency/Department Responsible:	Code Enforcement
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Local Building Codes, Ordinances

2022 ANALYSIS:
Defer to Plan Update.

SECTION 18: PREVIOUS ACTIONS

	City of La Feria– Action #18
Proposed Action:	Harden Building Envelope at critical facilities.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to critical facilities and ensure continuity of emergency services and emergency response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind; Thunderstorm Wind; Tornado
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	Varies per site
Potential Funding Sources:	Local Budgets; HMGP; Council of Governments
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

City of La Feria– Action #19	
Proposed Action:	Educate homeowners on the benefits of wind retrofits such as shutters and hurricane clips.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages to residential structures through education on minimal mitigation techniques.
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; Thunderstorm Wind; Tornado
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budgets
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #20
Proposed Action:	Install Hail resistant materials at public buildings, with an emphasis on critical facilities.
BACKGROUND INFORMATION	
Site and Location:	City-wide public buildings
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of hail damage to public buildings.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	Varies per site
Potential Funding Sources:	Local Budgets; HMGP
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan; Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #21
Proposed Action:	Install covered parking at Police and Fire Stations to protect emergency vehicles from hail damages and vehicle equipment/computers from damages of extreme heat.
BACKGROUND INFORMATION	
Site and Location:	Police and Fire Stations
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of repetitive damage to emergency vehicles.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail; Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	Varies per site
Potential Funding Sources:	Local Budgets; HMGP
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #22
Proposed Action:	Develop Dam Failure study and emergency action plan.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or loss of life through planning, awareness, and preparedness.
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:	Dam Failure
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000
Potential Funding Sources:	Local Budgets; HMGP; Texas Water Development Board
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan; Emergency Action Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #23
Proposed Action:	Educate citizens on the risk of dam failure and actions to take in the event of a failure.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or loss of life through planning, awareness, and 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:	Dam Failure
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budgets; HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan; Emergency Action Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #24
Proposed Action:	Educate citizens on the dangers of extreme cold and the steps they can take to protect themselves when extreme temperatures occur; Educate homeowners on how to protect their pipes during winter storms.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or loss of life through planning, awareness, and preparedness; reduce risk of damage from busted pipes.
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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budgets; HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan; Emergency Action Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #25
Proposed Action:	Develop dam inundation mapping to inform risk of dam failure.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or loss of life through planning, awareness, and 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:	Dam Failure
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000
Potential Funding Sources:	Local Budgets; HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan; Emergency Action Plan

2022 ANALYSIS:
Defer to Plan Update.

		City of La Feria– Action #26
	Proposed Action:	Install surveillance cameras at strategic locations in town.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of terrorist activity through monitoring activities.
	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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	Local Budgets
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Counter Terrorism

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of La Feria– Action #27
Proposed Action:	Conduct public education campaign to "See Something, Say Something" by distributing flyers and putting up signs.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of terrorist activity through monitoring activities
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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budgets
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Counter Terrorism

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

City of La Feria– Action #28	
Proposed Action:	Train personnel on identifying the different hazardous materials and to inform public of dangers of different hazardous materials.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to first responders and 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:	Hazardous Materials
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000
Potential Funding Sources:	Local Budgets
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of La Feria– Action #29
Proposed Action:	Provide education to residents of location of pipelines and emergency procedures to follow during a hazard event.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents during and after an event through education and awareness of the dangers of pipelines.
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:	Pipeline Failure
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budgets
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

City of La Feria– Action #30	
Proposed Action:	Provide education to residents of the methods of transmitting infectious disease and ways to protect against infection.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to citizens 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:	Infectious Disease
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budgets
Lead Agency/Department Responsible:	Health Department
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of La Feria– Action #31
Proposed Action:	Install surge protection on critical facilities to protect equipment.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of lightning damage to critical facilities 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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Lightning
Effect on new/existing buildings:	Reduce risk to new and existing critical facilities
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	Local Budgets; HMGP
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan; Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #32
Proposed Action:	Adopt newer building codes that include lightning resistant construction practices including installation of lightning rods and/or surge protection.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through stronger disaster resistant construction techniques.
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:	Lightning
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Budgets; HGMP
Lead Agency/Department Responsible:	Code Enforcement
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Local Building Codes

2022 ANALYSIS:
Defer to Plan Update.

	City of La Feria– Action #33
Proposed Action:	Adopt ordinance to restrict development in dam inundation areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or loss of life through development 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:	Dam Failure
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Budgets; HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan; Emergency Action Plan

2022 ANALYSIS:
Defer to Plan Update.

TOWN OF LAGUNA VISTA

	Town of Laguna Vista– Action #1
Proposed Action:	Drainage improvements Basin "B": Install upgraded drainage system for 80-acre residential area. Current system is inadequate to carry storm water runoff.
BACKGROUND INFORMATION	
Site and Location:	Basin is located along the western boundary of the Town and is generally bounded on the south by Hisbiscus Drive, the north by Taylor Avenue, the east by Mesquite Drive and the west by Palm Boulevard.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and reduces cost of flood 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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Reduce flood hazard to existing and future structures
Effect on new/existing buildings:	High
Priority (High, Moderate, Low):	$5,000,000
Estimated Cost:	HMGP; Local Funds; Other Grants; Drainage Fee
Potential Funding Sources:	Town of Laguna Vista / Public Works
Lead Agency/Department Responsible:	Within 12 months of plan adoption pending funding
Implementation Schedule:	Master Drainage Plan
Incorporation into Existing Plans:	Flood

2022 ANALYSIS:
Defer to Plan Update.

		Town of Laguna Vista– Action #2
	Proposed Action:	Drainage improvements Basin "C": Install upgraded drainage system for 60-acre residential area. Current system is inadequate to carry storm water runoff.
	BACKGROUND INFORMATION	
	Site and Location:	Basin is located on the most northwestern part of the Town limits bounded by Taylor Avenue, State Highway 510, and Ebony Lane.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and reduces cost of flood 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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce flood hazard to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants; Drainage Fee
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #3
Proposed Action:	Drainage improvements Basin "D": Install upgraded drainage system west side of State Highway 510 for 80-acre residential area. Current system is inadequate to carry storm water runoff.
BACKGROUND INFORMATION	
Site and Location:	Basin is located in the central part of the original Town limits and is generally bounded by Fernandez Streets, State Highway 510, alley between Ebony Lane and Orange Lane. Existing run-off drains along street side ditches.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and reduces cost of flood 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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce flood hazard to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants; Drainage Fee
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		Town of Laguna Vista– Action #4
	Proposed Action:	Drainage improvements Basin "E": Install upgraded drainage system off Saunders Street and State Highway 510 that drains acreage south of Fernandez Street and north of Morris Street.
	BACKGROUND INFORMATION	
	Site and Location:	Saunders Street and State Highway 510
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and reduces cost of flood 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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce flood hazard to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants; Drainage Fee
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		Town of Laguna Vista– Action #5
	Proposed Action:	Drainage improvements Basin "F": Install drainage system at the most southwestern part of the Town limits, bounded by State Highway 100 and State Highway 510.
	BACKGROUND INFORMATION	
	Site and Location:	Southwestern part of the Town limits, bounded by State Highway 100 and State Highway 510
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and reduces cost of flood 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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce flood hazard to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants; Drainage Fee
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		Town of Laguna Vista– Action #6
	Proposed Action:	Drainage improvements SH 100: Regrade the existing drainage ditch that parallels State Highway 100 to increase capacity and reduce risk of flooding.
	BACKGROUND INFORMATION	
	Site and Location:	State Highway 100
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and reduces cost of flood 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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce flood hazard to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants; Drainage Fee
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		Town of Laguna Vista– Action #7
	Proposed Action:	Drainage improvements: Upgrade the drainage system on the intersection of Broadway and Palo Blanco to increase capacity and reduce risk of flooding.
	BACKGROUND INFORMATION	
	Site and Location:	Intersection of Broadway and Palo Blanco
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and reduces cost of flood 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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce flood hazard to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants; Drainage Fee
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #8
Proposed Action:	Drainage Improvements: Upgrade the drainage system on Holley Beach to increase capacity and reduce risk of flooding.
BACKGROUND INFORMATION	
Site and Location:	Holley Beach
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and reduces cost of flood 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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce flood hazard to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants; Drainage Fee
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #9
Proposed Action:	Drainage Improvements: Upgrade and harden drainage structure on Town-owed marina to increase capacity and reduce risk of damages.
BACKGROUND INFORMATION	
Site and Location:	Town-owed marina
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of damages to Marina.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce flood hazard to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants; Drainage Fee
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #10
Proposed Action:	Drainage Improvements: Harden and reinforce head wall along the Laguna Madre Bay off Beach Boulevard.
BACKGROUND INFORMATION	
Site and Location:	Laguna Madre bay off Beach Boulevard
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of damages to head wall and reduce risk of erosion caused by Hurricane and flooding.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane, Extreme Wind
Effect on new/existing buildings:	Reduce flood hazard to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants; Drainage Fee
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #11
Proposed Action:	Drainage Improvements: Upgrade 48” drainage pipe located at 1004 Beach Blvd to increase capacity and reduce risk of flood damages.
BACKGROUND INFORMATION	
Site and Location:	1004 Beach Blvd
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and reduces cost of flood 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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce flood hazard to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants; Drainage Fee
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		Town of Laguna Vista– Action #12
	Proposed Action:	Drainage Improvements: Relocate and upgrade existing 36" drainage pipe located at 1026 Beach Blvd to increase capacity and reduce risk of flood damages.
	BACKGROUND INFORMATION	
	Site and Location:	Relocate and upgrade existing 36" drainage pipe located at 1026 Beach Blvd
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and reduces cost of flood 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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce flood hazard to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants; Drainage Fee
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

		Town of Laguna Vista– Action #13
	Proposed Action:	Purchase trailer mounted water trash pumps**.**
	BACKGROUND INFORMATION	
	Site and Location:	Town-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk to residents and reduces cost of loss to property owners with mobile pumps that can be used at high hazard locations without permanent pump installation.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce flood hazard to existing and future structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants; Drainage Fee
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan; Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #14
Proposed Action:	Implement early warning system in expanded/new areas outside of the current system capabilities in use.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk to residents and reduces cost of loss to property owners through early warning system
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Tornado, Wildfire
Effect on new/existing buildings:	Reduce hazards to existing and future structures through early warning
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants; Drainage Fee
Lead Agency/Department Responsible:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #15
Proposed Action:	Adopt ordinance to promote water conservation by landscaping with low water usage plants at all public and residential buildings.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces the use of water
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:	$1,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Local Ordinances

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #16
Proposed Action:	Educate public on mitigation measures against all hazards. For example, develop and distribute an education brochure on the effects of extreme heat and measures residents can take to prevent injury or illness.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Educating the public on how to protect themselves from the extreme heat will save loss of life and reduce health risks.
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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #17
Proposed Action:	Implement a tree trimming program that routinely cleans tree limbs hanging in ROW and easements Survey and remove hazardous trees from drainage systems.
BACKGROUND INFORMATION	
Site and Location:	Town-wide ROW easement
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of power outages; reduces damage to homes and vehicles; reduces debris in drainage systems that exacerbates flooding.
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 Wind; Flood; Hurricane, Hail
Effect on new/existing buildings:	Protect new and existing property
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #18
Proposed Action:	Construct an Emergency Operations Center equipped with telecommunications system, video equipment, sirens, and a backup generator; purchase an airboat and trailer; and digitalize Town records
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure continuity of emergency services. Informs residents in advance to make better decision on their plan of action.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Education and Awareness; Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Wind; Hurricane; Flood; Extreme Heat; Drought; Tornado; Hail; Wildfire; Expansive Soils; Hazardous Materials; Terrorism; Pipeline Failure
Effect on new/existing buildings:	Reduces risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #19
Proposed Action:	Harden Town Hall with wind, hail, and flood mitigation measures to reduce damages and ensure continuity of services.
BACKGROUND INFORMATION	
Site and Location:	Town Hall
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces damage to Town Hall and reduces service interruption.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Wind; Flood; Hurricane; Hail; Tornado
Effect on new/existing buildings:	Protect existing building
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #20
Proposed Action:	Conduct a Hailstorm Safety Education Program that includes a community campaign to reduce losses during hail events.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss by educating residents on how to make better informed decisions to protect themselves and their property during hail 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:	Hail
Effect on new/existing buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #21
Proposed Action:	Educate the public on awareness of the threat of Hurricanes and mitigation measure they can implement to protect their property.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	To help the public make better informed decisions; Reduce the risk of loss of life and property.
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 new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants
Lead Agency/Department Responsible:	Tow of Laguna Vista / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #22
Proposed Action:	Inform public by an emergency notification system, including expansion of early warning system and distribution of NOAA weather radios.
BACKGROUND INFORMATION	
Site and Location:	Emergency Notification Sires: Town Hall, Fire Department, NOAA Weather Radios: Critical Facilities, Schools
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Advance notification reduces loss of life and property.
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:	Tornado; Extreme Wind; Hail; Hurricane; Flood
Effect on new/existing buildings:	Reduces risk through early warning
Priority (High, Moderate, Low):	Low
Estimated Cost:	$75,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #23
Proposed Action:	Landscaping ordinance to include plants more resistant to fire and adopt a revised Fire Wise landscaping ordinance.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces the spread of wildfire.
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
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Administration
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Local Ordinance

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #24
Proposed Action:	Update Emergency Management Plan pertaining to hazardous materials and pipeline failure.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of loss of life 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:	Hazardous Materials; Pipeline Failure
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$40,000
Potential Funding Sources:	Local Funds; Other Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

		Town of Laguna Vista– Action #25
	Proposed Action:	Install cameras at critical infrastructure locations and major areas in the Town.
	BACKGROUND INFORMATION	
	Site and Location:	Town-wide critical infrastructure locations
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Monitoring prevents possible terrorism.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds; Other Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

		Town of Laguna Vista– Action #26
	Proposed Action:	Plant trees and vegetation along public ROW and easements to provide shaded areas for relief from extreme heat and lower temperatures.
	BACKGROUND INFORMATION	
	Site and Location:	Town-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provides shade and lowers temperatures, reduce energy consumption.
	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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	Reduces temperature at existing/new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #27
Proposed Action:	Education outreach program for residents with information on drought impacts, restrictions, and water conservation measures.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Makes residents aware of potential hazard, risk, water conservation measures required or recommended, and possible means to reduce the impacts of prolonged drought conditions.
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
Effect on new/existing buildings:	Reduce usage at new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Public Awareness Planning

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #28
Proposed Action:	Remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Site and Location:	Town-wide WUI
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Natural landform protection and reduced risk of loss of property due to wildfire.
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:	Wildfire
Effect on new/existing buildings:	Reduce fire risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	Texas Forest Service; FireWise; HMPG
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	CWPP

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #29
Proposed Action:	Install sprinkler systems at all public buildings and common areas and implement watering schedule.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of foundation shifts and cracks.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils; Wildfire
Effect on new/existing buildings:	Reduce risk on new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000 per location
Potential Funding Sources:	HMGP; Local Funds; Other Grants; CDBG
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Laguna Vista– Action #30
Proposed Action:	Educate the general public on benefits of utilizing sprinkler system or watering around foundation and sidewalks to prevent expansive soils from cracking concrete.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce chances of concrete cracking, thus saving money and damage to structures.
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:	Expansive Soils; Wildfire
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP; Local Funds; Other Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Administration
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Public Awareness Planning

2022 ANALYSIS:
Defer to Plan Update.

CITY OF LOS FRESNOS

	City of Los Fresnos– Action #1
Proposed Action:	Educate public of potential hazards due to reservoir breach and mitigation measures to reduce damages. Include education for water conservation measures following a breach and adopt policy to implement water restrictions following an event.
BACKGROUND INFORMATION	
Site and Location:	Water Reservoir 801 S Nogal
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the potential loss of water and water shortage for residents.
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:	Dam Failure
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works, Administration
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Action Plan

2022 ANALYSIS:
Completed.

	City of Los Fresnos– Action #2
Proposed Action:	Purchase and install an early warning system to reduce damages from a dam breach.
BACKGROUND INFORMATION	
Site and Location:	Water Reservoir 801 S Nogal
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the potential loss of life, injury and response time to reduce loss of water storage or breach.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure
Effect on new/existing buildings:	Reduce damage to property
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP; General Funds; NRCS
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	EAP

2022 ANALYSIS:
Completed.

	City of Los Fresnos– Action #3
Proposed Action:	Visually monitor reservoir banks for erosion or possible failure with a camera system and fencing; mitigate erosion damage as necessary when it is identified.
BACKGROUND INFORMATION	
Site and Location:	Water Reservoir 801 S Nogal
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the potential loss of water storage or breach.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure
Effect on new/existing buildings:	Reduce risk of loss of water to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP; General Funds; NRCS
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	EAP

2022 ANALYSIS:
Defer to Plan Update. Partially completed. Fence completed. Update action to camera installations for an estimated cost of $10,000.

	City of Los Fresnos– Action #4
Proposed Action:	Implement program to promote water conservation by landscaping with low water usage plants at all public buildings and new residential development.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces the use of water.
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:	Reduce drought impact on existing/new buildings
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Local Ordinances, Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. In progress, presenting ordinance to council.

	City of Los Fresnos– Action #5
Proposed Action:	Construct facilities to reclaim wastewater to be potable water.
BACKGROUND INFORMATION	
Site and Location:	Water and Wastewater Plants
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Significantly reduce fresh water usage; lower quantity of water needed, saving thousands of gallons daily.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	Reduce water usage at new/existing buildings
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	TDB
Potential Funding Sources:	HMGP; CDBG
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Delete Action. Project is no longer applicable.

	City of Los Fresnos– Action #6
Proposed Action:	Install sprinkler systems at all public buildings and common areas and implement watering schedule.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of foundation shifts and cracks.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils; Wildfire
Effect on new/existing buildings:	Reduce risk on new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000 per location
Potential Funding Sources:	HMGP; CDBG; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan; Public Works

2022 ANALYSIS:
Completed and Defer to Plan Update. Incorporated annually into budget at each facility.

	City of Los Fresnos– Action #7
Proposed Action:	Educate the general public on benefits of utilizing sprinkler system or watering around foundation and sidewalks to prevent expansive soils from cracking concrete.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce chances of concrete cracking thus saving money and damage to structures.
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:	Expansive Soils; Wildfire
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; General Funds; Private Funds; Developers
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Public Works; Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Update to include develop flyers (combine with other flyers such as landscaping and water conservation) to implement on social media.

	City of Los Fresnos– Action #8
Proposed Action:	To provide an education brochure on the effects of extreme heat and measures citizens should take to protect themselves from injury or illness.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Educating the public on how to protect themselves from the extreme heat will save loss of life and reduce health risks.
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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Develop flyers (combine with other flyers such as landscaping and water conservation) to be mailed out. Incorporate a social media announcement.

	City of Los Fresnos– Action #9
Proposed Action:	Plant trees and vegetation along public ROW and easements to provide shade and reduce temperatures.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provides shade and lowers temperatures, reduces energy consumption.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project; Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	Reduces temperature and existing/new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Delete Action. No longer a priority.

City of Los Fresnos– Action #10	
Proposed Action:	Implement a tree trimming program that routinely cleans tree limbs hanging in ROW and easements; Survey and remove hazardous trees from drainage systems that have the potential to damage power lines and/or impede flow of water and create dam effects during flood/wind events.
BACKGROUND INFORMATION	
Site and Location:	City-wide – ROW Easements Drainage Problems: Drainage Ditch South of Highway 100 causes flooding on: East Fifth St., East Sixth St., East Seventh St., East Eighth St., East Ninth St., East Tenth St. South Nogal St. causes flooding on: West First St., West Second St., West Third St., Valle Alto St. & Bougainvillea St., Jacqueline St. & North Canal St. Drainage Pipe Collapse Olmo St. from West Eighth St. to West Tenth St. Holly Lane Drain under Canal Pasto Drive at California Road Drain under Canal Resaca Escondido Drain Pipe Collapse Resaca Crossings too low Henderson Rd. East Side, Henderson Rd. West Side, Whipple Rd. West Side
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of power outages; reduces damage to homes and vehicles; reduces debris and flood depths in drainage areas.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations; Natural System Protection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Wind; Flood; Hurricane
Effect on new/existing buildings:	Protect new and existing property
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Operation Plan; Local Ordinances

2022 ANALYSIS:
Completed and Defer to Plan Update. Include in description: Plan a week-long event annually possibly with the help of service groups. Drainage improvements completed at following locations. East Fifth St., East Sixth St., East Seventh St., East Eighth St., East Ninth St., East Tenth St., South Nogal St. causes flooding on: West First St., West Second St., West Third St., Valle Alto St. & Bougainvillea St., Jacqueline St. & North Canal St. Drainage Pipe Collapse Olmo St. from West Eighth St. to West Tenth St., Holly Lane Drain under Canal

	City of Los Fresnos– Action #11
Proposed Action:	Develop and conduct public awareness program related to tree maintenance at commercial and residential home sites.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	To help prevent loss of life, property, utilities, and the loss of manpower to restore services.
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 Wind; Hurricane
Effect on new/existing buildings:	Reduce damage to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; Insurance Companies; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Develop flyers and can be completed with properly week-long event in action #10 analysis.

	City of Los Fresnos– Action #12
Proposed Action:	Implement early warning system currently in use by expanding into areas currently not covered by system in-place.
BACKGROUND INFORMATION	
Site and Location:	City Hall; Rode Grounds; Public Works Department' LFCISD Board Training Room; Los Fresnos United High School; Cuates Lift Station
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk to residents – reduces cost of loss to property owners; Advance notification reduces loss of life and property.
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; Extreme Wind; Hurricane; Tornado
Effect on new/existing buildings:	Reduce damages to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$125,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Operations Plan

2022 ANALYSIS:
Defer to Plan Update. Funding not available, continuing to pursue available funding opportunities.

	City of Los Fresnos– Action #13
Proposed Action:	Upgrade culverts and install drainage improvements at various locations (below) to increase capacity and reduce risk of flood damages. Purchase trailer mounted water trash pump to reduce or eliminate flooding.
BACKGROUND INFORMATION	
Site and Location:	Drainage Improvements locations: South of Highway 100 causes flooding on: East Fifth St., East Sixth St., East Seventh St., East Eighth St., East Ninth St., East Tenth St. South Nogal St. causes flooding on: West First St., West Second St., West Third St., Valle Alto St. & Bougainvillea St., Jacqueline St. & North Canal St. Drainage Pipe Collapse Olmo St. from West Eighth St. to West Tenth St., Holly Lane Drain under Canal, Pasto Drive at California Road Drain under Canal, Resaca Escondido Drain Pipe Collapse, Resaca Crossings too low, Henderson Rd. East Side , Henderson Rd. West Side, Whipple Rd. West Side
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk to structures through increased storm water runoff capacity and reduced flood depths.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce flooding to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$10,000,000
Potential Funding Sources:	HMGP; General Funds; Drainage Fee
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Drainage/Master Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Break out into 5 separate projects. Include new site location project #6 at Hwy 100, Evergreen St. Area to Canal Crossings. Drainage improvements completed at Drainage Pipe Collapse Olmo St. from West Eighth St. to West Tenth St. Resaca Escondido Drain Pipe Collapse, Resaca Crossings too low, Henderson Rd. East Side , Henderson Rd. West Side, Whipple Rd. West Side

	City of Los Fresnos– Action #14
Proposed Action:	Elevate or acquire and demolish flood-prone structures.
BACKGROUND INFORMATION	
Site and Location:	Various Floodplain Locations
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Eliminate or reduce flood risk to structures located in the floodplain; reduce injury and loss of lives from flooding
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Protection; Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood; Hurricane; Extreme Wind
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	HMGP; General Funds; CDBG
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Delete Action. City reports no flood-prone structures indicated.

	City of Los Fresnos– Action #15
Proposed Action:	Conduct a Hailstorm Safety Education Program that includes a community campaign to reduce losses during hail events and protect citizens from injury.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss by educating residents on how to make better informed decisions
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:	Hail
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Budget annually, include in description, Develop flyers to be distributed, and announcements made on social media.

	City of Los Fresnos– Action #16
Proposed Action:	Build and/or secure shelters for police and fire emergency response vehicles and trailers by constructing additional bays and covered parking areas for fleet vehicles at Fire Station, City Hall, and Police Station.
BACKGROUND INFORMATION	
Site and Location:	East Ocean Boulevard
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the loss of public property.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail; Extreme Wind; Hurricane
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$250,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Annual Budget, Capital Improvement Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Los Fresnos– Action #17
Proposed Action:	Update Emergency Management Plan pertaining to hazardous materials and pipeline failure.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of loss of life 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:	Hazardous Materials; Pipeline Failure
Effect on new/existing buildings:	Reduce risk to new and existing buildings
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	General Funds; Other Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed. Included in Emergency Management Plan.

	City of Los Fresnos– Action #18
Proposed Action:	Train personnel on identifying the different hazardous materials and to inform public of dangers.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk 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:	Hazardous Materials
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000
Potential Funding Sources:	General Funds; Other Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of Los Fresnos– Action #19
Proposed Action:	Educate and awareness program on the threat of Hurricanes and how to mitigate damages to residential structures.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	To help the public make better informed decisions; reduce the risk of loss of life and property through pre- event mitigation actions.
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 new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. In progress- currently flyer have been distributed to the public along with social media posts advising on safety recommendations for hurricanes.

	City of Los Fresnos– Action #20
Proposed Action:	Construct a combined emergency operations center and first responder safe room.
BACKGROUND INFORMATION	
Site and Location:	East Ocean Boulevard
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect emergency personnel so they will be able to protect the city.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane; Tornado; Hail; Extreme Wind
Effect on new/existing buildings:	Build building to withstand 200 MPH winds
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	HMGP; CDBG; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Administration
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Completed. Los Fresnos Dome being utilized as new City Hall and Emergency Services Facility.

	City of Los Fresnos– Action #21
Proposed Action:	Provide education to residents of location of pipelines and emergency procedures during a hazard event.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Make residents aware of the dangers of pipelines reducing risk to residents during and after an event.
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:	Pipeline Failure
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	General Funds; Other Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of Los Fresnos– Action #22
Proposed Action:	Relocate gas lines to outside city limits or to less populated areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damage to life and property
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Pipeline Failure
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000,000
Potential Funding Sources:	General Funds; Other Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of Los Fresnos– Action #23
Proposed Action:	Install cameras at critical infrastructure locations and in major areas in the city to monitor suspicious activity.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Monitoring prevents possible terrorism
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Terrorism
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of Los Fresnos– Action #24
Proposed Action:	Keep residents aware of potential threats through social media; create network for reporting suspicious activities.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Increasing awareness through education will help residents be more aware of their surroundings
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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	General Funds; Other Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of Los Fresnos– Action #25
Proposed Action:	Become a "StormReady" community to reduce risk and damage caused by hail, tornado, hurricane, and extreme wind events.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Assist residents in preparing, mitigation risk to hail, tornado, and thunderstorms
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:	Hail; Tornado; Hurricane; Extreme Wind
Effect on new/existing buildings:	Reduce damage to new/existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$20,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Delete Action. Los Fresnos Dome has been constructed and being used as emergency service facility.

	City of Los Fresnos– Action #26
Proposed Action:	Install shutters on glass windows and doors to protect critical facilities during tornadoes, severe hail and thunderstorm events, and Hurricane.
BACKGROUND INFORMATION	
Site and Location:	Key critical facilities within the city
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce continued glass replacement and repairs; reduce possible injury to county staff and residents due to flying glass during severe weather events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Hurricane, Tornado, Extreme Wind
Effect on new/existing buildings:	Reduce damages to new/existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$300,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Los Fresnos– Action #27
Proposed Action:	Remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide WUI
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Natural landform protection and reduced risk of loss of property due to wildfire.
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:	Wildfire
Effect on new/existing buildings:	Reduce fire risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	Texas Forest Service; FireWise
Lead Agency/Department Responsible:	City of Los Fresnos / Parks and Recreation
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	CWPP

2022 ANALYSIS:
Defer to Plan Update.

	City of Los Fresnos– Action #28
Proposed Action:	Landscaping ordinance to include plants more resistant to fire and adopt a revised Fire Wise landscaping ordinance.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces the spread of fire; reduces the risk of loss of property due to wildfire.
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
Effect on new/existing buildings:	Reduce fire risk to new/existing buildings
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	General Funds
Lead Agency/Department Responsible:	City of Los Fresnos / Administration
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Local Ordinances; Comprehensive Plan

2022 ANALYSIS:
Delete Action. No longer a priority for the city.

	City of Los Fresnos– Action #29
Proposed Action:	Purchase and install permanent hard-wired generators for back-up power supply for critical facilities (4).
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	During brown outs / power outages, use generators for lift stations and critical facilities to keep operational.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat; Extreme Wind; Hurricane; Tornado; Hail
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	HMGP; General Funds; Utility Funds
Lead Agency/Department Responsible:	City of Los Fresnos
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed.

	City of Los Fresnos– Action #30
Proposed Action:	Purchase large volume pumps (2).
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Pump water from flooded areas to reduce damage to property and life.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce damage to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed.

	City of Los Fresnos– Action #31
Proposed Action:	Deepen drainage area in Resaca Escondido and Falcon Lake to increase storm water retention capacity.
BACKGROUND INFORMATION	
Site and Location:	Resaca Escondido and Falcon Lake
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Increase capacity of drainage to protect homes and property from flooding.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce damage to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	City of Los Fresnos
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

CITY OF PORT ISABEL

	City of Port Isabel– Action #1
Proposed Action:	Educate citizens of water conservation year-round through pamphlets, social media and annual meetings.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces impact on environment and citizens during a drought; reductions in water usage and adoption of methods that promote drought resiliency may result in reduction of drought losses to ornamental and agricultural planting.
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
Effect on new/existing buildings:	Reduce impacts of drought on existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500
Potential Funding Sources:	Texas Water Development Board; Region M Water Planning Group
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	Mitigation; Utilities

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #2
Proposed Action:	Plant native trees/plants to provide shading in public ROWs and parks to provide shade, help with heat reduction, and reduce water usage.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	By implementing this measure, the city can avoid loss to publicly owned trees and plants, valued at approximately $250,000. Reduce risk of injury or illness to residents.
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
Effect on new/existing buildings:	Reduce effects of extreme heat on existing buildings
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	General Funds
Lead Agency/Department Responsible:	Building Maintenance
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	Utilities; Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #3
Proposed Action:	Upgrade Tarpon, Pompano, Harbor Island, Bass, and Trout roadways to install flexible base material and pavement joints to prevent road damage due to soil expansion.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property caused by disruption in response.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils
Effect on new/existing buildings:	Reduce effects of expansive soils on new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,500,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Update description to include “Upgrade drainage and streets on Lincoln Ave., Garfield Ave., Buchanan Ave., N. Roosevelt St., Jefferson Ave., Washington Ave, Roy St., and Pennsylvania Ave. by upgrading drainage and utilizing topographic study to improve streets and current drainage issues.” Update costs to $3,500,000.

	City of Port Isabel– Action #4
Proposed Action:	Require plans and specifications for public works projects to include materials resistant to soil expansion, such as flexible base material instead of concrete.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property caused by disruption in response.
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:	Expansive Soils
Effect on new/existing buildings:	Reduce effects of expansive soils to new structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of Port Isabel– Action #5
Proposed Action:	Conduct public education on dangers of extreme heat and methods to avoid injury or illness.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property 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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #6
Proposed Action:	Establish cooling center at Port Isabel Community Center, by installing upgraded air conditioners, fans, and a generator; distribute information to residents on the availability of the cooling center during extreme heat events.
BACKGROUND INFORMATION	
Site and Location:	Community Center
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property 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; Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$150,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Library
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #7
Proposed Action:	Extend garage bays at fire department, EMS, and police department to protect emergency response vehicles during disasters.
BACKGROUND INFORMATION	
Site and Location:	Municipal fire and police department
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce property damage loss of emergency response vehicles; the replacement value of the vehicles being protected is approximately $1,000,000.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail; Extreme Wind; Hurricane; Flood; Extreme Heat; Tornado
Effect on new/existing buildings:	Reduce risk to existing structures through continuity of emergency services
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP; General Fund; AFG
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Law Enforcement, Fire Fighting

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #8
Proposed Action:	Purchase and Installation of permanent (hard-wired) generators in municipal buildings necessary for continuity during a disaster.
BACKGROUND INFORMATION	
Site and Location:	Municipal buildings (EOC, Community Center, Police Station, Fire/EMS, City Hall, Public Works)
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Allows continuity of operation during and after disasters.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail; Extreme Wind; Hurricane; Flood; Tornado; Extreme Heat
Effect on new/existing buildings:	Reduce risk to existing facilities
Priority (High, Moderate, Low):	High
Estimated Cost:	$300,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Law Enforcement; Recovery; Public Works; Utilities; Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Update costs to $500,000.

	City of Port Isabel– Action #9
Proposed Action:	Become a "StormReady" Community as per NOAA standards.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk 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 Wind; Hurricane; Flood; Hail; Tornado
Effect on new/existing buildings:	Reduce risk to existing structures through early awareness and education
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	EMC
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #10
Proposed Action:	Prepare and advertise local evacuation plan.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property through education and awareness
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:	Hail; Extreme Wind; Hurricane; Flood; Terrorism; Hazardous Material; Wildfire
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	HMGP; General Funds; AFG
Lead Agency/Department Responsible:	Police Department
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Evacuation Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #11
Proposed Action:	Update floodplain management ordinances to include higher standards required to join the CRS program; Join the CRS program upon adoption of ordinance.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Updates to the flood ordinance or adoption of measures required by CRS would result in a reduction in risk to property within the city
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):	High
Estimated Cost:	$500
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Building Department
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Floodplain Ordinance

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #12
Proposed Action:	Adopt NFIP model ordinance with higher floodplain standards.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk to life 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:	Flood
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Building Inspection
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Floodplain Ordinance

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #13
Proposed Action:	Construct “safe haven” canopies over city parking lots including at municipal buildings and parks to be utilized by public.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents, protect property
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail; Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$200,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan; Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Update costs to $400,000

	City of Port Isabel– Action #14
Proposed Action:	Require roofing products with UL 2218 Hail Resistant Listing for new development.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by hail through stronger construction practices
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:	Hail
Effect on new/existing buildings:	Reduce risk on new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Building Inspector
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Building Codes

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #15
Proposed Action:	Educate citizens about procedures for evacuation and shelter in place in the event of a hazardous materials release.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property 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:	Hazardous Materials
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500
Potential Funding Sources:	General Funds; Other Grants
Lead Agency/Department Responsible:	Fire Marshal
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of Port Isabel– Action #16
Proposed Action:	Purchase SCBAs, personal protective equipment, monitors, and other hazmat equipment for Port Isabel Fire Department.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property 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:	Hazardous Materials
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	General Funds; Other Grants
Lead Agency/Department Responsible:	Fire Marshal
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of Port Isabel– Action #17
Proposed Action:	Purchase fire boat for Port Isabel Fire Department.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property 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:	Hazardous Materials
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000,000
Potential Funding Sources:	General Funds; Other Grants
Lead Agency/Department Responsible:	Fire Marshal
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of Port Isabel– Action #18
Proposed Action:	Purchase drone for pre- and post-disaster rescue, recovery, and loss evaluation.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce disaster response time of emergency personnel; reduction of response time may result in protection of lives and property
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 Wind; Hazardous Material; Terrorism
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; General Fund
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	FD SOPs; Recovery, Direction and Control; Firefighting; Law Enforcement; Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #19
Proposed Action:	Elevate and widen coastal roads as well as evacuation routes to reduce risk of flood damages and maintain emergency access.
BACKGROUND INFORMATION	
Site and Location:	North Shore Drive extending from 1st and 4th street and Highway 100 extending from Island Avenue to 4th Street
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents; improve emergency response access
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail; Extreme Wind; Hurricane; Flood
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Evacuation Plan; Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #20
Proposed Action:	Retrofit municipal structures for flood protection and wind protection by improving drainage systems, dry flood proofing, adding hurricane shutters, etc.
BACKGROUND INFORMATION	
Site and Location:	Municipal Buildings
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce property damage and allow continuity of local government during disaster; The approximate replacement value of the buildings is $6,500,000; the operation of the buildings allows the city to preserve life and property
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail; Extreme Wind; Hurricane; Flood; Tornado
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,500,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Building Maintenance
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Public Works, Direction and Control, Recovery; Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #21
Proposed Action:	Use the internet and social media to warn citizens of disasters and extreme weather on a regular basis as well as how to prepare for such events and mitigate damages.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk for citizens and property damage in residential areas.
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 Wind; Hurricane; Flood; Extreme Heat; Drought; Tornado; Hail; Wildfire; Expansive Soils; Hazardous Materials; Terrorism; Pipeline Failure
Effect on new/existing buildings:	Reduce risk to existing structures through education and early warning
Priority (High, Moderate, Low):	High
Estimated Cost:	$500
Potential Funding Sources:	HMPG; General Funds
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Public Information Annex

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #22
Proposed Action:	Build breakwater or similar shoreline protection for harbor.
BACKGROUND INFORMATION	
Site and Location:	Entrance of Modern Venice Harbor
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents and vessels docking in Modern Venice harbor for storm protection; reduce risk of silting of harbor; the approximate value of vessels sheltered in the harbor is $20,000,000; the value of the harbor dredging is approximately $6,000,000.
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:	Flood; Hurricane; Extreme Wind
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$6,000,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #23
Proposed Action:	Install security/surveillance cameras in all municipal buildings and key points in the city.
BACKGROUND INFORMATION	
Site and Location:	City-wide (base of causeway, harbor entrances, main highway through city)
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents through monitoring
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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$400,000
Potential Funding Sources:	General Funds; Other Grants
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	Warning Annex; Law Enforcement Annex

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of Port Isabel– Action #24
Proposed Action:	Conduct public education campaign to "See Something, Say Something" by distributing flyers and putting up signs.
BACKGROUND INFORMATION	
Site and Location:	City-wide (base of causeway, harbor entrances, main highway through City)
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk 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:	Terrorism
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500
Potential Funding Sources:	General Funds
Lead Agency/Department Responsible:	Police
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	Warning Annex; Law Enforcement Annex

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of Port Isabel– Action #25
Proposed Action:	Implement early warning system for residents to notify of natural disasters; three warning sirens would be installed.
BACKGROUND INFORMATION	
Site and Location:	City-Wide; Fire Department, Derry Elementary, Laguna Heights
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents; preserve life and property through early warning
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:	Tornado; Extreme Wind; Hurricane; Hail; Flood; Extreme Heat; Wildfire; Hazardous Materials; Terrorism; Pipeline Failure
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Police, Fire, Emergency Management
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #26
Proposed Action:	Upgrade building codes to require anchors, tie-downs, and increased windstorm resistance.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk to residents; preserve life 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:	Tornado; Hurricane; Extreme Wind
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Building Inspector
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Building Codes

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #27
Proposed Action:	Purchase improved firefighting equipment, including ladder truck, additional SCBAs and cascade system, and additional tanker truck.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property caused by disruption in response
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:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures through increased response capabilities
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HGMP; General Funds; AFG
Lead Agency/Department Responsible:	Fire Marshal
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #28
Proposed Action:	Conduct an education program on fire safety.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property 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:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures through education and awareness
Priority (High, Moderate, Low):	High
Estimated Cost:	$500
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Fire Marshal
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update.

	City of Port Isabel– Action #29
Proposed Action:	Remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide; WUI
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Natural landform protection and reduced risk of loss of property due to wildfire.
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:	Wildfire
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	HMGP; General Funds
Lead Agency/Department Responsible:	Fire Marshal
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	CWPP

2022 ANALYSIS:
Defer to Plan Update.

CITY OF PRIMERA

	City of Primera– Action #1
Proposed Action:	Amend subdivision ordinances to require retention or detention ponds in any new subdivision.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood risk to new development and prevent additional runoff for neighboring developments.
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 new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds
Lead Agency/Department Responsible:	City of Primera / Permitting Department
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Primera– Action #2
Proposed Action:	Construct a large retention/detention pond in the northwest part of town to hold water during heavy rain events.
BACKGROUND INFORMATION	
Site and Location:	Northwest Primera
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood risk to surrounding and downstream developments.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds; HMGP; Cameron County Drainage District
Lead Agency/Department Responsible:	City of Primera / Public Works; Cameron County Drainage District
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan; Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Primera– Action #3
Proposed Action:	Construct a new water treatment plan supplied by groundwater for a redundant water source during extreme drought.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Secondary water supply during drought.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	Reduce risk to new and existing structures by providing reliable water source
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds; HMGP; Other Grants
Lead Agency/Department Responsible:	City of Primera / Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Update costs to $5,000,000.

	City of Primera– Action #4
Proposed Action:	Develop educational materials for residents on methods of water conservation; provide materials on community website and include link to materials on water bills.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce water consumption by educating residents on appropriate conservation measures to take during times of drought.
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
Effect on new/existing buildings:	Reduce risk to new and existing structures by providing water conservation education
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds; HMGP
Lead Agency/Department Responsible:	City of Primera / Water Department
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Delete Action. City no longer deems action as a priority for Plan Update.

	City of Primera– Action #5
Proposed Action:	Designate the City's community center as a cooling area during the months of June through September for vulnerable residents during extreme heat periods.
BACKGROUND INFORMATION	
Site and Location:	City Community Center
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to vulnerable residents by providing a cool refuge during extreme heat.
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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds
Lead Agency/Department Responsible:	City of Primera / Administration
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Delete Action. City no longer deems action as a priority for Plan Update.

	City of Primera– Action #6
Proposed Action:	Retrofit non-energy efficient homes to be energy efficient.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to vulnerable residents by reducing energy costs at older homes
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on new/existing buildings:	Reduce effects to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP; CDBG
Lead Agency/Department Responsible:	City of Primera / Economic Development
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Update description and risk benefit to include “The city would retrofit current non-energy homes to energy efficient homes by providing assistance to better insulate them. This would lower the cost of energy bills for the home and less burden on the electrical grid.”

	City of Primera– Action #7
Proposed Action:	Develop educational materials for residents on extreme weather events; provide guidance on how to protect property and lives; provide materials on community website and include link to materials on water bills or other appropriate method/location.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property through early preparation and 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:	Extreme Wind; Hurricane; Flood; Tornado; Hail; Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds; HMGP
Lead Agency/Department Responsible:	City of Primera / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Delete Action. City no longer deems action as a priority for Plan Update.

	City of Primera– Action #8
Proposed Action:	Implement early warning system to new areas of the jurisdiction to alert residents of impending severe weather.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property through early warning
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 Wind; Hurricane; Flood; Tornado; Hail; Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$75,000
Potential Funding Sources:	Local Funds; HMGP
Lead Agency/Department Responsible:	City of Primera / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Update costs to $25,000

	City of Primera– Action #9
Proposed Action:	Adopt standards from International Code Council (ICC)-600 Standard for Residential Construction in High-Wind Regions.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to new and substantially improved structures in the floodplain.
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 Wind; Hurricane; Tornado
Effect on new/existing buildings:	Reduce risk to new or substantially improved structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds; HMPG
Lead Agency/Department Responsible:	City of Primera / Permitting Department
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. City had adopted.

	City of Primera– Action #10
Proposed Action:	Adopt higher floodplain standards such as freeboard and cumulative substantial damage.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to new and substantially improved structures in the floodplain
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
Effect on new/existing buildings:	Reduce risk to new or substantially improved structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds; HMGP
Lead Agency/Department Responsible:	City of Primera / Permitting Department
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Flood Damage Prevention Ordinance

2022 ANALYSIS:
Defer to Plan Update.

	City of Primera– Action #11
Proposed Action:	Increasing tree plantings around public buildings to share parking lots and along public ROWs to provide shade and reduce temperatures.
BACKGROUND INFORMATION	
Site and Location:	City-wide public buildings
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the effects of extreme heat on public buildings and common areas
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
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000 per site
Potential Funding Sources:	Local Funds; HMGP
Lead Agency/Department Responsible:	City of Primera / Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Primera– Action #12
Proposed Action:	Develop and implement a schedule for regularly checking water supply system for leaks to minimize water supply loss.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of water during 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:	$10,000 annually
Potential Funding Sources:	Local Funds
Lead Agency/Department Responsible:	City of Primera / Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Update implementation schedule to annually.

	City of Primera– Action #13
Proposed Action:	Retrofit critical facilities to minimize hail damage including but not limited to hail resistant roofing materials and shatter proof glass.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce or eliminate hail damage at critical facilities
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail
Effect on new/existing buildings:	Reduce damages to existing critical facilities
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds; HMGP
Lead Agency/Department Responsible:	City of Primera / Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of Primera– Action #14
Proposed Action:	Require the use of non-combustible materials for new construction in wildfire hazard areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce wildfire risk for new development through better construction practices
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
Effect on new/existing buildings:	Reduce damages on new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds
Lead Agency/Department Responsible:	City of Primera / Permitting Department
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan; Subdivision Ordinance

2022 ANALYSIS:
Delete Action. City no longer deems action as a priority for Plan Update.

	City of Primera– Action #15
Proposed Action:	Implement a fuels reduction program in the Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide WUI
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce wildfire risk for structures in or near the WUI
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:	Wildfire
Effect on new/existing buildings:	Reduce damages to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	Local Funds; Texas Forest Service
Lead Agency/Department Responsible:	City of Primera / Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	CWPP

2022 ANALYSIS:
Delete Action. City no longer deems action as a priority for Plan Update.

	City of Primera– Action #16
Proposed Action:	Install sprinkler systems at all public buildings and common areas and implement watering schedule.
BACKGROUND INFORMATION	
Site and Location:	City public buildings and common areas
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of foundation damage and sidewalk/pavement cracking.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils
Effect on new/existing buildings:	Reduce damages to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000 per site
Potential Funding Sources:	Local Funds; CDBG; HMGP
Lead Agency/Department Responsible:	City of Primera / Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Delete Action. City no longer deems action as a priority for Plan Update.

	City of Primera– Action #17
Proposed Action:	Educate the general public on benefits of utilizing sprinkler system or watering around foundation and sidewalks to prevent expansive soils from cracking concrete.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of foundation damage to residential structures.
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:	Expansive Soils; Wildfire
Effect on new/existing buildings:	Reduce damages to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds; CDBG; HMGP
Lead Agency/Department Responsible:	City of Primera / Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Delete Action. City no longer deems action as a priority for Plan Update.

TOWN OF RANCHO VIEJO

	Town of Rancho Viejo– Action #1
Proposed Action:	Education outreach program to educate residents on water conservation methods including turning water off during cleaning activities, checking for plumbing leaks or dripping faucets, and installing rain capturing devices for irrigation.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Save water and reduce the impact of drought
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
Effect on new/existing buildings:	Reduce impact on existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update.

	Town of Rancho Viejo– Action #2
Proposed Action:	Determining how the community and its water sources have been impacted by drought in the past through identifying local drought indicators, such as precipitation, temperature, surface water levels, soil moisture; develop a drought emergency plan; adopt an ordinance to restrict the use of public water resources for non-essential usage, such as landscaping, washing cars, filling pools, and require low flow fixtures in new public buildings, etc.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce vulnerability to 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:	Reduce impact of drought on existing buildings
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$20,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Local Ordinance

2022 ANALYSIS:
Defer to Plan Update.

	Town of Rancho Viejo– Action #3
Proposed Action:	Adopt the International Building Code (IBC) and International Residential Code (IRC); revise and update regulatory floodplain maps; adopt higher standards in floodplain ordinances including freeboard, no-rise in the floodplain, cumulative substantial damage, etc.
BACKGROUND INFORMATION	
Site and Location:	City-wide/V-MUD location
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce wind/flood and foundation damage
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 Wind; Hurricane; Tornado; Expansive Soils; Flood
Effect on new/existing buildings:	Reduce risk to new or substantially improved structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; Local Funds
Lead Agency/Department Responsible:	City / Valley MUD
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan; Drainage Plan; Floodplain Ordinance

2022 ANALYSIS:
Defer to Plan Update.

	Town of Rancho Viejo– Action #4
Proposed Action:	Establish program for all utilities for regular scheduled tree pruning around lines; inspect utility poles to ensure they meet specifications and are wind resistant.
BACKGROUND INFORMATION	
Site and Location:	City-wide / V-MUD location
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce wind damage; limit power outages
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Planning and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Wind; Hurricane; Hail
Effect on new/existing buildings:	Limit power outage and damages at existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000
Potential Funding Sources:	HMGP; Local Funds; Utility Fees
Lead Agency/Department Responsible:	City/Valley MUD
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

		Town of Rancho Viejo– Action #5
	Proposed Action:	Bury power lines to provide uninterrupted power after hazard events, considering both maintenance and repair issues.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide / V-MUD location
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce number and length of power outages.
	Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Wind; Tornado; Hurricane; Hail
Effect on new/existing buildings:	Reduce power outage and damages to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,000,000
Potential Funding Sources:	HMGP; Local Funds; Utility Fee
Lead Agency/Department Responsible:	City / Valley MUD
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Rancho Viejo– Action #6
Proposed Action:	Educate property owners on how to properly install temporary window coverings before a storm; educate design professionals to include wind mitigation during building design.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce wind damage 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 Wind; Hurricane; Tornado; Hail
Effect on new/existing buildings:	Reduce damage to existing and new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Rancho Viejo– Action #7
Proposed Action:	Educate citizens regarding the dangers of extreme heat and the steps they can take to protect themselves from injury or illness when extreme temperatures occur.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce heat affects 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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP; Local Funds
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update.

	Town of Rancho Viejo– Action #8
Proposed Action:	Create and implement program to increase tree plantings around buildings to shade parking lots and along public ROWs to reduce temperatures and provide shaded areas for residents.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce heat effect.
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
Effect on new/existing buildings:	Reduce effects at existing buildings
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Rancho Viejo– Action #9
Proposed Action:	Mail safety brochures with mitigation measures residents can take to reduce hail damages; upload brochure to local website with links for additional information including StormReady data and links.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce hail damage.
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:	Hail
Effect on new/existing buildings:	Reduce hail damage at existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,000
Potential Funding Sources:	HMGP; Local Funds
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Rancho Viejo– Action #10
Proposed Action:	Update, review, and enforce ordinances, as appropriate, related to building materials (requiring hail resistant roofing and glass on all new public buildings) and continue to adopt current construction codes.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce hail damage.
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:	Hail
Effect on new/existing buildings:	Reduce hail damage at existing and new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Rancho Viejo– Action #11
Proposed Action:	Update website with maps and information including StormReady data and links. Mail educational brochures to residents in hazard- prone areas on mitigation measures to reduce damages.
BACKGROUND INFORMATION	
Site and Location:	City-wide/V-MUD location
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to residents, reduce ongoing repair costs to homes, roads, etc.
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; Extreme Wind; Hurricane
Effect on new/existing buildings:	Reduce flood/wind damage to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; Local Funds
Lead Agency/Department Responsible:	City Administration/Valley MUD
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Drainage Plan; Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Rancho Viejo– Action #12
Proposed Action:	Revise landscape ordinance to include plants more resistant to fire at public building and new residential developments.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the spread of fire; reduce the risk of loss of property due to wildfire.
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
Effect on new/existing buildings:	Reduce fire risk to new/existing buildings
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Local Ordinance; Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	Town of Rancho Viejo– Action #13
Proposed Action:	Create and Implement program to remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide WUI
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Natural landform protection and reduce risk of loss of property due wildfire.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural Systems Projection

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce fire risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	Texas Forest Service; FireWise; HMGP
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	CWPP

2022 ANALYSIS:
Defer to Plan Update.

	Town of Rancho Viejo– Action #14
Proposed Action:	Educate the general public on benefits of utilizing sprinkler system or watering soil around foundation and sidewalks to prevent expansive soils from cracking concrete.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce chances of concrete cracking thus saving money and damage to structures.
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:	Expansive Soils; Wildfire
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP; Local Funds
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update.

	Town of Rancho Viejo– Action #15
Proposed Action:	Install sprinkler systems at all public buildings and common areas and implement watering schedule.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of foundation shifts and cracks.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils; Wildfire
Effect on new/existing buildings:	Reduce risk on new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000 per location
Potential Funding Sources:	HMGP; CDBG; Local Funds
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Completed.

CITY OF RIO HONDO

City of Rio Hondo– Action #1	
Proposed Action:	Repair and upgrade all waterlines to stop water loss.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce potable water 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:	Drought
Effect on new/existing buildings:	Reduce the need to purchase water
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,200,000
Potential Funding Sources:	Texas Water Development; City Funds
Lead Agency/Department Responsible:	City of Rio Hondo Water Treatment
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan; Water Loss Study

2022 ANALYSIS:
Defer to Plan Update. Update description to include “need for ground water well to augment the surface water quantities”. Also discussed need for more efficient alternative water source. Include “increase potable water” in risk reduction benefit. Update cost to $1,800,000.

	City of Rio Hondo– Action #2
Proposed Action:	Map and Assess vulnerability to wildfire; identify water sources to fight fires; update Emergency Management Plan of identified vulnerabilities and sources of water.
BACKGROUND INFORMATION	
Site and Location:	City-wide; Extra Territorial Jurisdiction
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of wildfires.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Local Plans and Regulations (coordinate with surrounding cities and towns)

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Texas Forest Service
Lead Agency/Department Responsible:	City of Rio Hondo Fire Department
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Update costs to $650,000.

	City of Rio Hondo– Action #3
Proposed Action:	Adopt and enforce building codes; Upgrade to the International Building Code 2013 and review all Permit Procedures.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of wind 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 Wind; Hurricane; Tornado; Hail
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$200,000
Potential Funding Sources:	City Funds
Lead Agency/Department Responsible:	City of Rio Hondo Permit Division
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Completed. Adopted with Resident Building Code and 2018 Building Code. Incorporate new action to address hazard, as city has large inventory of housing in need of renovation, cost will be $1,500,000.

	City of Rio Hondo– Action #4
Proposed Action:	Adopt ASCE24-05 Flood Resistant Design and Construction to reduce flooding caused by Storm Surge.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Prohibiting floodplain development through regulatory and/or incentive-based measures.
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
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,000,000
Potential Funding Sources:	USDA; City Funds; HMGP
Lead Agency/Department Responsible:	City of Rio Hondo Permit Division
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed. City adopted Floodplain Ordinance and City has a certified Flood Plain Manager.

	City of Rio Hondo– Action #5
Proposed Action:	Install sprinkler systems at all public buildings and common areas and implement watering schedules.
BACKGROUND INFORMATION	
Site and Location:	City-wide public buildings
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of foundation shifts and cracks.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils; Wildfire
Effect on new/existing buildings:	Reduce risk of damage to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000 per location
Potential Funding Sources:	HMGP; CDBG; City Funds
Lead Agency/Department Responsible:	City of Rio Hondo Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. City has adopted the Water Conservation Plan and Drought Contingency Plan.

	City of Rio Hondo– Action #6
Proposed Action:	Stabilize the banks of the Arroyo Colorado River by using rock splash pads to direct run off and minimize the potential for erosion.
BACKGROUND INFORMATION	
Site and Location:	Banks of Arroyo Colorado River inside the City of Rio Hondo
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of erosion and flood damage.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane; Flood
Effect on new/existing buildings:	Reduce risks to new and existing structures along the banks of the Arroyo Colorado
Priority (High, Moderate, Low):	High
Estimated Cost:	$8,000,000
Potential Funding Sources:	Army Corps. Of Engineers; City Funds; HMGP
Lead Agency/Department Responsible:	City of Rio Hondo; Army Corps. Of Engineers
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Funding not available.

	City of Rio Hondo– Action #7
Proposed Action:	Educate the public on mitigation measures against all hazards such as proper hydration and proper clothing while working outside; identify and promote air condition shelters for the elderly and educate the public on their availability.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce heat illness and death due to heat exhaustion.
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; Winter Storm
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000
Potential Funding Sources:	City Funds; USDA
Lead Agency/Department Responsible:	City of Rio Hondo Administration
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan; Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Update description to include maintaining a website and PSA's on hazard events due to climate changes in area.

	City of Rio Hondo– Action #8
Proposed Action:	Develop and conduct public awareness program related to tree maintenance at commercial and residential home sites.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce loss of life, property, utilities, and the loss of manpower to restore services.
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 Wind; Hurricane
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; Insurance Companies; City Funds
Lead Agency/Department Responsible:	City of Rio Hondo Emergency Management
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Include additional action to “increase the replacement of telephone poles, cut trees affecting power lines, have electrical companies replace streetlights and have cable companies secure overhead wires. Cost estimate $200,000”

	City of Rio Hondo– Action #9
Proposed Action:	Plant trees and vegetation along public ROW and easements to reduce temperatures and provide shade.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provide shade and lowers temperatures; reduces energy consumption.
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
Effect on new/existing buildings:	Reduces temperature at new/existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000
Potential Funding Sources:	HMGP; City Funds
Lead Agency/Department Responsible:	City of Rio Hondo Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. City will be adopting a tree ordinance in the next 12 months and will be added to permitting process. Update implementation schedule to 12 months. Priority High.

	City of Rio Hondo– Action #10
Proposed Action:	Incorporate drought tolerant or xeriscape practices into landscape ordinances to reduce dependence on irrigation.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce dependence on irrigation.
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:	Drought
Effect on new/existing buildings:	Reduce water consumption at new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	City Funds; HMGP
Lead Agency/Department Responsible:	City of Rio Hondo Permit Division
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update. Due to increase cost in water, City is looking to promote drought tolerant plants and develop mini parks with drought tolerant plants. Update costs to $100,000. Priority Moderate.

	City of Rio Hondo– Action #11
Proposed Action:	Retrofit portion of City Hall to serve as Safe Room for first responders.
BACKGROUND INFORMATION	
Site and Location:	City Hall
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protect first responders 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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado; Hurricane
Effect on new/existing buildings:	Reduce risk at existing building
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	City Funds; HMGP
Lead Agency/Department Responsible:	City of Rio Hondo Emergency Management
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Update action description to include warming shelter and generators. Update costs to $1,800,000.

	City of Rio Hondo– Action #12
Proposed Action:	Retrofit public buildings with hail resistant materials.
BACKGROUND INFORMATION	
Site and Location:	City-wide public buildings
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to public buildings.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail
Effect on new/existing buildings:	Reduce risk at existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000 per site
Potential Funding Sources:	City Funds; HMGP
Lead Agency/Department Responsible:	City of Rio Hondo Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Update priority level to moderate.

	City of Rio Hondo– Action #13
Proposed Action:	Remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide WUI
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Natural landform protection and reduced risk of loss of property due to wildfire.
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:	Wildfire
Effect on new/existing buildings:	Reduce fire risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	Texas Forest Service
Lead Agency/Department Responsible:	City of Rio Hondo Parks and Recreation
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	CWPP

2022 ANALYSIS:
Defer to Plan Update. Update to include additional hazards.

	City of Rio Hondo– Action #14
Proposed Action:	Educate the general public on benefits of utilizing sprinkler system or watering around foundation and sidewalks to prevent expansive soils from cracking concrete.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce chances of concrete cracking thus saving money and damage to structures
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:	Expansive Soils; Wildfire
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP; City Funds
Lead Agency/Department Responsible:	City of Rio Hondo Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update. City intends to develop a website related to action.

CITY OF SAN BENITO

	City of San Benito– Action #1
Proposed Action:	Assess the community's critical and public facilities for their ability to protect their occupants during a wind relate disaster within the City of San Benito and Cameron County; retrofit where necessary.
BACKGROUND INFORMATION	
Site and Location:	City-wide – critical infrastructures, schools, businesses, and residential housing
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce reoccurring losses due to extreme wind by evaluating vulnerability and identifying at-risk 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:	Extreme Wind; Hurricane
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$25,000
Potential Funding Sources:	CDBG; EDC; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Code Enforcement, Building Inspections; City Administration
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #2
Proposed Action:	Provide information to educate the citizens, elected officials, and property owners about hurricane hazards and potential ways to mitigate damages.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to 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; Extreme Wind
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	EMPG; HMGP; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	San Benito Police; Fire Department; SBOEN; City Administration
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #3
Proposed Action:	Implement drainage improvements for the entire City of San Benito, drainage watersheds within the city and surrounding the city to increase storm water runoff capacity and protect structures and infrastructure from flood damages.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Protection of all properties and reduce reoccurring losses.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

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:	$10,000,000
Potential Funding Sources:	CDBG; EDC; HMGP; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Public Works; Street Department; Irrigation District; City Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #4
Proposed Action:	Designate public buildings as cooling stations during extreme heat events and educate citizens on the availability of cooling stations.
BACKGROUND INFORMATION	
Site and Location:	City-wide – selected public buildings
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury to vulnerable 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:	Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	School District; CDBG; EMPG; EDC; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Public Works; Street Department; Irrigation District; City Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #5
Proposed Action:	Modify building codes to require drought tolerant landscaping for new public buildings and commercial developments to reduce water consumption.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce water consumption at public buildings.
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:	Reduce effects of drought on future commercial development
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	School District; CDBG; EDC; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Public Works; Street Department; Irrigation District; City Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #6
Proposed Action:	Implement subdivision regulations, new building regulations, building codes and enforcement and development reviews to influence the way land and buildings are developed and built to sustain winds caused by extreme weather.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by extreme wind events through more stringent building codes and wind resistant construction practices.
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:	Tornado; Extreme Wind; Hurricane
Effect on new/existing buildings:	Reduce the risk to new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000
Potential Funding Sources:	School District; CDBG; EDC; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Code Enforcement and Building Inspections; City Administration
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	Building Codes; Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #7
Proposed Action:	Implement subdivision regulations, new building regulations, building codes and enforcement and development reviews to influence the way land and buildings are developed and built to withstand hail events.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by hail events through more stringent building codes and hail resistant construction materials and practices.
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:	Hail
Effect on new/existing buildings:	Reduce the risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	HMGP; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Code Enforcement and Building Inspections; City Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Building Codes; Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #8
Proposed Action:	Adopt land use restrictions for preservation and forest management to minimize damage and losses while preserving natural systems and vegetation.
BACKGROUND INFORMATION	
Site and Location:	City-wide, with an emphasis on the WUI
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of wildfire by limiting development in high-risk areas and preserving buffer area.
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
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000
Potential Funding Sources:	EMPG; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Fire Department; Code Enforcement; City Administration
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan; CWPP

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #9
Proposed Action:	Adopt building codes with appropriate construction methods for expansive soils to prevent or reduce the risk of structural damage.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of damage to future structures through construction practices that minimize movement caused by expansive soils.
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:	Expansive Soils
Effect on new/existing buildings:	Reduce risk to future structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000
Potential Funding Sources:	EMPG; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Code Enforcement; City Administration
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	Building Codes; Comprehensive Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

	City of San Benito– Action #10
Proposed Action:	Create a program to help inform the citizens, elected officials, and property owners about hazards and potential ways to mitigate hazardous material events and how to properly dispose of them.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce these types of events from reoccurring.
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:	Hazardous Materials
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	EMPG; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Storm Water Grants; Code Enforcement; City Administration
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #11
Proposed Action:	Create a program to help inform the citizens, elected officials, and property owners about how they can prevent acts of terrorism.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce these types of events from reoccurring.
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
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	EMPG; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Police; Fire; OEM
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #12
Proposed Action:	Create a program to help inform the citizens, elected officials, and property owners about hazards and potential ways to prevent illegal digging in and around pipelines.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce these types of events from reoccurring.
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:	Pipeline Failure
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	EMPG; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Public Works; Police; Fire; OEM
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #13
Proposed Action:	Adopt higher standards into the flood damage prevention ordinance to limit floodplain development and provide higher protection to structures in the floodplain.
BACKGROUND INFORMATION	
Site and Location:	City-wide – FEMA and community identified floodplain
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages caused by flood through more stringent requirements and 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:	Flood
Effect on new/existing buildings:	Reduce the risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000
Potential Funding Sources:	CDBG; EDC; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Code Enforcement and Building Inspections; City Administration
Implementation Schedule:	Within 36 months of plan adoption pending funding
Incorporation into Existing Plans:	Flood Damage Prevention Ordinance; Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #14
Proposed Action:	Plant trees and vegetation along public ROW easements and public building common areas, public school common areas to reduce temperatures and provide shade.
BACKGROUND INFORMATION	
Site and Location:	Selected public buildings and ROW easements
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provide shade, lower temperatures and reduce emergency consumption at public facilities
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
Effect on new/existing buildings:	Reduce risk to existing public buildings
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	CDBG; EMPG; EDC; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Public Works; ISD; Street Department; Irrigation District; City Administration
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #15
Proposed Action:	Upgrade existing water system to eliminate line breaks and leaks and prevent water loss.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce water loss through broken or leaky pipes.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on new/existing buildings:	Reduce effects of drought on all development
Priority (High, Moderate, Low):	Low
Estimated Cost:	$2,000,000
Potential Funding Sources:	CDBG; HMGP; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	Public Works; City Administration
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #16
Proposed Action:	Retrofit San Benito Police Station or other public building (determine most feasible) as a safe room for first responders.
BACKGROUND INFORMATION	
Site and Location:	Police Station or other public facility
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to police station caused by extreme weather events while protecting first responders; ensuring immediate emergency response after an event.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Tornado; Extreme Wind; Hurricane; Hail
Effect on new/existing buildings:	Reduce the risk to existing structure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	CDBG; HMGP
Lead Agency/Department Responsible:	Code Enforcement; City Administration
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #17
Proposed Action:	Provide information to educate the citizens, elected officials, and property owners about hail hazards and potential ways to mitigate them.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to structures, protect citizens from injury 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:	Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	EMPG; HMGP; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	San Benito Police; Fire Department; SBOEN; City Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #18
Proposed Action:	Remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide WUI
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of wildfire through fuels reduction.
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:	Wildfires
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	Texas Forest Service; HMGP
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan; CWPP

2022 ANALYSIS:
Defer to Plan Update.

	City of San Benito– Action #19
Proposed Action:	Educate the general public on benefits of utilizing sprinkler system or watering around foundation and sidewalks to prevent expansive soils from cracking concrete.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of damage to existing structures through regular watering.
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:	Expansive Soils
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	EMPG; Pre-Disaster Mitigation Grant Program
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Delete Action as Plan Update is not profiling this hazard.

CITY OF SOUTH PADRE ISLAND

	City of South Padre Island– Action #1
Proposed Action:	Review and Update Erosion Response Plan.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce erosion and impacts through assessment and planning.
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; Coastal Erosion
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$30,000
Potential Funding Sources:	HMGP; Local Funds
Lead Agency/Department Responsible:	Public Works / Shoreline Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Erosion Response Plan; Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update. In progress. Currently updated beach and dune study being conducted. Data from study can be utilized to update the erosion response plan. Update costs to $50,000. Include Beach Maintenance Funds, CEPRA to funding sources. Update existing plans to include Beach Management Plan.

	City of South Padre Island– Action #2
Proposed Action:	Establish Continuous Dune Line; Plant Vegetation to protect Dunes; Construct walkovers to prevent foot traffic on dunes.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Established, strengthening, and protecting dunes reduces damages to structures and infrastructure.
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
Priority (High, Moderate, Low):	High
Estimated Cost:	$400,000
Potential Funding Sources:	HMGP; Local Funds; CDBG
Lead Agency/Department Responsible:	Public Works / Shoreline Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Erosion Response Plan; Emergency Response Plan

2022 ANALYSIS:
Defer to Plan Update. Grant received in 2021 for dune restoration. Update costs to $500,000 based on location. Update agency to Shoreline Taskforce and City Council. Implementation schedule is ongoing.

	City of South Padre Island– Action #3
Proposed Action:	Adoption erosion control ordinance and prohibit development in high-hazard areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Erosion control reduces damage to structures and infrastructure along coast.
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; Coastal Erosion
Effect on new/existing buildings:	Reduce risk to existing Structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; Local Funds
Lead Agency/Department Responsible:	Public Works / Shoreline Management
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Erosion Response Plan; Emergency Response Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Update implementation schedule to Ongoing. Construction plans review by various department to ensure regulations and applicable.

	City of South Padre Island– Action #4
Proposed Action:	Retrofit/harden existing critical facilities to ensure continuity of services during and following hazard events.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to first responders and ensure continued emergency response services.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane; Tornado; Extreme Wind; Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP; Local Funds; CDBG
Lead Agency/Department Responsible:	City Building Department
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Generators installed at Transit Building, Fire Department, Police Department, and City Hall. Update implementation schedule to ongoing.

	City of South Padre Island– Action #5
Proposed Action:	Retrofit Community Center to serve as a Safe Room during Severe weather events; establish the community center as a community cooling center during extreme heat. Educate the public on the availability of the community center as a cooling station.
BACKGROUND INFORMATION	
Site and Location:	City Community Center
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to citizens by providing a safe place to shelter during hazardous events.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane; Tornado; Extreme Wind; Hail; Extreme Heat; Flood
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP; Local Funds; CDBG
Lead Agency/Department Responsible:	City Building Department
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Management Plan

2022 ANALYSIS:
Defer to Plan Update. Generator needed at Community Center. Funding not available.

	City of South Padre Island– Action #6
Proposed Action:	Upgrade undersized culverts throughout the Island to increase capacity and reduce flood risk.
BACKGROUND INFORMATION	
Site and Location:	Various locations throughout the city
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood 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 Project

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:	$10,000,000
Potential Funding Sources:	HMGP; CDBG
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Master Drainage Plan

2022 ANALYSIS:
Defer to Plan Update. In progress. Laguna Blvd. is currently being reconstructed for drainage upgrades. Include additional action noting that City is working with Army Corp of Engineering to update master drainage plan.

	City of South Padre Island– Action #7
Proposed Action:	Update building codes to include wind resistant construction in new and substantially improved structures.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce wind damage and insurance payouts; loss of 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:	Extreme Wind; Hurricane
Effect on new/existing buildings:	Reduce risk to new and substantially improved structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; CDBG; Local Funds
Lead Agency/Department Responsible:	Code Enforcement
Implementation Schedule:	Within 12 months of plan adoption pending funding
Incorporation into Existing Plans:	Building Codes

2022 ANALYSIS:
Defer to Plan Update. In progress. ADHOC Committee is reviewing city codes and ordinances related to development. In 2021, Council approved 2018 International Building Code. Update agency to Building Division.

	City of South Padre Island– Action #8
Proposed Action:	Install covered parking structure to protect police, fire, and emergency response vehicles**.**
BACKGROUND INFORMATION	
Site and Location:	Police and Fire Stations
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to response vehicles; improve 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:	Extreme Wind; Hurricane; Tornado; Hail; Extreme Heat
Effect on new/existing buildings:	Reduce risk to new and substantially improved structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000
Potential Funding Sources:	HMGP; CDBG; Local Funds
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Completed. Implemented small structure over a portion of police fleet. Fire Department has shade structure over 90%.

	City of South Padre Island– Action #9
Proposed Action:	Outreach program to educate residents on protecting property and sheltering during Hail events.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property through education and planning.
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:	Hail
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP; Local Funds
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing. City currently had communication staff to notify public of severe weather events including SWIFT 911, social media, website, and preparation press releases.

	City of South Padre Island– Action #10
Proposed Action:	Outreach program to educate residents on the dangers of extreme heat and how to prevent injury or illness.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life through education on signs of heat exhaustion/stroke and measures to reduce 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:	Extreme Heat
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP; Local Funds
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing. City currently had communication staff to notify public of severe weather events including SWIFT 911, social media, website, and preparation press releases.

	City of South Padre Island– Action #11
Proposed Action:	Identify potential terrorist targets and develop appropriate security plans and procedures; Review and update any plans already in place; Implement training for first responders.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to lives and property through planning and training.
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:	Terrorism
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000
Potential Funding Sources:	Local Funds; Other Grants
Lead Agency/Department Responsible:	Police / Fire Department
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Terrorism Response Plan, EMP

2022 ANALYSIS:
Completed. Ongoing. City currently had communication staff to notify public of severe weather events including SWIFT 911, social media, website, and preparation press releases.

	City of South Padre Island– Action #12
Proposed Action:	Review and update any Hazardous Material plans already in place; implement training for first responders; acquire equipment necessary for training and response.
BACKGROUND INFORMATION	
Site and Location:	City Water Treatment Plant
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to lives and property through planning and training.
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:	Hazardous Materials
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$250,000
Potential Funding Sources:	Local Funds; Other Grants
Lead Agency/Department Responsible:	Fire Department / Public Works
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Emergency Response Plan

2022 ANALYSIS:
Completed. Hazardous Communication Police updated in 2021 and staff trained accordingly.

	City of South Padre Island– Action #13
Proposed Action:	Adopt higher floodplain standards in local floodplain ordinance.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood damages and insurance payouts.
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 new and substantially improved structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds
Lead Agency/Department Responsible:	Code Enforcement
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Flood Damage Prevention Ordinance

2022 ANALYSIS:
Defer to Plan Update.

	City of South Padre Island– Action #14
Proposed Action:	Adopt an ordinance to restrict the use of public water resources for non-essential usage.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce vulnerability to 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:	Reduce impact of drought on existing buildings
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	HMGP; Local Funds
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	Local Ordinance

2022 ANALYSIS:
Defer to Plan Update. Action will need to be revised as City does not maintain water utilities; collaboration on community notices with the Laguna Madre Water District.

City of South Padre Island– Action #15	
Proposed Action:	Education outreach program to educate residents on water conservation methods including adjusting sprinkler systems to water lawn and not sidewalks, turning water off during cleaning activities; checking for plumbing leaks or dripping faucets, and installing rain capturing devices for irrigation.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Save water and reduce the impact of drought.
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
Effect on new/existing buildings:	Reduce impact on existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP; Local Funds
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 24 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Defer to Plan Update. Action will need to be revised as City does not maintain water utilities; collaboration on community notices with the Laguna Madre Water District.

	City of South Padre Island– Action #16
Proposed Action:	Remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide WUI
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Natural landform protection and reduced risk of loss of property due to wildfire.
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:	Wildfire
Effect on new/existing buildings:	Reduce fire risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Texas Forest Service
Lead Agency/Department Responsible:	Parks and Recreation
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	CWPP

2022 ANALYSIS:
Delete Action. Not applicable to City.

	City of South Padre Island– Action #17
Proposed Action:	Install sprinkler systems at all public buildings and common areas and implement water schedules.
BACKGROUND INFORMATION	
Site and Location:	City-wide public buildings
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of foundation shifts and cracks.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Expansive Soils; Wildfires
Effect on new/existing buildings:	Reduce risk of damage to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000 per location
Potential Funding Sources:	HMGP; CDBG; Local Funds
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	Comprehensive Plan

2022 ANALYSIS:
Delete Action. Not applicable to City.

City of South Padre Island– Action #18	
Proposed Action:	Encourage the use of fire-resistant materials for new construction.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce fire risk to new 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:	Wildfires
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	Texas Forest Service
Lead Agency/Department Responsible:	Parks and Recreation
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	CWPP

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing action. City Council adopted in 2021 the 2018 International Fire Code.

City of South Padre Island– Action #19	
Proposed Action:	Educate the general public on benefits of utilizing sprinkler system or watering around foundation and sidewalks to prevent expansive soils from cracking concrete.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of concrete cracking thus saving money and damage to structures.
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:	Expansive Soils; Wildfire
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	HMGP; Local Funds
Lead Agency/Department Responsible:	Public Works
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

2022 ANALYSIS:
Delete Action. Not applicable to City.

	City of South Padre Island– Action #20
Proposed Action:	Develop and implement dune restoration and beach renourishment in high-risk areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce erosion and impacts through restoration and renourishment.
Type of Action: (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; Coastal Erosion
Effect on new/existing buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$400,000
Potential Funding Sources:	HMGP; Local Funds
Lead Agency/Department Responsible:	Public Works / Shoreline Management
Implementation Schedule:	Within 24-36 months of plan adoption pending funding
Incorporation into Existing Plans:	Erosion Response Plan; Emergency Response Plan

2022 ANALYSIS:
Completed and Defer to Plan Update. Ongoing. City is working with US Army Corp of Engineers, FLO, and Cameron County to renourish beaches. City encourages property owners to restore dunes. If and when funding is available, City implements dune restoration.

SECTION 19: MITIGATION ACTIONS

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 Cameron County and all participating jurisdictions.

All mitigation actions created by the additional participating jurisdictions Planning Team members are presented in this section in the form of Mitigation Action Worksheets. Table 19-1A reflects the mitigation action matrix for the additional jurisdictions. The term jurisdiction-wide action refers to all the additional participating jurisdictions within the amended Cameron County Plan Update.

Table 19-1. Cameron 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	Extreme Heat	Thunderstorm Wind	Lightning	Drought	Tornado	Hail	Winter Storm	Wildfire	Dam Failure	Coastal Erosion
Cameron County	xxxxx	xxxxx	xxx	xxxx	xxx	xxxx	xxxxx	xxxx	xxx	xxxx	xxx	xxx
City of Harlingen	xxxxx	xxxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxxx	N/A	N/A
City of Palm Valley	xxxx	xxxx	xxx	xxx	xxx	xx	xxx	xxx	xxx	xxx	N/A	N/A

Table 19-1A. Amended Cameron County Mitigation Action Matrix

Jurisdiction	Flood	Hurricane Wind	Thunderstorm Wind	Extreme Heat	Lightning	Drought	Tornado	Hail	Wildfire	Winter Storm	Dam Failure	Coastal Erosion
Town of Indian Lake	XXX	XXX	XXX	XX	XX	XX	XXX	XXX	XXX	XX	N/A	N/A
City of La Feria	XXX	XXX	XXX	XX	XXX	XXXX	XXX	XXX	XXX	XXX	XXX	N/A
Town of Laguna Vista	XX	XX	XX	XXX	XX	XXX	XX	XX	XXX	XX	N/A	N/A
City of Los Fresnos	XXX	XXX	XXX	XX	XXX	XXX	XXX	XXX	XXX	XXX	N/A	N/A
City of Port Isabel	XXXXX	XXXXX	XXXX	XXX	XX	XXX	XXXX	XXXX	XXXX	XXX	N/A	N/A
City of Primera	XXX	XXX	XXX	XXX	XX	XXX	XXX	XX	XXX	XX	N/A	N/A
Town of Rancho Viejo	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	N/A	N/A
City of Rio Hondo	XXX	XX	XX	XXX	XX	XXXX	XX	XX	XXXX	XXX	XX	N/A
City of San Benito	XXX	XXX	XXX	XX	XX	XXX	XXX	XXX	XXX	XX	N/A	N/A
City of Santa Rosa	XXX	XXX	XXX	XX	XX	XX	XXX	XXX	XXXX	XX	N/A	N/A
City of South Padre Island	XXX	XXX	XXX	XX	XX	XXX	XXX	XXX	XXX	XXX	N/A	XX

CAMERON COUNTY – COUNTY-WIDE ACTIONS

	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	
Jurisdiction/Location:	Cameron County and all participating jurisdictions
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:	Dam Failure (applicable jurisdiction), Coastal Erosion (applicable jurisdiction), Drought, Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Cameron/Harlingen Floodplain Coordinator
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS

		County-Wide – Action #2
	Proposed Action:	Acquire and install generators with hard wired quick connections at all critical facilities.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure (applicable jurisdiction), Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
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 and Local Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS

		County-Wide – Action #3
	Proposed Action:	Upgrade critical facilities to include drought mitigation measures such as greywater reuse systems, drought tolerant landscaping, and installation of a sprinkler system with regular watering schedule.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions critical facilities
	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 Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	County and Local Public Works
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

COMMENTS

		County-Wide – Action #4
	Proposed Action:	Incorporate higher standards for hazard resistance in local application of the building code.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk of damages to structures through improved construction techniques; Reduce recovery efforts for the community after an event.
	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:	Dam Failure (applicable jurisdiction), Coastal Erosion (applicable jurisdiction), Extreme Heat, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm
Effect on New/Existing Buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$20,000
Potential Funding Sources:	General Revenues, State and Federal Grants
Lead Agency/Department Responsible:	Cameron/Harlingen Engineering
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes

COMMENTS

		County-Wide – Action #5
	Proposed Action:	Conduct an NFIP public education program regarding availability of flood insurance and promoting NFIP flood insurance protection.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduction of lives lost; flood insurance protection of structures.
	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, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$11,500-$57,500
Potential Funding Sources:	General Revenues and Grants
Lead Agency/Department Responsible:	Cameron/Harlingen Floodplain Coordinator
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Flood Ordinance, Flood Management Plan, Community Rating System

COMMENTS

		County-Wide – Action #6
	Proposed Action:	Conduct a public information campaign regarding hurricane and flood preparedness.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduction of lives and property lost during flood and hurricane events.
	Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Education and Awareness Preparedness/Response

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$11,500- $23,000
Potential Funding Sources:	State and Federal Grants, General Revenues
Lead Agency/Department Responsible:	County/City of Harlingen Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Flood Management Plan, Emergency Operation Plan, Emergency Response Plan

COMMENTS

		County-Wide – Action #7
	Proposed Action:	Join the FIREWISE program.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce fire fuels and mitigate wildfire and urban fire potential.
	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
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,750
Potential Funding Sources:	Texas Forest Service
Lead Agency/Department Responsible:	Fire Departments
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS

		County-Wide – Action #8
	Proposed Action:	Work with South Padre Island to implement an evacuation plan for the proposed bridge connecting the mainland to South Padre Island.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of lives during evacuation, particularly during a hurricane event and peak season.
	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 Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$28,750
Potential Funding Sources:	HMGP, Local Revenue
Lead Agency/Department Responsible:	County/City of Harlingen Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, Emergency Response Plan, Evacuation Plan

COMMENTS
The Rio Grande Valley's population continues to grow as does traffic on the Queen Isabella causeway, currently the only bridge connecting the island to Cameron County. On peak days, there have been more than 40,000 vehicle crossings the bridge. With only one bridge, estimate a 40 to 50-minute drive from hospitals in Brownsville or Harlingen through severe traffic jams.

		County-Wide – Action #9
	Proposed Action:	Construct a bridge connecting the mainland to South Padre Island.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of lives during evacuation, particularly during a hurricane event and peak season.
	Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hurricane Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	Portion of proposed $18 - $23 million project
Potential Funding Sources:	HMGP, Local Revenue, State and Federal Grants
Lead Agency/Department Responsible:	County/City of Harlingen Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, Emergency Response Plan, Evacuation Plan

COMMENTS
The Rio Grande Valley's population continues to grow as does traffic on the Queen Isabella causeway, currently the only bridge connecting the island to Cameron County. On peak days, there have been more than 40,000 vehicle crossings the bridge. With only one bridge, estimate a 40 to 50-minute drive from hospitals in Brownsville or Harlingen through severe traffic jams.

		County-Wide – Action #10
	Proposed Action:	Install color-coded street signs in evacuation zones throughout Cameron County, the City of Harlingen, and other participating communities.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Assist in expediting evacuation of residents in the event of natural disasters, dam failure, reduce loss of lives.
	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, Wildfire, Dam Failure (applicable jurisdiction)
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$115,000
Potential Funding Sources:	General Revenues and Grants
Lead Agency/Department Responsible:	Cameron/Harlingen Floodplain Coordinator
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Annual Budget, Emergency Response Plan, Evacuation Plan

COMMENTS
Evacuation and shelter signs provide direction during emergency situations and identify designated evacuation areas during a power outage, fire, thunderstorm, or dam failure.

		County-Wide – Action #11
	Proposed Action:	Conduct an educational program for residents on evacuation zones and location of shelters in conjunction with installing color-coded street signs.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Assist in expediting evacuation of residents in the event of natural disasters; reduce loss of lives.
	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, Wildfire, Dam Failure (applicable jurisdiction)
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$115,000
Potential Funding Sources:	General Revenues and Grants
Lead Agency/Department Responsible:	Cameron/Harlingen Floodplain Coordinator
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan, Evacuation Plan

COMMENTS
Evacuation and shelter signs provide direction during emergency situations and identify designated evacuation areas during a power outage, fire, thunderstorm, dam failure (applicable jursidction). Outreach to include leaflets, social media, public notices in local paper, etc.

		County-Wide – Action #12
	Proposed Action:	Upgrade building codes and ordinances to require an increased freeboard for new construction in areas of flood inundation as a result of dam failure and levee breach upstream of the Cameron County planning area.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood risk to people and parcels by elevating new construction.
	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 new structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$57,500
Potential Funding Sources:	Local Revenue, Drainage fees
Lead Agency/Department Responsible:	Building Code and Inspection Dept.
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Comprehensive Land Use, Flood Management Plan

COMMENTS

		County-Wide – Action #13
	Proposed Action:	Construct a regional retention facility to reduce runoff and flooding for the City of Harlingen and Cameron County, and capture secondary water supply for future drought events.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions: South of Hickory Hills subdivision, White Ranch, and Mariposa area
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Mitigate flooding and damage / displacement of residents.
	Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm Wind, Drought
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$11,500,000
Potential Funding Sources:	State and Federal Grants, HMGP
Lead Agency/Department Responsible:	County Engineering Dept.
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Floodplain Mgmt. Plan, partnering agreements

COMMENTS
The ponds will serve as a park facility when dry.

		County-Wide – Action #14
	Proposed Action:	Develop and implement a Master Flood Protection Plan for Cameron County Drainage District No. 5 to construct drainage features to mitigate flooding such as levees, widening, constructing channels, and detention ponds.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions: Encompassing most of the cities of Harlingen, Primera, and Combes
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood risk to people and parcels.
	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 Wind, Dam Failure (applicable jurisdiction)
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Revenue, Drainage fees
Lead Agency/Department Responsible:	Cameron County Drainage District No.5
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Comprehensive Land Use, Flood Management Plan

COMMENTS

		County-Wide – Action #15
	Proposed Action:	County-Wide Hydrologic & Hydraulic Model Update and Maintenance.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood risk to, structures, infrastructure and residents; Enhanced risk 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:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000 (5-year planning cycle)
Potential Funding Sources:	Local Revenue, Drainage fees, State and Federal Grants, TWDB
Lead Agency/Department Responsible:	Cameron County Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Comprehensive Land Use, Flood Management Plan

COMMENTS
Regular updates to and enhancement of the Cameron County Water Model (CCWM). The CCWM will be an adaptive resolution ensemble of H&H models, ranging from coarse-grid HUC12-scale hydrologic models, to fine-resolution hydraulic models applied at the catchment scale. Adaptive resolution implementation allows for phased coverage, with coarse-grid hydrologic models being deployed initially, and fine-resolution hydraulic models being initially developed for specific catchments identified as high-priority. In order to ensure comprehensive coverage of the entire County with sufficient resolution in catchments where hydraulic forecasts (for early warning) and hindcasts (for structural control design development) are anticipated to be needed, hydrographic data must continue to be collected for uncharacterized areas and updated for previously characterized areas, followed by development and calibration of models, and integration into CCWM cyber-infrastructure for ready access and use by the County and developers. Following the initial investment, continued annual investment is needed to ensure CCWM responsiveness to County growth needs. Return on Investment is assured from reduction in lives lost and property damages from flood reduction.

		County-Wide – Action #16
	Proposed Action:	County-Wide Real-Time Hydrologic Monitoring.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood risk to, structures, infrastructure and residents; Enhanced risk 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:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$375,000 (5-year planning cycle)
Potential Funding Sources:	Local Revenue, Drainage fees, State and Federal Grants, TWDB
Lead Agency/Department Responsible:	Cameron County Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Comprehensive Land Use, Flood Management Plan

COMMENTS
Because of Cameron County's unique topography, prevalence of Resacas that significantly modify local drainage patterns, and extensive anthropogenic modifications to the regional hydrography through the construction of irrigation and drainage networks, engineered drainage modifications at the local level, even down to subdivision scale, can have significant impacts on the regional hydrology. Further, local control structures such and gate valves and drainage pumps are ubiquitous, as mechanisms for managing local drainage issues. Overlapping operational jurisdictions, such as irrigation districts with responsibilities for Resacas and the control of structures for maintaining their level for water supply and aesthetics, and drainage districts that operate gate valves and high capacity pumps for flood control, often work against each other. The limited coordination of these locally managed diversions and control operations have significant impact on regional hydrology that cannot be readily programmatically integrated into a regional hydrodynamic model. The combination of these factors necessitates real-time validation of any forecasting or hindcasting tools using observed data, more so than any other region in the LRGV.

		County-Wide – Action #17
	Proposed Action:	Integration of County Hydrologic Knowledge into National Water Model.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood risk to, structures, infrastructure and residents; Enhanced risk 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:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$375,000
Potential Funding Sources:	Local Revenue, Drainage fees, State and Federal Grants, TWDB
Lead Agency/Department Responsible:	Cameron County Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Comprehensive Land Use, Flood Management Plan

COMMENTS
The National Water Model (NWM) is a real-time hydrologic forecast tool that provides forecasts of in-stream discharge at over 2.6M locations across the coterminous United States. The NWM provides forecasts from 18-hour, typically used for flood emergency management, through 30-day, used more for planning and water-supply applications. The NWM relies on the National Hydrography Dataset (NHD) to form the basis of its hydrologic forecasts, along with various meteorological forecasts and other data. The accuracy of NWM's forecasts are directly related to the availability of local water intelligence to derive flow patterns from contributing tributaries and diversions.

		County-Wide – Action #18
	Proposed Action:	Develop and adopt higher building code standards.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood risk to, structures, infrastructure and residents; Enhanced risk 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:	Flood
Effect on New/Existing Buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$700,000
Potential Funding Sources:	Local Revenue, Drainage fees, State and Federal Grants, TWDB
Lead Agency/Department Responsible:	Cameron County Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Comprehensive Land Use, Flood Management Plan

COMMENTS
Designing new structures to exceed select provisions of the 2015International Building Code (IBC) and International Residential Code (IRC) and the adoption of the2015 International Wildland-Urban Interface Code (IWUIC). This resulted in a national benefit of $4 for every $1 invested.

		County-Wide – Action #19
	Proposed Action:	Drainage, Development, and stormwater policy update.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County and all participating jurisdictions
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce flood risk to, structures, infrastructure and residents; Enhanced risk 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:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$250,000
Potential Funding Sources:	Local Revenue, Drainage fees, State and Federal Grants, TWDB
Lead Agency/Department Responsible:	Cameron County Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Comprehensive Land Use, Flood Management Plan

COMMENTS
Cameron County's current subdivision rules and drainage/stormwater policies are in need for an update to better integrate the current best practices of development, stormwater management and drainage requirements. The current rules are not strict enough and do not address the pressing issues and challenges of today's weather nature. The new policies should include (not limited to): Private Development Regulations • Flood detention requirement • Water quality requirement • GSI/LID regulatory credit • Stormwater retention requirement; Private Development Incentives • Regulatory incentives • Financial incentives • Stormwater fee discount; Public Initiatives • Capital project construction • Street construction • Education.

		County-Wide – Action #22
	Proposed Action:	Implement projects from LRGVDC regional action plan to address flooding issues. See attached list appendix G.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	County-wide (applicable jurisdictions) – Multiple actions as listed in Appendix G
	Risk Reduction Benefit *(Current Cost/ Losses Avoided)***:**	Reduce risk to structures, infrastructure and citizens through various drainage improvements, flood control projects and watershed management projects.
	Type of Action *(Local Plans and Regulations, Structure and Infrastructure projects, Natural System Protection, or Education and Awareness)*	Structure and Infrastructure Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce or eliminate the impacts on new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$562,407,832
Potential Funding Sources:	Bond, Federal Grants, TWDB
Lead Agency/Department Responsible:	LRGVDC in coordination with Cameron County Engineers
Implementation Schedule:	Within the five-year planning cycle upon plan adoption
Incorporation into Existing Plans:	Drainage Plan, Capital Improvement Plan

COMMENTS

CAMERON COUNTY

	Cameron County – Action #1
Proposed Action:	Construct a retention facility to reduce runoff and flooding for the Town of Santa Rosa, the City of La Feria and Cameron County, and capture secondary water supply for future drought events; Improve drainage flow and reduce flood levels and impacts.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County outside of Santa Rosa and La Feria
Risk Reduction Benefit *(Current Cost/Losses Avoided)*:	Mitigate flooding and damage / displacement of residents.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*:	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Drought
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000,000
Potential Funding Sources:	State and Federal Grants, HMGP
Lead Agency/Department Responsible:	County Engineering Dept.
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Floodplain Mgmt. Plan, partnering agreements

COMMENTS

		Cameron County – Action #2
	Proposed Action:	Flood proof basement of the County Emergency Management Office by incorporating Floodproofing components that my include floodwalls, small localized levees, pumps, berms around buildings, or a combination thereof. Upgrade EOC equipment including technological equipment.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Dancy Bldg. 1100 E. Monroe, Brownsville, TX 78520
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce impact of flooding on first responder and emergency operations, ensure continuance of critical operations during flood event; reduce cost to repair and maintain structure following a flood event.
	Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$700,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Emergency Management office
Implementation Schedule:	Within 36-48 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan, Floodplain Mgmt. Plan, Flood Response Plan

COMMENTS
The Dancy Building basement previously experienced flooding, requiring sandbagging and evacuation of employees. As the County EOC is located in the building, the Emergency Operations Center could be forced to shut down.

	Cameron County – Action #3
Proposed Action:	Install temporary cooling stations at county facilities to aid low income and elderly residents during extreme heat events.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County facilities: San Benito Annex (Health Dept.), Isla Blanca Park/Recreation Center, Dancy Building, Lucio Clinic, and possible other sites
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce health risk, loss of life to a segment of population without air-conditioning.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	HUD grant/CDBG/HMGP
Lead Agency/Department Responsible:	County Health and Hospital Authority
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan

COMMENTS
Cooling stations may be installed at county parks, recreation centers or other facilities; some may include misting areas.

	Cameron County – Action #4
Proposed Action:	Install hail guards on A/C units for all Cameron County critical facilities.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County critical facilities
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Increase efficiency of units by minimizing debris damage, reduce electrical costs, reduce health risk from overheating units unable to properly cool buildings.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	County maintenance dept.
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations, Continuity of Operations Plan

COMMENTS

	Cameron County – Action #5
Proposed Action:	Work with General Land Office to develop and implement a dune restoration plan to protect roads and minimize washouts from flooding and tidal surge.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Coastal areas of Cameron County
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Prevent County, State, and Federal agencies from having to continually incur repair costs and prevent loss of life 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 Wind, Coastal Erosion
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$4,000,000
Potential Funding Sources:	State and Federal Grants
Lead Agency/Department Responsible:	Cameron County Parks and Recreation, GLO
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Flood Response Plan

COMMENTS

	Cameron County – Action #6
Proposed Action:	Update the existing Regional Mobility Authority Plan (RMA) to include long-range planning mechanisms.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	The RMA would provide a mechanism for long-range planning, administration and implementation of structural projects to mitigate hazards.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Response Action not funded under federal grant programs

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Hail, Thunderstorm Wind, Tornado, Drought
Effect on New/Existing Buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$16,000,000
Potential Funding Sources:	General Revenues
Lead Agency/Department Responsible:	County Administrator
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Annual Budget, Stormwater Plan, Floodplain Management Plan

COMMENTS

	Cameron County – Action #7
Proposed Action:	Survey structures and implement a FEMA buyout for repetitive loss flood prone structures.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Green Valley Farms, Kendall Street, Tio Cano Lake & White Ranch Road area, Iowa Gardens, Laureles Subdivision
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Restore natural flood prone areas, reduce loss to NFIP Program, remove unsafe structures from flood prone areas, reduce loss of lives from flooding.
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:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$15,000,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Floodplain Administrator
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Annual Budget, Flood Ordinance, Flood Management Plan

COMMENTS

	Cameron County – Action #8
Proposed Action:	Work with General Land Office to develop a living coastline constructed from natural materials derived from regional materials such as rock and seagrass.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Laguna Madre area
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk of dune washout.
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, Coastal Erosion
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000,000
Potential Funding Sources:	State land office grants, HMGP
Lead Agency/Department Responsible:	County Parks & Recreation, TX Parks & Recreation, GLO
Implementation Schedule:	Within 24 to 48 months of plan adoption
Incorporation into Existing Plans:	Dune Restoration Plan

COMMENTS

		Cameron County – Action #9
	Proposed Action:	Conduct a Public Education Campaign to address extreme heat.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Provides education to the public on the dangers of extreme heat; reduces the risk to public health and welfare.
	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
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$30,000
Potential Funding Sources:	Grant, General fund, CDBG
Lead Agency/Department Responsible:	Health Department, CDBG
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan, County Health Dept. Regs

COMMENTS
Provide information on EOC website regarding location of cooling stations, dangers of working outdoors in extreme heat, care for pets in extreme heat and drought conditions.

	Cameron County – Action #10
Proposed Action:	Conduct a public education campaign through social media regarding relocating or elevating HVAC and utility systems in and around the home in the event of dam failure.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to public health, safety, and welfare.
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:	Dam Failure
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Public Information Officer
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations, Evacuation Plan

COMMENTS
Develop a public awareness campaign regarding evacuation routes, safety information, documentations needed for re-entry into evacuated areas, medical transportation, shelters, and animal care facilities and evacuations procedure for people with pets, etc. Will include development of brochures, fliers, T.V. and/or radio spots, webpage development; Requires coordination with multiple agencies and departments.

	Cameron County – Action #11
Proposed Action:	Conduct a public education campaign for drought.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Provide an increase level of preparedness to reduce risk to public health, safety, and welfare, reduce risk to agricultural and wildlife; ensure continued essential water supply.
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
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$30,000
Potential Funding Sources:	Grants, General funds
Lead Agency/Department Responsible:	VFD, County Fire Depts.
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	FireWise Plan, County Health Dept. Regs.

COMMENTS
Develop pre-disaster activities to increase the level of preparedness in county, create mitigation actions to identify/address the slow onset nature of drought; Partner with fire department, water works, irrigation and drainage districts, agriculture groups, conservation groups, and wildlife groups; Look into alternate technologies and methodologies for water conservation including xeriscaping.

	Cameron County – Action #12
Proposed Action:	Upgrade codes and regulations to require burying power lines in conjunction with new construction in coastal areas.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County and incorporated boundaries along coastline
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to public health, safety, and general welfare.
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 Wind, Tornado, Flood Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500,000
Potential Funding Sources:	Grants
Lead Agency/Department Responsible:	Cameron County Electric Utility
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Plan, Comprehensive Plan

COMMENTS

	Cameron County – Action #13
Proposed Action:	Upgrade existing wooden power poles to concrete along coastal areas.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County and incorporated boundaries along coastline
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to public health, safety, and general welfare.
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, Tornado, Flood
Effect on New/Existing Buildings:	Reduce risk to existing infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500,000
Potential Funding Sources:	Grants
Lead Agency/Department Responsible:	Cameron County Electric Utility Services
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Plan, Comprehensive Plan

COMMENTS

	Cameron County – Action #14
Proposed Action:	Work with General Land Office to implement beach nourishment activities to sustain dune protection from storm surge and erosion.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Laguna Madre area and coastal areas of county
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk of dune washout.
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, Coastal Erosion
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000,000
Potential Funding Sources:	State land office grants, HMGP
Lead Agency/Department Responsible:	County Parks & Recreation, TX Parks & Recreation, GLO
Implementation Schedule:	Within 24 to 48 months of plan adoption
Incorporation into Existing Plans:	Dune Restoration Plan

COMMENTS

	Cameron County – Action #15
Proposed Action:	Install shutters on glass windows and doors to protect critical facilities during severe hail and thunderstorm events, hurricane wind, and tornado.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Key critical facilities within Cameron County
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce continued glass replacement and repairs; reduce possible injury to county staff and residents due to flying glass during severe weather events.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Hurricane Wind, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$350,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 24 to 48 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS

		Cameron County – Action #16
	Proposed Action:	Become a "StormReady" community to reduce risk and damage caused by hail, tornado, and thunderstorm events.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Cameron County
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Assist residents in preparing, mitigating risk to hail, tornado, and thunderstorms.
	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:	Hail, Tornado, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$20,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 24 to 48 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS

	Cameron County – Action #17
Proposed Action:	Remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Natural landform protection and reduce risk of loss of property due to wildfire.
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:	Wildfire, Drought
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$25,000
Potential Funding Sources:	Texas Forest Service, FireWise
Lead Agency/Department Responsible:	Parks & Recreation
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	FireWise Plan, Fire Protection Plan

COMMENTS

	Cameron County – Action #18
Proposed Action:	Install hail guards on HVAC systems supporting critical facilities and to protect against severe Hail in excess of ½ inch diameter.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Key critical facilities within Cameron County
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce repairs and replacement of costly systems and continue essential service to facilities.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$250,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 24 to 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS

	Cameron County – Action #19
Proposed Action:	Add protective cover to parking areas to reduce damage to county-owned vehicles in the event of hail and thunderstorm events.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Parking facilities within Cameron County
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce repairs and replacement of costly vehicles
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$6,000,000
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 24 to 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS

	Cameron County – Action #20
Proposed Action:	Secure Memorandum of Understanding (MOU) with Lower Rio Grande Flood Control agency regarding potential dam and levee failure of upstream flood control system.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce potential dollar losses and loss of life from Dam Failure from Anzalduas Dam and Falcon Reservoir.
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:	Dam Failure, Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$57,500
Potential Funding Sources:	Lower Rio Grande Water User fee
Lead Agency/Department Responsible:	LRGFC, Cameron County Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan, Emergency Management Plan, Partnering agreements

COMMENTS
For purposes of the HMAP, upstream dam failure would affect the majority of communities within Cameron County boundaries. Due to potential of dam failure, levee failure money is needed to maintain levees.

	Cameron County – Action #21
Proposed Action:	Develop and implement a public education program for evacuating residents downstream of the Lower Rio Grande Flood Control system in the event of dam or levee failure.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Cameron County
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce loss of life from Dam Failure from Anzalduas Dam and Falcon Reservoir.
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:	Dam Failure, Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$28,750
Potential Funding Sources:	Lower Rio Grande Water User fee
Lead Agency/Department Responsible:	LRGFC, Cameron County Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan, Emergency Management Plan, Partnering agreements

COMMENTS
For purposes of the HMAP, upstream dam failure would affect majority of communities within Cameron County boundaries. Due to potential of dam failure, levee failure money is needed to maintain levees.

CITY OF HARLINGEN

	City of Harlingen – Action #1
Proposed Action:	Improve existing drainage system 001 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	The proposed improvements are located on New Combs Hwy, between Pitman St. and N. B Street; and along First Street between Brentwood Drive and Austin Ave
Risk Reduction Benefit *(Current Cost/Losses Avoided)*:	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*:	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$289,800
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS

	City of Harlingen – Action #2
Proposed Action:	Improve Drainage System 002 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Along Buchanan from A St. to 3rd Street then head south up to Lincoln Ave.; from Buchanan and 1st Street, South to Grant; From Grant and A Street to 3rd Street then South to the Arroyo Colorado (outfall)
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,170,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 4 to 5 phases to complete.

City of Harlingen – Action #3	
Proposed Action:	Improve Drainage System 004 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	From 9th and Grimes, West on Grimes to 77 Sunshine Strip, West on 77 Sunshine Strip to outfall (3rd Street Ditch); From Marshall and 7th Street, South on 7th to 77 Sunshine Strip; Bowie and 7th Street, North on 7th Street to 77 Sunshine Strip
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,750,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 3 to 4 phases to complete project.

	City of Harlingen – Action #4
Proposed Action:	Improve Drainage System 005 by replacing the existing inlets and increasing the capacity of the existing drainage pipes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	The location of the improvements will be from 9th and Monroe, South on 9th to Pierce, East on Pierce to 11th Street, South to canal and East along canal to tie into existing system; from 13th and Tyler South to Pierce, West to 11th Street to tie into system
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,735,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 4 to 5 phases to be completed.

	City of Harlingen – Action #5
Proposed Action:	Improve Drainage System 007 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	The proposed improvements are along 21st St heading South from North of Theresa into Jefferson outfall; tying into Washington then West about 750'; from Van Buren along 21st St head North to Jefferson outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,676,590
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 3 to 4 phases to be completed.

	City of Harlingen – Action #6
Proposed Action:	Improve Drainage System 008 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes and adding new storm sewer lines and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at the inlet located on the northwest intersection of Haine Drive, head northwest approximately 1,000 feet along south 25th Street. The next lateral extends west approximately 115 feet and connects into storm sewer system 018. Another lateral runs east from the intersection of Treasure Hills and 25th street, past Emerald Lake Drive, then heads North into the outfall.
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,064,700
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 2 to 3 phases to complete.

		City of Harlingen – Action #7
	Proposed Action:	Improve existing Drainage System 012 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Beginning from the existing 30" storm sewer pipe located along Alcott St., Eastward into the 13th St outfall
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
	Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$186,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

City of Harlingen – Action #8	
Proposed Action:	Improve existing Drainage System 013 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Begin South of Arroyo Vista Circle and head North to opposite curve then NW into outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$207,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 1 or 2 phases.

City of Harlingen – Action #9	
Proposed Action:	Improve Drainage System 017 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	About 250' West along Beck into New Combes outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$103,500
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

		City of Harlingen – Action #10
	Proposed Action:	Improve Drainage System 021 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Along Adams from A St to 3rd St; Along Jefferson from A St to 3rd St then South on 3rd to Madison; Along A street from Monroe Ave to Van Buren then along Commerce about 200'; Along 5th St from Van Buren South to Commerce; Along 7th from Polk South to Commerce
	Risk Reduction Benefit *(Current Cost/Losses Avoided)*:	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
	Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)*:	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,815,977
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 3 or 4 phases.

City of Harlingen – Action #11	
Proposed Action:	Improve Drainage System 022 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	The proposed improvements will tie into the existing drainage system on Davis and head South towards Williamson, along 1st Street.
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$179,500
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

		City of Harlingen – Action #12
	Proposed Action:	Improve Drainage System 023 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	The proposed improvements are along Marjory from Kelly to Dennis; along Kelly from existing drainage system on Davis towards the North about 600'; along Davis from existing drainage system about 750' Eastward then South about 270' then Eastward about 60' to outfall; along Pickens from the South West corner of Kelly about 800' to the outfall
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
	Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,530,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 3 or 4 phases.

	City of Harlingen – Action #13
Proposed Action:	Improve Drainage System 027 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	The proposed improvements are located along Buchanan from A St Westward past F St; along Lincoln from D St Eastward to B St; along Grant Ave from E St to A St; along Roosevelt from D St to B St then North slightly past Cleveland
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,795,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 3 or 4 phases.

City of Harlingen – Action #14	
Proposed Action:	Improve Drainage Systems 100 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	South side of Ed Carey from existing South of Haine North 1,875' cross over NW about 200' to tie into existing then North 1,750' to tie into 77 Sunshine, branch off SE about 200' to cross over Ed Carey then North about 500' to tie into existing. From previous existing on 77 head North about 3,500' then cross over NE and tie into existing; from existing on Benwood about 150' North to Haine drive
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,298,200
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 3 or 4 phases.

	City of Harlingen – Action #15
Proposed Action:	Improve Drainage Systems 102 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	About 3660' West from the intersection of Emerald Lake and Ted Street; North from the intersection of Emerald Lake and Ted St. along Emerald Lake about 270; then East about 150' into outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$593,500
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 1 or 2 phases.

City of Harlingen – Action #16	
Proposed Action:	Improve Drainage Systems 103 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	About 720' East from the intersection of Encino and Regency into the out fall; About 600' East from the intersection of Euno and Hoogland and tie-in into existing storm sewer system
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$317,500
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 1 or 2 phases.

	City of Harlingen – Action #17
Proposed Action:	Improve Drainage System 105 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Tie-in to the existing storm sewer system North of U Street and head about 1,020' East, then South about 1,100' to tie into existing storm sewer system; then East about 660' to tie into the existing storm sewer system; from the existing storm sewer system located on Fair Park Blvd and O Street, head South West about 720' then West about 300'
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,518,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 3 or 4 phases.

City of Harlingen – Action #18	
Proposed Action:	Improve Drainage System 112 by increasing the capacity of the existing drainage pipes and replacing the inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Replace the existing 24” storm pipe with a 36” storm pipe on Haine Drive North of Whalen into the outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$303,600
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

City of Harlingen – Action #19	
Proposed Action:	Improve Drainage System 113 by increasing the capacity of the drainage pipes and replacing the inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	From the existing drainage system North of the intersection of Haine drive and FM 509, head West about 240' crossing over FM 509 then 120' Southwest, then 240' West along Haine Drive
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$158,700
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

	City of Harlingen – Action #20
Proposed Action:	Improve Drainage System 115 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	On the North side of Houston St about 80' West of Falcon, heading South about 80' then East into the out fall; branch off that pipe at about 360' Northwest about 80' crossing over Houston; starting about 120' West of Falcon on Hale heading East into outfall; From Northwest corner of Sesame Circle heading Northwest about 120' then North about 160' then East about 20' to outfall; From Northeast corner of Live Oak heading Southwest about 120' then 240' East then about 240' Northwest in to outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$910,800
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 3 or 4 phases.

	City of Harlingen – Action #21
Proposed Action:	Improve Drainage System 122 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	From the existing manhole located on the Northwest corner of Jacaranda and Willowicke, about 70' Southeast and then approximately 550' Southwest
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$158,700
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

	City of Harlingen – Action #22
Proposed Action:	Improve Drainage System 123 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Starting approximately 150' from the back of curb on Monroe near 25th St then North about 60' then West to outfall; on North side of Jackson near 25th from existing West to outfall; starting about 150' from the back of curb on Van Buren near 25th St then North about 60' then West to outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$124,200
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

	City of Harlingen – Action #23
Proposed Action:	Improve Drainage System 124 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Along 5th from Monroe to Van Buren; along 13th from existing on Jefferson to Harrison Ave then East about 450'; from the existing drainage system on Jefferson at the intersection of Jefferson and 10th heading West along Jefferson into existing drainage system slightly East of 3rd St; from existing drainage system on Jefferson at the intersection of Jefferson and 6th North along 76 drive to existing drainage system East of Sul Ross
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,600,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 3 or 4 phases.

	City of Harlingen – Action #24
Proposed Action:	Improve Drainage System 127 by increasing the capacity of the drainage pipes and replacing the inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	From the existing drainage system on the Northwest of Estrellita, heading Southwest approximately 340' crossing Lamb, then slightly Northwest approximately 180' then Southwest into the outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$656,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 1 or 2 phases.

	City of Harlingen – Action #25
Proposed Action:	Improve Drainage System 132 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	From the existing drainage system located on Calle Princesa, approximately 450' behind the houses then slightly approximately 300' Southwest then approximately 210' Southwest into the outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$552,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 2 or 3 phases.

	City of Harlingen – Action #26
Proposed Action:	Improve Drainage System 135 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Head approximately 1,300' West from the existing drainage system located at the intersection of Matz and Breedlove, slightly past Rose; Head approximately 650' North from the intersection of Matz and Breedlove then approximately 550' East
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$759,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 2 or 3 phases.

	City of Harlingen – Action #27
Proposed Action:	Improve Drainage System 139 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Head approximately 240' West from the existing drainage system located on Marshall, then Southwest to the South corner of Marshal and 13th, then about 1,020' South then East about 120' then South about 300' then along the 77 Sunshine curve to the corner South of Washington then SE about 120' then South to Jefferson outfall; From the intersection of Crockett Ave and Sunshine Strip along Austin then East to 13th Street; from the existing system at the intersection of Morgan Blvd and Chaparral West about 900' to tie into the proposed system following along the curve on 77 Sunshine Strip
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$4,138,016
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 4 or 5 phases.

	City of Harlingen – Action #28
Proposed Action:	Improve Drainage System 141 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Begin on Warren St. into Morgan Blvd heading South slightly to tie into existing storm sewer East of Morgan, High St East to Morgan Blvd Grimes South on 21st St to run along Citrus Terrace to Bowie, On Austin St from 25th St West half the street distance towards 21st St Susan St from 25th St to Whitehouse 25th St from Washington to Jefferson (existing)
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,794,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 3 to 4 phases to complete.

City of Harlingen – Action #29	
Proposed Action:	Improve Drainage System 142 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Head Northwest along 77 Sunshine Strip past Markowsky to tie into the existing storm sewer system, then North to cross 77, then Southeast to G St then North along G St two-thirds of the street distance. On Orange Heights from the existing storm sewer system, head Eastward to tie into the existing storm sewer system on 1St St. On 77 from the existing storm sewer system, on intersection of 1St and 77, head Northwest to tie into the existing storm sewer system on 77
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,104,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 2 to 3 phases to complete.

City of Harlingen – Action #30	
Proposed Action:	Improve Drainage System 145 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	From the existing storm sewer system located on the intersection of Jones St and Sam Houston, go between the houses, slightly Northwest along the alley way, and cross Lamar until the alley ends
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$414,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

	City of Harlingen – Action #31
Proposed Action:	Improve Drainage System 148 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Begin on South of New Hampshire Road, off of Bus 77, from the halfway point South to railroad tracks, from one safety end treatment to the other, then North on the opposite side of New Hampshire Road to water entrance
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$345,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

	City of Harlingen – Action #32
Proposed Action:	Improve Drainage System 149 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Begin at the end of Oregon St from the existing storm sewer system and head North 2/3 length of the street towards Bus 77
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$289,800
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

	City of Harlingen – Action #33
Proposed Action:	Improve Drainage System 153 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Begin from the existing storm sewer system West of Rose St, North through the subdivision to tie into the existing storm sewer system located on Loop 499
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$152,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

City of Harlingen – Action #34	
Proposed Action:	Improve Drainage System 154 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Begin from the existing storm sewer system on Dilworth, head South approximately 500 ft.
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$138,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

City of Harlingen – Action #35	
Proposed Action:	Improve Drainage System 157 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at the existing storm sewer system located across Quail Run, cross Emerald Lake and end South of Quail Run opening
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$35,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

City of Harlingen – Action #36	
Proposed Action:	Improve Drainage System 158 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Along La Vaca from Colorado to Rangerville then turn North along Rangerville Rd to tie into the existing storm sewer system South of Knox
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$593,400
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 1 or 2 phases.

City of Harlingen – Action #37	
Proposed Action:	Improve Drainage System 159 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at the existing storm sewer system located on the intersection of Rangerville Rd and Ponderosa, head South approximately 900 ft. from that same intersection West to Arroyo Colorado (outfall), from the existing storm sewer system located across Rangerville, in front of Ponderosa, head straight through Outpatient clinic to the back of the parking lot, then run across the parking lot to the field
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$207,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 2 or 3 phases.

City of Harlingen – Action #38	
Proposed Action:	Improve Drainage System 161 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at the existing storm sewer system at the intersection of Davis and 7th St, run South along 7th St and tie into the existing storm sewer system in front of Calvary Baptist Church
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 276,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

City of Harlingen – Action #39	
Proposed Action:	Improve Drainage System 200 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at the outfall, along the houses and crossing Ebony Road and Cenizo Road to the alley between Cenizo Road and Lantana Road
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$ 276,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

City of Harlingen – Action #40	
Proposed Action:	Improve Drainage System 204 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Approximately 250' East of Hand Rd from the outfall North of Roosevelt Rd, head North across Lazy Palms Drive S, then approximate 50' Northeast
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$ 552,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 1 or 2 phases.

City of Harlingen – Action #41	
Proposed Action:	Improve Drainage System 206 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at the existing storm sewer system located on S Sesame Cir, cross approximately 60' then approximately 300' South, then West to the outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 207,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

City of Harlingen – Action #42	
Proposed Action:	Improve Drainage System 207 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at the existing storm sewer system East of Kratzer St, head North about 300ft to tie into the existing storm sewer system East of Burke Ct
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$ 138,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

	City of Harlingen – Action #43
Proposed Action:	Improve Drainage System 216 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at the existing storm sewer system located North of Harrison, on the intersection of Harrison and Bus 77 crossing Bus 77 Westward to tie into the existing manhole. Beginning at the existing manhole on the intersection of Tyler (West of 77) and Bus 77 to head South to the intersection of Filmore Ave and 77 then 80' West then South to the outfall near Little Creek
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$ 690,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 2 or 3 phases.

	City of Harlingen – Action #44
Proposed Action:	Improve Drainage System 224 by increasing the capacity of the existing drainage pipes and replacing the inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at the existing storm sewer system off of US Highway 77, head East approximately 300' along North side of Fair Park Blvd then South approximately 200' then East approximately 300' to cross T St then North crossing over Fairpark Blvd to the corner
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 317,400
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 1 or 2 phases.

City of Harlingen – Action #45	
Proposed Action:	Improve Drainage System 227 by increasing the capacity of the drainage pipes and replacing the inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at the existing safety end treatment located in front of L&F Distributers headed East about 270' to tie into existing storm sewer system
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$ 69,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

City of Harlingen – Action #46	
Proposed Action:	Improve Drainage System 229 by increasing the capacity of the drainage pipes and replacing the inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at Tamm Lane, North of US Highway 83 to run East approximately 700' to tie into the existing storm sewer system, opposite of that existing storm sewer system, to start proposed storm sewer system along US Highway 83 past Stuart Place Rd approximately 1000' then North to the outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$ 3,450,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 3 or 4 phases.

		City of Harlingen – Action #47
	Proposed Action:	Improve Drainage System 230 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Beginning at the existing storm sewer system located on US Bus 83 and Harrison Ave, approximately 240' West to existing storm sewer system, across US 77 Frontage then South approximately 380' then East approximately 380' to tie into the existing storm sewer system
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
	Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$ 317,500
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 1 or 2 phases.

City of Harlingen – Action #48	
Proposed Action:	Improve Drainage System 233 by increasing the capacity of the drainage pipes and replacing the inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at the corner block of the intersection on North side of Vinson and 77 Sunshine Strip along 77 Sunshine Southward to existing storm sewer system
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$ 472,800
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 1 or 2 phases.

City of Harlingen – Action #49	
Proposed Action:	Improve Drainage System 234 by increasing the capacity of the drainage pipes and replacing the inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning from the existing storm sewer system located on Austin Ave (West of Ed Carey, North of the fields) approximately 500' to the West past Sonesta Drive
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$ 159,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

City of Harlingen – Action #50	
Proposed Action:	Improve Drainage System 237 by increasing the capacity of the existing drainage pipes and replacing the inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning from the existing storm sewer system located on Beck St, East of 3rd heading East to approximately 275' to the outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 83,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

	City of Harlingen – Action #51
Proposed Action:	Improve Drainage System 244 by increasing the capacity of the drainage pipes and replacing the inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning from the existing manhole on Adam's, approximately 550' East crossing between Karis Drive and Gabriel's Landing, then approximately 500' North to cross Christian Drive
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 414,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split in 1 or 2 phases.

		City of Harlingen – Action 52#
	Proposed Action:	Improve Drainage System 245 by increasing the capacity of the drainage pipes and replacing the inlets and manholes.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Beginning from the existing storm sewer system located on the North side of Summerfield, heading Northwest at the intersection of Summerfield and 13th street into the outfall
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
	Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 55,200
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be completed in 1 phase.

	City of Harlingen – Action #53
Proposed Action:	Improve Drainage System 247 by increasing the capacity of the drainage pipes and replacing the inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at the existing 30"storm sewer pipe on Mark Cir, approximately 330' East of Thomas, East crossing E Mark Cir then heading South about 150'; from existing 36" storm sewer pipe North of Leggett about 1,000' to outfall tying into each 18" pipe along the way; off the opposite end of the same existing 36" pipe North of Leggett about 210' West to tie into existing 30" sewer system
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 759,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 2 or 3 phases.

	City of Harlingen – Action #54
Proposed Action:	Improve Drainage System 248 by increasing the capacity of the drainage pipes and replacing the inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning East of Country Drive on 7th St from existing 36" storm sewer pipe, head South approximately 80' to tie into the existing storm sewer system; opposite end of that existing system, head South about 140' to tie into existing 30" pipe coming off Tumbleweed; from that point about 200' South to tie into existing 42" pipe; opposite end of that 42" pipe about 220' South to the corner on Matz Ave; then West along Matz about 1,000' then cross over Northwest about 400' to outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 1,035,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 2 or 3 phases.

City of Harlingen – Action #55	
Proposed Action:	Improve Drainage System 251 by increasing the capacity of the drainage pipes and replacing the inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at Breedlove straight across from Hoogland approximately 1500' North towards Loop 499 then across Breedlove behind the homes approximately 1,350' to the outfall
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 966,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 2 or 3 phases.

City of Harlingen – Action #56	
Proposed Action:	Improve existing drainage system 252 by increasing the capacity of the existing drainage pipes and replacing the existing inlets and manholes.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Beginning at the existing 18" storm sewer pipe located South of Sun Chase Drive, approximately 420' East to tie into the existing manhole, then approximately 60' Northeast crossing Sunnyside Drive then approximately 660' Northeast to Stuart Place Main Drain (outfall)
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$ 345,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The project can be split into 1 or 2 phases.

City of Harlingen – Action #57	
Proposed Action:	Commissioning of four (4) remote Real-Time-Hydrologic-Systems (RTHS) to directly measure stream gage heights, water temperature, precipitation, barometric pressure, wind speed direction, air temperature, and relative humidity. Measurements of volumetric flow rate and near real time access to measured and derived data products will also be available.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Along the Arroyo Colorado located near or within the City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$100,000
Potential Funding Sources:	State and Federal Grant, General fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS

	City of Harlingen – Action #58
Proposed Action:	Improve Drainage System near Fire Station No. 1. (System 021) by increasing the capacity of the drainage pipes and replacing the inlets and manholes to help mitigate flooding issues.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Along West Jefferson Ave from approximately 350' west of 3rd street head east along Jefferson avenue towards commerce street.
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

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:	$1,500,000
Potential Funding Sources:	State and Federal Grant, General fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
Improvements may require coordination with railroad company if drainage system is crossing or near the railroad tracks.

City of Harlingen – Action #59	
Proposed Action:	Improve the drainage system near the Harlingen Police Department by increasing the capacity of the drainage pipes and replacing the inlets and manholes to help mitigate flooding issues.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Along Fair Park Blvd and Wichita Ave
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare; reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

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:	State and Federal Grant, General fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
Improvements may require coordination with railroad company if drainage system is crossing or near the railroad tracks.

City of Harlingen – Action #60	
Proposed Action:	Develop and implement a Public Education Campaign to address extreme heat. Develop a city web page with information regarding location of cooling stations, develop and distribute brochures in English and Spanish. Create and give presentations at local schools, daycares (adult and child), mobile home parks, public housing, boys & girls clubs. Involve care for pets in extreme heat and drought conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Provides education to the public on the dangers of extreme heat; reduces the risk to public health and welfare.
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
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$34,500
Potential Funding Sources:	State and Federal Grant, General fund, CDBG
Lead Agency/Department Responsible:	Health Department, CDBG
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Partnering agreements with city depts.

COMMENTS
Develop a city web page with information regarding location of cooling stations, develop and distribute brochures in English and Spanish. Create and give presentations at local schools, daycares (adult and child), mobile home parks, public housing, boys & girls clubs. Involve care for pets in extreme heat and drought conditions.

City of Harlingen – Action #61	
Proposed Action:	Expand artificial grass project in landscaped medians to include other areas within public rights-of-ways.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Various locations throughout the city
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Product has 15-year life span without need to irrigate medians; product is fire retardant, drought and heat- resistant, eliminates city personnel replacing grass following hurricane, tornado, or flood.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project not eligible for federal grant programs

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat, Wildfire, Hurricane Wind, Tornado, Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$8,314,500
Potential Funding Sources:	State and Federal Grants, general funds, partnerships
Lead Agency/Department Responsible:	Public Works, Engineering Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Water District Plan, Harlingen Proud Plan

COMMENTS
Install artificial grass in landscape medians to reduce the amount of irrigated landscape and reduce the consumption of water. Also reduce the exposure of city personnel to high traffic areas while beautifying thoroughfares; Partner with Harlingen Proud, water works, irrigation districts.

City of Harlingen – Action #62	
Proposed Action:	Join the Community Rating System Program.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to public health, safety, and welfare; increase awareness and regulations.
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 structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$57,500
Potential Funding Sources:	General Fund, Staff Time, Federal Grant
Lead Agency/Department Responsible:	Public Works, Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Flood Plan, NFIP Ordinance

COMMENTS

City of Harlingen – Action #63	
Proposed Action:	Increase drainage capacity of the retention ponds in the Treasure Hills area.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Treasure Hill area within City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to critical infrastructure (streets and drainage system); reduce risk to public health, safety, and welfare.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,300,000
Potential Funding Sources:	State and Federal Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

COMMENTS
With increased growth in the area of Treasure Hills the existing retention ponds no longer provide adequate retention, the ponds need to be increased in depth (dredged) as the increase in size is limited due to their location.

City of Harlingen – Action #64	
Proposed Action:	Develop and implement a plan to construct Cooling Centers throughout the City of Harlingen.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Community centers, shelters, public buildings, library
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Provides an implementation method(s) for reducing and educating the public on the dangers of extreme heat and drought; reduces the risk to the public health and safety.
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
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$34,500
Potential Funding Sources:	Grants, donations, CDBG
Lead Agency/Department Responsible:	Health Department, Public Buildings
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations, Partnering Agreements with city depts.

COMMENTS
Create and develop a plan which identifies cooling centers in days of extreme heat. Identify public locations for cooling areas, notification for the public (TV, radio, public access stations, HCISD channels), provide free transportation to sites via bus lines; partner with nonprofit organizations such as Red Cross, Salvation Army, and churches to coordinate donation of fans or window AC units.

	City of Harlingen – Action #65
Proposed Action:	Develop and implement a Drought Mitigation Plan.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City limits and surrounding communities for implementation
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Provides an increase level of preparedness to reduce risk to public health, safety, and welfare reduce risk to agricultural and wildlife; ensure continued essential water supply.
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:	$34,500
Potential Funding Sources:	State and Federal Grants, General funds
Lead Agency/Department Responsible:	Public Works, Planning Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	FireWise, Water Utilities

COMMENTS
Develop pre-disaster activities to increase the level of preparedness within the city; create mitigation actions to identify/address the slow on set nature of drought; Partner with fire department, water works, irrigation and drainage districts, agriculture groups, conservation groups, and wildlife groups; Look into alternate technologies and methodologies for water conservation.

City of Harlingen – Action #66	
Proposed Action:	Upgrade and expand access roads used during wildfire events.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City wide with primary focus on the area around the Arroyo Colorado and birding centers
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk to public health, safety, and welfare; reduce damage to wildlife habitats when responding to emergencies.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$23,000
Potential Funding Sources:	State and Federal Grant, General Fund, Texas Forest Service
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	FireWise, Wildfire Recovery Plan, Emergency Mgmt. Plan

COMMENTS

City of Harlingen – Action #67	
Proposed Action:	Improve Baker Potts roadway for access into subdivisions during all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Baker Potts from Business 83 to Drury Lane
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of caliche/dirt roadway to a 37' B-B curb & gutter road to allow all weather access of emergency response vehicles and allow for evacuations, eliminate ongoing roadway repairs due to flooding.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,300,000
Potential Funding Sources:	State and Federal Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

COMMENTS

City of Harlingen – Action #68	
Proposed Action:	Implement bi-annual or annual program to remove overgrown and dead brush from undeveloped / vacant land, city parkland.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk to public health, safety, and welfare; reduce fuel for wildfire on vacant land or ranch land.
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:	Wildfire, Flood
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$92,000
Potential Funding Sources:	State and Federal Grant, General Fund, Texas Forest Service
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	FireWise, Wildfire Response Plan, Parks/Rec. Regs.

COMMENTS
Develop a plan for brush and/or overgrown vegetation on undeveloped/vacant land which do not currently have brush pickup with the city.

		City of Harlingen – Action #69
	Proposed Action:	Improve Dilworth Bridge crossing for access into subdivisions in all weather conditions.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Dilworth Bridge crossing
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of bridge crossing to ensure safety for vehicles crossing drainage ditch; ensures access of responding vehicles to areas; provides for evacuation route.
	Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

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:	$1,400,000
Potential Funding Sources:	State and Federal Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

COMMENTS

	City of Harlingen – Action #70	
	Proposed Action:	Improve Drury Lane roadway for access into subdivisions in all weather conditions.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Drury Lane from Beckham Road and Tamm Lane
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improve of caliche/dirt roadway to a 37' B-B curb & gutter road to allow all weather access of emergency response vehicles and allow for evacuations, eliminate ongoing roadway repairs due to flooding.
	Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,450,000
Potential Funding Sources:	State and Federal Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

COMMENTS
Partner with Cameron County on roadways.

City of Harlingen – Action #71	
Proposed Action:	The City of Harlingen shall conduct a public education campaign in the event of a necessary evacuation.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to public health, safety, and welfare.
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, Tornado, Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$64,400
Potential Funding Sources:	State and Federal Grant, General fund
Lead Agency/Department Responsible:	Public Works, Engineering, Public Information Officer
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan

COMMENTS
Develop a public awareness campaign regarding evacuation routes, safety information, documentations needed for re-entry into evacuated areas, medical transportation, shelters, and animal care facilities and evacuations procedure for people with pets, etc. Will include development of brochures, fliers, T.V. and/or radio spots, webpage development; Requires coordination with multiple agencies and departments.

City of Harlingen – Action #72	
Proposed Action:	Work with area agencies to develop and implement evacuation / shelter-in-place plan (pre & post) to address multiple hazards.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce risk to public health, safety, and welfare.
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, Tornado, Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$34,500
Potential Funding Sources:	State and Federal Grant, General fund
Lead Agency/Department Responsible:	Public Works, Engineering Department, Emergency Management Coordinator,
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan, Evacuation Plan

COMMENTS
Develop a plan regarding evacuation routes, safety information, documentations needed for re-entry into evacuated areas, medical transportation, shelters, animal care facilities and evacuations of animals, shelter- in-place facilities, and post event clean up procedures, etc.; Will require coordination with multiple agencies and departments.

City of Harlingen – Action #73	
Proposed Action:	Install mobile and permanent generators with permanent quick connections at critical facilities.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Critical facilities within the City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Services will continue to function in the event of an emergency.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Tornado, Thunderstorm Wind, Hail, Extreme Heat, Lightning, Winter Storm, Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$230,000 - $345,000 each generator
Potential Funding Sources:	State and Federal Grant, General funds
Lead Agency/Department Responsible:	Public Works, Public Buildings, Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan

COMMENTS
May require additional work to buildings for connection of the buildings to generators (electrical services, concrete pads, etc.) Locations of generators would be City Hall, Lon C Hill Building, Auditorium, Casa de Amistad, and Case del Sol.

	City of Harlingen – Action #74
Proposed Action:	Improve Morris Road roadway for access into subdivisions in all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Morris Road from Rangerville Road (F.M. 1479) to Ed Carey (F.M. 801)
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improve the roadway from 18' asphalt rural section roadway to 37' B-B curb & gutter rural section to allow all weather access of emergency response vehicles and allow for evacuations, eliminate ongoing roadway repairs due to flooding.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$6,440,000
Potential Funding Sources:	State and Federal Grant, General funds
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Storm Mgmt., Flood Plan, CIP Budget

COMMENTS
Partner with Cameron County on roadway as sections are in the county.

City of Harlingen – Action #75	
Proposed Action:	Install hail guards on HVAC systems supporting critical facilities and to protect against severe Hail in excess of ½ inch diameter.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Key critical facilities within City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce repairs and replacement of costly systems and continue essential service to 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:	Hail
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$287,500
Potential Funding Sources:	HMGP
Lead Agency/Department Responsible:	Emergency Management
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS

		City of Harlingen – Action #76
	Proposed Action:	Improve Hughes Road roadway for access into subdivisions in all weather conditions.
	BACKGROUND INFORMATION	
	Jurisdiction/Location:	Hughes Road from Tamm Lane west to FM 800 Bass Boulevard
	Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of caliche/dirt roadway to a 37' B-B curb and gutter road to allow all weather access of emergency response vehicles and allow for evacuations, eliminate ongoing roadway repairs due to flooding.
	Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,300,000
Potential Funding Sources:	State and Federal Grant, General funds
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Storm Mgmt., Flood Plan, CIP Budget

COMMENTS

City of Harlingen – Action #77	
Proposed Action:	Improve Lipscomb Road roadway for access into subdivisions in all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	The proposed improvements are on Lipscomb Road from Rangerville Road (F.M. 1479) East to Ed Carey (F.M. 801)
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of roadway from caliche/dirt to 37' B-B curb & gutter to allow all weather access of emergency response vehicles and allow for evacuations, eliminate ongoing roadway repairs due to flooding.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$6,440,000
Potential Funding Sources:	State and Federal Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

COMMENTS

City of Harlingen – Action #78	
Proposed Action:	Purchase property to use as drainage easement.
BACKGROUND INFORMATION	
Jurisdiction/Location:	The proposed easement shall be located on the Northeast of Lot 1 of Colunga Subdivision
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Providing a drainage easement along the property will allow the City of Harlingen to alleviate ongoing flooding issues in the area.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$50,000
Potential Funding Sources:	State and Federal Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

COMMENTS

City of Harlingen – Action #79	
Proposed Action:	Purchase NOAA "all hazards" radios for early warning and post –event information and place in schools, critical facilities.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk to public health, safety, and welfare.
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, Hail, Tornado, Thunderstorm Wind, Wildfire
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$34,500
Potential Funding Sources:	Grant, General Fund, CDBG, Private and Public partnerships
Lead Agency/Department Responsible:	Emergency operations
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan

COMMENTS
Purchase of radios for distribution; cost of radios is approximately $50.00 each radio; possible distribution to include public housing and mobile home parks.

City of Harlingen – Action #80	
Proposed Action:	Improve North Tamm Lane for access into subdivisions in all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	The proposed improvements shall be constructed on North Tamm Lane from the frontage road on Expressway 83 North to Hick Hill Road
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of roadway from caliche/dirt road to a 37' B-B curb & gutter section to allow all weather access of emergency response vehicles and allow for evacuations, eliminate ongoing roadway repairs due to flooding.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,725,000
Potential Funding Sources:	State and Federal Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

COMMENTS

	City of Harlingen – Action #81
Proposed Action:	Install pump station and increase the size of outfall boxes at the North Floodway.
BACKGROUND INFORMATION	
Jurisdiction/Location:	East of Expressway 77 along Ballenger Road. Location of pump will be along the South bank of the floodway
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the damage to critical infrastructure and reduce the risk to public health, safety, and welfare, and reduce the damage to structures (residential and commercial).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,500,000
Potential Funding Sources:	State and Federal Grants, General Funds, Partnerships
Lead Agency/Department Responsible:	Public Works, Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Flood Plan

COMMENTS
Pump would allow for continuous drainage when the floodgates to the North Floodway are closed due to flooding concerns. The project would include a pump, housing, security measures (fencing), remote access (via cellular service), elevation of structure, etc.

City of Harlingen – Action #82	
Proposed Action:	Install an area-wide telephone emergency notification system (Reverse 911).
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk to public health, safety, and welfare; provide better communication for evacuations or instructions to the public in the event of an emergency.
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, Thunderstorm Wind, Tornado, Hail, Wildfire, Extreme Heat
Effect on New/Existing Buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$172,500
Potential Funding Sources:	State and Federal Grant, General Fund, CDBG
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan, coordination with other depts.

COMMENTS
Provide public with instructions or information regarding emergency situations.

City of Harlingen – Action #83	
Proposed Action:	Install a stream gauge monitoring station at the spillway.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Treasure Hills spillway located on Clifford Street
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce damage to critical infrastructure (drainage system).
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 structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$150,000
Potential Funding Sources:	State and Federal Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Flood plan

COMMENTS
Install the monitoring station to ensure damage to spillway is minimized.

	City of Harlingen – Action #84
Proposed Action:	Improve Teege Road Bridge crossing for access into subdivisions in all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	The bridge is located to the West of the intersection of Teege Road and Brazil Road
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of bridge crossing to ensure safety for vehicles crossing drainage ditch; ensures access of responding vehicles to areas; provides for evacuation route.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$920,000
Potential Funding Sources:	State and Federal Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations; Cameron County
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

COMMENTS
Partner with Cameron County as bridge is in the county.

City of Harlingen – Action #85	
Proposed Action:	Improve Traxler Way roadway for access into subdivision throughout all weather conditions.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Traxler Way from the frontage on Expressway 83 West to F.M. 800
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Improvement of roadway from 16' asphalt/caliche rural section to 37' B-B curb & gutter rural section to allow all weather access of emergency response vehicles and allow for evacuations and eliminate ongoing roadway repairs due to flooding.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$2,300,000
Potential Funding Sources:	State and Federal Grant, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Mgmt., Flood Plan, CIP Budget

COMMENTS

City of Harlingen – Action #86	
Proposed Action:	The City of Harlingen shall create and implement a wildfire recovery plan to address soil erosion control and vegetative recovery.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City wide with primary focus on the area around the Arroyo Colorado
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Reduce the risk to public health, safety, and welfare; protect natural habitat area.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Natural Systems Protection Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$23,000
Potential Funding Sources:	State and Federal Grant, General Fund, Texas Forest Service
Lead Agency/Department Responsible:	Fire Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	FireWise, Land Use Plans

COMMENTS

City of Harlingen – Action #87	
Proposed Action:	The City of Harlingen shall remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Natural landform protection and reduced risk of loss of property due to wildfire.
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:	Wildfire
Effect on New/Existing Buildings:	Reduce risk to existing structures and infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$28,750
Potential Funding Sources:	Texas Forest Service, FireWise
Lead Agency/Department Responsible:	Parks & Recreation
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	FireWise Plan, Fire Protection Plan

COMMENTS

	City of Harlingen – Action #88
Proposed Action:	The City of Harlingen shall develop and implement a Drought Emergency Plan to include rainwater harvesting, water conservation measures and promoting drought-tolerant landscaping.
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Harlingen
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Conserve water for long-term availability for area residents.
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
Effect on New/Existing Buildings:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$11,500
Potential Funding Sources:	Texas Forest Service, FireWise
Lead Agency/Department Responsible:	Parks & Recreation
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	FireWise Plan, Fire Protection Plan

COMMENTS

	City of Harlingen – Action #89
Proposed Action:	The proposed drainage improvements will include an increase in channel and culvert size to expand capacity though System C – Dixieland Drainage Ditch Improvements.
BACKGROUND INFORMATION	
Jurisdiction/Location:	The ditch improvements will be from Lincoln Avenue, between Dixieland Road and Tucker Road, to the outfall at the Arroyo Colorado
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	The proposed improvements will reduce damage to infrastructure (streets and drainage systems), reduce risk to public health, safety, and welfare, reduce damage to structures (homes and businesses).
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

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:	$3,270,000
Potential Funding Sources:	State and Federal Grants, General Fund
Lead Agency/Department Responsible:	Public Works/Engineering
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Stormwater Plan, Floodplain Mgmt. Plan, CIP Budget

COMMENTS
The proposed project improvements will be a collaborative effort between the Drainage District and the City of Harlingen.

	City of Harlingen – Action #90
Proposed Action:	Improve and upgrade the Emergency Operations Building
BACKGROUND INFORMATION	
Jurisdiction/Location:	Fire Station #3 on Loop 499
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Provides for continuation of critical operations during emergency events.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm, Tornado, Hail, Wildfire
Effect on New/Existing Buildings:	Reduce impact on critical facility in natural disasters
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,575,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Operation Plan

COMMENTS

City of Harlingen – Action #91	
Proposed Action:	Perform a Right-of-Way asset inventory throughout the entire City
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Harlingen city limits
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Provides for photo and data documentation of the existing conditions for all above-ground City infrastructure.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Local Plans & Regulations - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Extreme Heat, Thunderstorm Wind, Lightning, Drought, Tornado, Hail, Winter storm, Wildfire
Effect on New/Existing Buildings:	Provides snapshot of existing infrastructure conditions
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	2020 or upon funding
Incorporation into Existing Plans:	Emergency Operation Plan

COMMENTS

City of Harlingen – Action #92	
Proposed Action:	Perform a drainage system asset inventory throughout the entire City
BACKGROUND INFORMATION	
Jurisdiction/Location:	City of Harlingen city limits
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Provides for photo and data documentation of the existing conditions for all drainage appurtenances.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Local Plans & Regulations - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Extreme Heat, Drought, Tornado, Wildfire
Effect on New/Existing Buildings:	Provides snapshot of existing infrastructure conditions
Priority (High, Moderate, Low):	High
Estimated Cost:	$2,500,000
Potential Funding Sources:	Grants, General Fund
Lead Agency/Department Responsible:	Public Works, Engineering, Emergency Operations
Implementation Schedule:	2020 or upon funding
Incorporation into Existing Plans:	Emergency Operation Plan

COMMENTS

CITY OF PALM VALLEY

City of Palm Valley – Action #1	
Proposed Action:	Drainage improvement and infrastructure project including: Dredging all 8 lakes; improve/upgrade retention walls and bulkheads as needed to all lakes; Remove existing underground drainage pipes and replace with larger diameter pipes to increase water flow.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Palm Valley area lakes
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Mitigate flooding and damage / improve drainage capacity.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$3,800,000
Potential Funding Sources:	State and Federal Grants, HMGP, TWDB
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Floodplain Mgmt. Plan

COMMENTS

	City of Palm Valley – Action #2
Proposed Action:	Lake 7: Install new underground drainage pipe from Lake #7 (north-most lake) utilizing existing public easements and connect it to the drainage ditch on Dilworth Rd.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Palm Valley lake #7
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Mitigate flooding and damage / improve drainage capacity.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,500,000
Potential Funding Sources:	State and Federal Grants, HMGP, TWDB
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Floodplain Mgmt. Plan

COMMENTS

	City of Palm Valley – Action #3
Proposed Action:	Papaya: Install a new underground drainage pipe from Papaya Circle and connect it to lake(s) 2 & 1 then to new drainage ditch on the golf course that drains to the south.
BACKGROUND INFORMATION	
Jurisdiction/Location:	Palm Valley lake3 #1 and 2
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Mitigate flooding and damage / improve drainage capacity.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$350,000
Potential Funding Sources:	State and Federal Grants, HMGP, TWDB
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Floodplain Mgmt. Plan

COMMENTS

	City of Palm Valley – Action #4
Proposed Action:	South Ditch: In conjunction with Drainage District 5 Project, remove existing underground drainage pipe, excavate ditch and in lieu of drainage pipe, create open ditch which will be concrete-lined the entire length of the ditch (drains south).
BACKGROUND INFORMATION	
Jurisdiction/Location:	Palm Valley south ditch
Risk Reduction Benefit *(Current Cost/Losses Avoided)***:**	Mitigate flooding and damage / improve drainage capacity.
Type of Action (*Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)***:**	Structure and Infrastructure Project

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood
Effect on New/Existing Buildings:	Reduce risk to new and existing structures and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,500,000
Potential Funding Sources:	State and Federal Grants, HMGP, TWDB
Lead Agency/Department Responsible:	City Administration
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Stormwater Management Plan, Floodplain Mgmt. Plan

COMMENTS

JURISDICTION-WIDE ACTIONS

		Jurisdiction-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:	Community-wide including all participating jurisdictions
	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:	Dam Failure (where applicable), Drought, Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm, Hurricane Wind, Coastal Erosion (where applicable)
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:	$25,000
Potential Funding Sources:	Local Funds (staff time), State and Federal Grants
Lead Agency/Department Responsible:	City/Local Emergency Managers
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Jurisdiction-wide – Action #2
	Proposed Action:	Acquire and install generators with hard wired quick connections at all critical facilities.
	BACKGROUND INFORMATION	
	Site and Location:	Community critical facilities including all participating jurisdictions
	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:	Dam Failure (where applicable), Extreme Heat, Flood, Hail, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm, Hurricane Wind
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:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City(Town) Public Works/City (Town) Engineer/City (Town) Administrator
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan (applicable jurisdictions)

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Jurisdiction-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:	Community-wide critical facilities including all participating jurisdictions
	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 and Security
Effect on New/Existing Buildings:	Reduce risk to existing and future structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City (Town) Public Works/City(Town) Engineer/City(Town) Administrator
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

COMMENTS:

		Jurisdiction-wide – Action #4
	Proposed Action:	Harden/retrofit critical facilities to hazard-resistant levels.
	BACKGROUND INFORMATION	
	Site and Location:	Community critical facilities including all participating jurisdictions
	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:	Dam Failure (where applicable), 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:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City (Town) Public Works/City(Town) Engineer/City (Town) Administrator
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan (applicable plans only); Capital Improvement Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		Jurisdiction-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:	City (Town) Public Works/City (Town) Engineer/City (Town) 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.

		Jurisdiction-wide – Action #6
	Proposed Action:	Develop a Community Wildfire Protection Plan.
	BACKGROUND INFORMATION	
	Site and Location:	Community-Wide for all participating jurisdictions that do not have an active CWPP. Jurisdictions included in this action are: Indian Lake, La Feria, Laguna Vista, Los Fresnos, Port Isabel, Primera, Rancho Viejo, Santa Rosa and South Padre Island.
	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:	City or Town Administrators
Implementation Schedule:	Within 12-24 month(s) of plan adoption
Incorporation into Existing Plans:	Local Codes and Ordinances

COMMENTS:

TOWN OF INDIAN LAKE

	Town of Indian Lake– Action #1
Proposed Action:	Elevate and harden bridge to reduce risk of damages and maintaining critical access route.
BACKGROUND INFORMATION	
Site and Location:	S Resaca Shore Drive Bridge
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damage, 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, 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:	$800,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #1
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	Town of Indian Lake– Action #2
Proposed Action:	Implement a public education program to educate residents of the hazards that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizen 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:	Flood, Hurricane Wind, Thunderstorm Wind, Extreme Heat, Wildfire, Drought, Hail, Lightning, Tornado, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication, Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred actions #2, 7, 25
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Town of Indian Lake– Action #3
Proposed Action:	Encourage the planting of native and drought-resistant plants, and the use of low-flow fixtures and appliances.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce effect of drought through water conservation education. Reduce loss of life to vulnerable populations.
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
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #3

	Town of Indian Lake– Action #4
Proposed Action:	Construct elevated water storage tank to provide independent water source.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injuries and loss of life to at-risk 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:	Drought, 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:	$1,250,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #4

		Town of Indian Lake– Action #5
	Proposed Action:	Notify and establish cooling center for residents without access to air condition; the building's air conditioner will be upgraded, and fans will be installed; a generator will be installed to ensure that the air conditioner works during power interruptions, including following a disaster; education residents on the availability of cooling center during extreme events.
	BACKGROUND INFORMATION	
	Site and Location:	Town Hall
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to vulnerable populations.
	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
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:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #8

		Town of Indian Lake– Action #6
	Proposed Action:	Prepare and advertise local evacuation plan and procedures.
	BACKGROUND INFORMATION	
	Site and Location:	Town-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injuries and fatalities.
	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, Thunderstorm Wind, 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):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake / Police Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Evacuation Plan

COMMENTS:
Deferred action #9
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Town of Indian Lake– Action #7
Proposed Action:	Adopt building codes that provide for protection against extreme weather, including but not limited to anchors and tie- downs for structures and mobile homes, hail resistant materials, and fire-resistant materials.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injury and loss of life through more stringent building codes.
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, Thunderstorm Wind, Hurricane Wind, Hail, Tornado, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Building Codes, Local Ordinances

COMMENTS:
Deferred action #10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	Town of Indian Lake– Action #8
Proposed Action:	Adopt revised floodplain ordinance to include model ordinance language and higher NFIP standards such as freeboard.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injury and loss of life through more stringent building codes in high hazard flood zones.
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:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Local Floodplain Ordinance

COMMENTS:
Deferred action #11
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	Town of Indian Lake– Action #9
Proposed Action:	Upgrade/Elevate Henderson Road bridge over Resaca to remove from potential floodway, reduce the risk of damages, and maintain critical access route.
BACKGROUND INFORMATION	
Site and Location:	Henderson Road
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages and/or potential loss of bridge and preserve access route for emergency response and evacuation.
Type of Action: (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, 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:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #12
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	Town of Indian Lake– Action #10
Proposed Action:	Construct canopy in Town Hall parking lot to protect city vehicles.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to emergency response vehicles and equipment. Ensure continuity of critical services in the event of a severe hazard 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:	Hail, Extreme Heat
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:	$200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #13

	Town of Indian Lake– Action #11
Proposed Action:	Require roofing products with UL 2218 Hail Resistant Listing.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injury and loss of life through more stringent building codes.
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:	Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Building Codes, Local Ordinances

COMMENTS:
Deferred action #14

	Town of Indian Lake– Action #12
Proposed Action:	Expand early warning system currently in use.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness and protect citizens from potential injuries and damages through early warning.
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, Drought, 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):	Low
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #16
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Town of Indian Lake– Action #13
Proposed Action:	Upgrade shoulders and provide turnouts along Henderson Road to support evacuation route.
BACKGROUND INFORMATION	
Site and Location:	Henderson Road
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:	Hail, Thunderstorm Wind, Hurricane Wind, Flood, Tornado, Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Evacuation Plan

COMMENTS:
Deferred action #17
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Town of Indian Lake– Action #14
Proposed Action:	Harden critical facilities to hazard-resistant level.
BACKGROUND INFORMATION	
Site and Location:	Town-wide critical facilities, including Town Hall, Police Station
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, Thunderstorm Wind, Tornado, Flood, Hail, Lightning, Winter Storm, Wildfire, Hurricane Wind
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:	$150,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 12 months of plan adoption
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.

		Town of Indian Lake– Action #15
	Proposed Action:	Acquire and Install generators with hard-wired quick connection at all critical facilities.
	BACKGROUND INFORMATION	
	Site and Location:	Town-wide critical facilities, including Town Hall, Police Station, and Wastewater facility/Lift Stations
	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, Thunderstorm Wind, Tornado, Flood, Hail, Lightning, Winter Storm, Wildfire, Hurricane 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):	High
Estimated Cost:	$150,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #19
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Town of Indian Lake– Action #16
	Proposed Action:	Purchase NOAA radios and distribute to critical facilities.
	BACKGROUND INFORMATION	
	Site and Location:	Town-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to citizen through improved communication and early warning.
	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:	N/A
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #22
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Town of Indian Lake– Action #17
	Proposed Action:	Build Safe Room Shelter for first responders and vulnerable populations.
	BACKGROUND INFORMATION	
	Site and Location:	Site Location TBD
	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)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Hurricane Wind, Thunderstorm 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:	$1,500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake / Police Department
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Evacuation Plan

COMMENTS:
Deferred action #23
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Town of Indian Lake– Action #18
	Proposed Action:	Dredge South Aztec Cove Lake and install pump system and dry hydrants to North and South Aztec Cove Lake and the Resaca.
	BACKGROUND INFORMATION	
	Site and Location:	South Aztec Cove Lake, North and South Aztec Cove Lake, Resaca
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property caused by wildfire by increasing suppression capability.
	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:	Reduce risk to new and existing structure and infrastructure
Priority (High, Moderate, Low):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #24

	Town of Indian Lake– Action #19
Proposed Action:	Upgrade secondary water connection to reduce risk of water service disruption in the event of pipe breakage caused by expansive soils.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to life and property caused by disruption in water service and associated fire response. Reduce risk of repairs to 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:	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):	High
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Indian Lake
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Water Management Plan

COMMENTS:
Deferred action #5

CITY OF LA FERIA

	City of La Feria– Action #1
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:	Extreme Heat, Flood, Hail, Hurricane Wind, Lighting, 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 La Feria
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Response 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 La Feria– Action #2
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 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:	Dam Failure, Extreme Heat, Flood, Hail, Hurricane Wind, Lighting, Thunderstorm Wind, Tornado, Wildfire Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety and Security, Energy
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 La Feria
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Response 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 La Feria– Action #3
Proposed Action:	Implement education and awareness program on all hazards and mitigation measures against hazards. For example, utilize media, social media, distribution of flyers and education brochures to educate on the measures residents can take to against severe weather 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

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Dam Failure, Extreme Heat, Drought, 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:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of La Feria
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #5, 10, 14, 19, 23, 24
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of La Feria– Action #4
Proposed Action:	Install rainwater harvesting systems at public buildings to water landscaping or groundwater recharge. Educate citizens on the benefits of rainwater harvesting to water yards and landscaping.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces water use at public buildings and benefits groundwater recharge. Reduces water use at residential structures.
Type of Action: (Local Plans and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, or Education and Awareness)	Natural System Protection, Education and Awareness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security, Communication
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000 per site location
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of La Feria / Public Works / Special Projects Department
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #1, 2

	City of La Feria– Action #5
Proposed Action:	Modify current regulations to include additional water restrictions during extreme drought.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Restrict water usage throughout the city during drought; protect water supply.
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:	Reduces risk on new and existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of La Feria Code Enforcement
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Ordinances

COMMENTS:
Deferred action #3

	City of La Feria– Action #6
Proposed Action:	Increase capacity of drainage system throughout the city to reduce or eliminate repetitive flooding caused by undersized drainage system.
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 La Feria / Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Deferred action #7
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of La Feria– Action #7
Proposed Action:	Partner with Cameron County to implement drainage improvements at city limit borders to prevent bottleneck flooding in the city from undersized drainage lines in the county.
BACKGROUND INFORMATION	
Site and Location:	City-wide along limits; Cameron County along La Feria city limits
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:	$10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of La Feria / Public Works/ Cameron County
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Master Drainage Plan

COMMENTS:
Deferred action #8
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of La Feria– Action #8
Proposed Action:	Revise and enforce local flood damage prevention ordinance to include higher standards such as freeboard and floodplain development restrictions.
BACKGROUND INFORMATION	
Site and Location:	City-wide repetitive loss and flood prone areas
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage to property and structure. Reduce risk of injury and fatalities. Reduce risk of emergency response personnel.
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:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds (staff time)
Lead Agency/Department Responsible:	City of La Feria Code Enforcement
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Flood Damage Prevention Ordinance

COMMENTS:
Deferred action #9
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of La Feria– Action #9
Proposed Action:	Adopt newer building codes that include natural disaster resistant construction practices.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage to property and structure. Reduce risk of injury and fatalities. Reduce risk of emergency response personnel.
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, Hail, 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:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of La Feria Code Enforcement
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes

COMMENTS:
Deferred action #15
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of La Feria– Action #10
Proposed Action:	Adopt standards from International Code Council (ICC)-600 Standard for Residential Construction in High-Wind Regions.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage to property and structure. Reduce risk of injury 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:	Hurricane Wind, Thunderstorm Wind, Tornado
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of La Feria Code Enforcement
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes

COMMENTS:
Deferred action #17

	City of La Feria– Action #11
Proposed Action:	Harden/retrofit critical facilities to hazard-resistant levels.
BACKGROUND INFORMATION	
Site and Location:	City-wide facilities and facilities in or near the WUI
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:	Dam Failure, 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:	$100,000 - $1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of La Feria / Public Works / Fire Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #13, 18, 20
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

		City of La Feria– Action #12
	Proposed Action:	Develop Dam Failure study and emergency action plan. Develop dam inundation mapping to inform risk of dam failure.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or loss of life through development restrictions.
	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:	Dam Failure
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 La Feria Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Action Plan

COMMENTS:
Deferred action #22, 25

	City of La Feria– Action #13
Proposed Action:	Adopt ordinance to restrict development in dam inundation areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury or loss of life through development 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:	Dam Failure
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of La Feria Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Action Plan

COMMENTS:
Deferred action #33

	City of La Feria– Action #14
Proposed Action:	Install surge protection on critical facilities to protect equipment.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of lightning damage to critical facilities 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:	Lightning
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 per site location
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of La Feria / Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #31

	City of La Feria– Action #15
Proposed Action:	Adopt newer building codes that include lightning resistant construction practices including installation of lightning rods and/or surge protection.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to structures and infrastructure through stronger disaster resistant construction techniques.
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:	Lightning
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:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of La Feria Code Enforcement
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Building Codes

COMMENTS:
Deferred action #32

	City of La Feria– Action #16
Proposed Action:	Install covered parking at Police and Fire Stations to protect emergency vehicles from hail damages and vehicle equipment/computers from damages of extreme heat.
BACKGROUND INFORMATION	
Site and Location:	City of La Feria Police and Fire Stations
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of repetitive damage to emergency vehicles. Reduces response time for emergency services and ensure continuity of service during severe weather 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, Hail
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 (varies per site)
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of La Feria / Public Works / Police and Fire Department
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #21

		City of La Feria– Action #17
	Proposed Action:	Install canopy covers in public parks for shade and relief from heat during extreme temperatures. Partner with local businesses and community organizations to collect and distribute fans to vulnerable populations during extreme heat events.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide, public parks
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of injury or fatalities to vulnerable populations by providing shaded areas in public parks.
	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
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 per site location $1,000 for distribution / collection
Potential Funding Sources:	Local Funds, State and Federal Grants, Fund Drive, Donations
Lead Agency/Department Responsible:	City of La Feria / Public Works / Special Projects Division
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #4, 6

	City of La Feria– Action #18
Proposed Action:	Expand the fuels reduction and maintenance program to include the entire WUI including recently annexed areas.
BACKGROUND INFORMATION	
Site and Location:	Annexed Areas; WUI
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce or eliminate wildfire threat in newly annexed areas of the city through fuels reduction.
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:	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
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of La Feria / Public Works / Fire Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #11

	City of La Feria– Action #19
Proposed Action:	Educate property owners on actions they can take to reduce risk to property, such as installation of sprinkler systems, disposal of combustibles, and defensible space.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promote hazard awareness. Reduce risk of injury and fatalities. Reduce or eliminate wildfire threat in residential neighborhoods.
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:	Wildfire
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):	Moderate
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of La Feria Fire Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #12

	City of La Feria– Action #20
Proposed Action:	Construct and utilized shelter for vulnerable populations during severe weather events.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of injury 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:	Extreme Heat, Winter Storm
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:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of La Feria / Emergency Management
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #16

TOWN OF LAGUNA VISTA

	Town of Laguna Vista– Action #1
Proposed Action:	Drainage improvements: Install upgraded drainage system for residential area. Current system is inadequate to carry storm water runoff.
BACKGROUND INFORMATION	
Site and Location:	Basin "B": 80 acres located along the western boundary of the Town. Basin "C": 60 acres located along the northwestern part of the Town Basin "D": 80 acres located in the central part of the original Town limits Basin "E": Saunders Street and State Hwy 510 Basin "F": Southwestern part of the Town limits, bounded by State Hwy 100 and State Hwy 510
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:	$5,000,000 per site location
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Combines deferred actions #1 through 5
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Town of Laguna Vista– Action #2
Proposed Action:	Drainage improvements SH 100: Regrade the existing drainage ditch that parallels State Highway 100 to increase capacity and reduce risk of flooding.
BACKGROUND INFORMATION	
Site and Location:	State Highway 100
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:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / 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 communities and reduces risk of flooding.

		Town of Laguna Vista– Action #3
	Proposed Action:	Drainage improvements: Upgrade the drainage system on the intersection of Broadway and Palo Blanco to increase capacity and reduce risk of flooding.
	BACKGROUND INFORMATION	
	Site and Location:	Intersection of Broadway and Palo Blanco
	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:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #7
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Town of Laguna Vista– Action #4
Proposed Action:	Drainage Improvements: Upgrade the drainage system on Holley Beach to increase capacity and reduce risk of flooding.
BACKGROUND INFORMATION	
Site and Location:	Holley Beach
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:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
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 communities and reduces risk of flooding.

	Town of Laguna Vista– Action #5
Proposed Action:	Drainage Improvements: Upgrade and harden drainage structure on Town-owed marina to increase capacity and reduce risk of damages.
BACKGROUND INFORMATION	
Site and Location:	Town-owned marina
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:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #9
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		Town of Laguna Vista– Action #6
	Proposed Action:	Drainage Improvements: Harden and reinforce head wall along the Laguna Madre Bay off Beach Boulevard.
	BACKGROUND INFORMATION	
	Site and Location:	Laguna Madre Bay off Beach Boulevard
	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, Hurricane Wind, 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:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	Town of Laguna Vista– Action #7
Proposed Action:	Drainage Improvements: Upgrade 48” drainage pipe located at 1004 Beach Blvd to increase capacity and reduce risk of flood damages.
BACKGROUND INFORMATION	
Site and Location:	1004 Beach Blvd
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:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / 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 communities and reduces risk of flooding.

		Town of Laguna Vista– Action #8
	Proposed Action:	Drainage Improvements: Relocate and upgrade existing 36” drainage pipe located at 1026 Beach Blvd to increase capacity and reduce risk of flood damages.
	BACKGROUND INFORMATION	
	Site and Location:	Relocate and upgrade existing 36” drainage pipe located at 1026 Beach Blvd
	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:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12-24 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.

	Town of Laguna Vista– Action #9
Proposed Action:	Purchase trailer mounted water trash pumps**.**
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk to residents and reduces cost of loss to property owners with mobile pumps that can be used at high hazard locations without permanent pump installation.
Type of Action: (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
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
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.

	Town of Laguna Vista– Action #10
Proposed Action:	Implement early warning system to expanded/new areas outside of the current system capabilities in use.
BACKGROUND INFORMATION	
Site and Location:	Town-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:	Flood, Hail, Hurricane Wind, 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 existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Deferred action #14
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Town of Laguna Vista– Action #11
Proposed Action:	Adopt ordinance to promote water conservation by landscaping with low water usage plants at all public and residential buildings.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of loss of water availability. Reduce risk of loss of life 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

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:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Ordinances

COMMENTS:
Deferred action #15

	Town of Laguna Vista– Action #12
Proposed Action:	Implement education and awareness program on all hazards and mitigation measures against hazards. For example, utilize media, social media, distribution of flyers and education brochures to educate on the measures residents can take to against severe weather events.
BACKGROUND INFORMATION	
Site and Location:	Town-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, Drought, 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:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred actions #16, 20, 21
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Town of Laguna Vista– Action #13
Proposed Action:	Education outreach program for residents with information on drought impacts, restrictions, and water conservation measures.
BACKGROUND INFORMATION	
Site and Location:	Town-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
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:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Public Awareness Planning

COMMENTS:
Deferred action #27

	Town of Laguna Vista– Action #14
Proposed Action:	Implement a tree trimming program that routinely cleans tree limbs hanging in ROW and easements Survey and remove hazardous trees from drainage systems.
BACKGROUND INFORMATION	
Site and Location:	Town-wide, ROW easement
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:	Thunderstorm Wind, Tornado, Flood, Hail, Lightning, Winter Storm, Wildfire, Hurricane Wind
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
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 24 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.

	Town of Laguna Vista– Action #15
Proposed Action:	Construct an Emergency Operations Center equipped with telecommunications system, video equipment, sirens, and a backup generator; purchase an airboat and trailer; and digitalize Town records.
BACKGROUND INFORMATION	
Site and Location:	Site to TBD
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure continuity of 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:	Extreme Heat, Drought, Thunderstorm Wind, Tornado, Flood, Hail, Lightning, Winter Storm, Wildfire, Hurricane Wind
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:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #18
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Town of Laguna Vista– Action #16
Proposed Action:	Harden/retrofit critical facilities to hazard-resistant levels.
BACKGROUND INFORMATION	
Site and Location:	Town-wide critical facilities, including but not limited to: Town 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 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, Thunderstorm Wind, Tornado, Flood, Hail, Lightning, Winter Storm, Wildfire, 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:	$100,000 - $1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #19
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation and prevents injury to residents.

	Town of Laguna Vista– Action #17
Proposed Action:	Inform public by an emergency notification system, including expansion of early warning system and distribution of NOAA weather radios.
BACKGROUND INFORMATION	
Site and Location:	Town-wide critical facilities, ISDs, and first responders
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to citizens through improved communication and early warning.
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:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$75,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Emergency Management
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #22
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	Town of Laguna Vista– Action #18
Proposed Action:	Landscaping ordinance to include plants more resistant to fire and adopt a revised Fire Wise landscaping ordinance.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of damage 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 Ordinances

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):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Administration
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Local Ordinance

COMMENTS:
Deferred action #23

	Town of Laguna Vista– Action #19
Proposed Action:	Plant trees and vegetation along public ROW and easements to provide shaded areas for relief from extreme heat and lower temperatures.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces 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, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat
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
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #26

		Town of Laguna Vista– Action #20
	Proposed Action:	Remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
	BACKGROUND INFORMATION	
	Site and Location:	Town-wide WUI
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages 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:	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:	$25,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #28

	Town of Laguna Vista– Action #21
Proposed Action:	Install sprinkler systems at all public buildings and common areas and implement watering schedule. Educate the public on benefits of utilizing sprinkler system or watering around foundation and sidewalks to prevent expansive soils from cracking concrete.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage.
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
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000 per site location
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Laguna Vista / Public Works & Administration
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Public Awareness Planning

COMMENTS:
Deferred actions #29, 30

CITY OF LOS FRESNOS

	City of Los Fresnos– Action #1
Proposed Action:	Deepen drainage area in Resaca Escondido and Falcon Lake to increase storm water retention capacity.
BACKGROUND INFORMATION	
Site and Location:	Resaca Escondido and Falcon Lake
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 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 Los Fresnos / City Manager
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred Action: 31
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Los Fresnos– Action #2
Proposed Action:	Partner with Cameron County to implement drainage improvements downstream to prevent bottleneck flooding int the city from undersized drainage lines in the County.
BACKGROUND INFORMATION	
Site and Location:	South of City
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 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 Los Fresnos / Public Works / CCDD#1
Implementation Schedule:	Within 12-60 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 Los Fresnos– Action #3
Proposed Action:	Implement surge protection on critical facilities to protect equipment.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of lightning damage to critical facilities. 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:	Lightning
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):	Moderate
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan; Comprehensive Plan

COMMENTS:

	City of Los Fresnos– Action #4
Proposed Action:	Install canopy covers in public parks for shade and relief from hearing during extreme temperatures. Partners with local business and community organizations to collect and distribute fans to vulnerable populations during extreme heat events.
BACKGROUND INFORMATION	
Site and Location:	City-wide public parks
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of injury or fatalities to vulnerable populations by providing shaded areas in public areas.
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
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:	$100,000 per location
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan; Comprehensive Plan

COMMENTS:

	City of Los Fresnos– Action #5
Proposed Action:	Increase drainage capacity. Including but not limited to upgrade/adding storm water detention / retention ponds, culverts, clearing of debris from brides/drains/culverts, etc.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood risk through improved drainage capacity. Reduce risk of damages and injuries. Reduce emergency response demands
Type of Action: (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:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 12-60 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 Los Fresnos– Action #6
Proposed Action:	Construct a large detention / retention pond in the South part of the city to hold water during heavy rain events.
BACKGROUND INFORMATION	
Site and Location:	S. Nogal St. / W. 10th St.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood risk through improved drainage capacity. 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:	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:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan; Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Los Fresnos– Action #7
Proposed Action:	Reclaim discharged water from sewer plant to empty into water reservoir to use as water supply.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Provides an alternative source of water. Reduces risk to vulnerable populations during extreme weather 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:	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:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:

	City of Los Fresnos– Action #8
Proposed Action:	Adopt higher floodplain standard such as freeboard and cumulative substantial damage.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of property damage, Injury 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:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Permitting Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Flood Damage Prevention Ordinance

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Los Fresnos– Action #9
Proposed Action:	Update Master Drainage Plan.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage caused by flooding by maintaining or restoring drainage capacity.
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:	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 Los Fresnos / Public Works
Implementation Schedule:	Within 12 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 Los Fresnos– Action #10
Proposed Action:	Upgrade asbestos and clay distribution water main. Upgrade tanks and water treatment systems.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury and loss of life. Ensure potable water availability during severe weather 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:	Drought
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:	$6,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan; Emergency Management Plan

COMMENTS:

	City of Los Fresnos– Action #11
Proposed Action:	Upgrade asbestos and clay distribution sewer pipes. Expand sewer services to area that do not have sewer infrastructure.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injury, and loss of life. Ensure potable water available during severe weather 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:	Drought, 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:	$6,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan; Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Los Fresnos– Action #12
Proposed Action:	Construct a deep water well for raw water.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury and loss of life. Ensure potable water availability during severe weather 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:	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:	$1,500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:

	City of Los Fresnos– Action #13
Proposed Action:	Install surveillance / camera system to visually monitor reservoir banks for erosion or possible failure. Mitigate erosion damage as necessary when it is identified.
BACKGROUND INFORMATION	
Site and Location:	Water Reservoir 801 S. Nogal
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of damages and loss of water storage or breach.
Type of Action: (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:	$10,000 - $50,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Emergency Action Plan

COMMENTS:
Deferred action # 3

	City of Los Fresnos– Action #14
Proposed Action:	Implement program to promote water conservation by landscaping with low water usage plants at all public buildings and new residential development.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the use of water.
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:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Administration
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Local Ordinances, Comprehensive Plan

COMMENTS:
Deferred action #4

	City of Los Fresnos– Action #15
Proposed Action:	Install sprinkler systems at all public buildings and common areas and implement watering schedule. Educate the public through us of social media and flyers on benefits of utilizing sprinkler system or watering around foundation and sidewalks to prevent expansive soils from cracking concrete.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage.
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
Effect on new/existing buildings:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000 per site location $5,000 for educational outreach
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #6, 7

	City of Los Fresnos– Action #16
Proposed Action:	Implement education and awareness program on all hazards and mitigation measures against hazards. For example, utilize media, social media, distribution of flyers and education brochures to educate on the measures residents can take to against severe weather 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

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat, Flood, Hurricane Wind, Lightning, Drought, Thunderstorm Wind, Tornado, Hail, 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):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action # 8, 15, 19
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Los Fresnos– Action #17
Proposed Action:	Implement a tree trimming program that routinely cleans tree limbs hanging in ROW and easements; Survey and remove hazardous trees from drainage systems that have the potential to damage power lines and/or impede flow of water and create dam effects during flood/wind events. Implement an annual event with City to elicit help with mitigation efforts.
BACKGROUND INFORMATION	
Site and Location:	City-wide ROW easement, including site location at Resaca Escondido Drainpipe Collapse.
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)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado, Flood, Hail, Lightning, Winter Storm, Wildfire, Hurricane Wind
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:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan, Local Ordinances

COMMENTS:
Deferred action #10, 11D
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Los Fresnos– Action #18
Proposed Action:	Implement early warning system currently in use by expanding into areas currently not covered by system in-place.
BACKGROUND INFORMATION	
Site and Location:	City-wide including but not limited to: City Hall; Rode Grounds; Public Works Department' LFCISD Board Training Room; Los Fresnos United High School; Cuates Lift Station
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:	Flood, Hail, Hurricane Wind, 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 existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$125,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works / Emergency Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Operations Plan

COMMENTS:
Deferred action #12
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Los Fresnos– Action #19
Proposed Action:	Upgrade culverts and install drainage improvements at various locations (below) to increase capacity and reduce risk of flood damages. Purchase trailer mounted water trash pump to reduce or eliminate flooding.
BACKGROUND INFORMATION	
Site and Location:	City-wide, including but not limited to: 1) South of Highway 100 causes flooding on: East Fifth St., East Sixth St., East Seventh St., East Eighth St., East Ninth St., East Tenth St. 2) South Nogal St. causes flooding on: West First St., West Second St., West Third St. 3) Valle Alto St. & Bougainvillea St., Jacqueline St. & North Canal St. 4) Holly Lane Drain under Canal 5) Pasto Drive at California Road Drain under Canal 6) Hwy 100, Evergreen St. Area to Canal Crossings
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:	$10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Public Works / Emergency Management
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred Action: 13
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Los Fresnos– Action #20
Proposed Action:	Build and/or secure shelters for police and fire emergency response vehicles and trailers by constructing additional bays and covered parking areas for fleet vehicles at Fire Station, City Hall, and Police Station.
BACKGROUND INFORMATION	
Site and Location:	East Ocean Boulevard
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of damage. Ensure continuity of critical services during and after a severe hazard 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:	Hail, Hurricane Wind, Thunderstorm Wind, Wildfire, Winter Storm
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):	Moderate
Estimated Cost:	$250,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Police Department
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Capital Improvement Plan

COMMENTS:
Deferred action #16

	City of Los Fresnos– Action #21
Proposed Action:	Install shutters on glass windows and doors to protect critical facilities during tornadoes, severe hail and thunderstorm events, and Hurricane.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of damage, injury and fatalities. Ensure continuity of critical services during and after a severe hazard 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:	Hail, Hurricane Wind, Thunderstorm Wind, Winter Storm
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing and new structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$200,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Los Fresnos / Emergency Management
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #26

		City of Los Fresnos– Action #22
	Proposed Action:	Remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide WUI
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Natural landform protection and reduced risk of loss of property due to wildfire.
	Type of Action: (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 fire risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	Texas Forest Service; FireWise
Lead Agency/Department Responsible:	City of Los Fresnos / Parks and Recreation
Implementation Schedule:	Within 48 months of plan adoption pending funding
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #27

CITY OF PORT ISABEL

	City of Port Isabel– Action #1
Proposed Action:	Upgrade drainage on N. Shore and 2nd St. by adding pump station to area to disperse water rapidly in low lying and provide secondary drainage in the event of high tides
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 infrastructure
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 Isabel Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Port Isabel– Action #2
Proposed Action:	Projects to upgrade drainage on Roy St, Washington Ave, Jefferson Ave, N Roosevelt St, Buchanan Ave, Garfield Ave, Lincoln Ave, and Pennsylvania Ave.
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 infrastructure
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 Isabel Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Isabel– Action #3
	Proposed Action:	Upgrade drainage and streets on Lincoln Ave., Garfield Ave., Buchanan Ave., N. Roosevelt St., Jefferson Ave., Washington Ave, Roy St., and Pennsylvania Ave. by upgrading drainage and utilizing topographic study to improve streets and current drainage issues
	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, 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 infrastructure
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$3,500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #3 – action description was revised per City's request
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Port Isabel– Action #4
	Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate residents of hazard that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages. Include links to weather alerts and departmental listings with contact personnel.
	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):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Administration / Emergency Management
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Hazard Mitigation Plan

COMMENTS:
Deferred actions #1, 5, 13, 21, 28
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Port Isabel– Action #5
Proposed Action:	Plant native trees/plants to provide shading in public ROWs and parks to provide shade, help with heat reduction, and reduce water usage.
BACKGROUND INFORMATION	
Site and Location:	City-wide
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)	Local Plans and Regulations, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Drought, Extreme Heat
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:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Building Maintenance
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #2

	City of Port Isabel– Action #6
Proposed Action:	Establish cooling center by installing upgraded air conditioners, fans, and a generator; distribute information to residents on the availability of the cooling center during extreme heat events.
BACKGROUND INFORMATION	
Site and Location:	Port Isabel Community Center
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of injury and fatalities to at-risk and vulnerable populations.
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
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:	$150,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Administration / Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #6

		City of Port Isabel– Action #7
	Proposed Action:	Extend garage bays at fire department, EMS, and police department to protect emergency response vehicles during disasters.
	BACKGROUND INFORMATION	
	Site and Location:	Port Isabel Fire and Police Department
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of damage to critical infrastructures. Ensures continuity of critical services during and after a severe hazard 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:	Hail, Thunderstorm Wind, Hurricane Wind, Flood, Tornado, Extreme Heat, Winter Storms
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):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #7
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Port Isabel– Action #8
Proposed Action:	Purchase and installation of permanent (hard-wired) generators in municipal buildings necessary for continuity during a disaster.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities include but not limited to municipal buildings such as EOC, Community Center, Police Station, Fire/EMS, City Hall, Public Works
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 infrastructure
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 Isabel Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #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 Isabel– Action #9
Proposed Action:	Become a "StormReady" Community as per NOAA standards.
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, 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:	$500
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Emergency Management
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:
Promotes public safety.

		City of Port Isabel– Action #10
	Proposed Action:	Prepare and advertise local evacuation plan.
	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:	Flood, Hail, Hurricane Wind, 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):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Police Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Evacuation Plan

COMMENTS:
Deferred action #10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Port Isabel– Action #11
Proposed Action:	Adopt NFIP model ordinance with higher floodplain standards. Update floodplain management ordinances to include higher standards required to join the CRS program; Join the CRS program upon adoption of ordinance.
BACKGROUND INFORMATION	
Site and Location:	City-wide
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)	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):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Building Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Floodplain Ordinance

COMMENTS:
Deferred action #11, 12
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Port Isabel– Action #12
Proposed Action:	Construct “safe haven” canopies over city parking lots including at municipal buildings and parks to be utilized by public.
BACKGROUND INFORMATION	
Site and Location:	City-wide
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)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Extreme Heat
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:	$400,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Emergency Management Plan

COMMENTS:
Deferred action #13

	City of Port Isabel– Action #13
Proposed Action:	Require roofing products with UL 2218 Hail Resistant Listing for new development.
BACKGROUND INFORMATION	
Site and Location:	City-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 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:	Hail, Thunderstorm Wind, Hurricane Wind, Tornado
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$400,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Building Inspector
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Building Codes

COMMENTS:
Deferred action #14

		City of Port Isabel– Action #14
	Proposed Action:	Purchase drone for pre- and post-disaster rescue, recovery, and loss evaluation.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	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)	Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Flood, Hurricane Wind, Thunderstorm Wind, Tornado, Winter Storm, Wildfire
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:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Emergency Management
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	FD SOPs; Recovery, Direction and Control; Firefighting; Law Enforcement; Emergency Response Plan

COMMENTS:
Deferred action #18
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Port Isabel– Action #15
Proposed Action:	Elevate and widen coastal roads as well as evacuation routes to reduce risk of flood damages and maintain emergency access.
BACKGROUND INFORMATION	
Site and Location:	North Shore Drive extending from 1st and 4th street and Highway 100 extending from Island Avenue to 4th Street
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages. 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:	Flood, Hurricane Wind, Tornado
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:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Evacuation Plan, Comprehensive Plan

COMMENTS:
Deferred action #19
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation and prevents injury to residents.

	City of Port Isabel– Action #16
Proposed Action:	Harden/Retrofit critical facilities to a hazard resistant level including but not limited to improving drainage systems, dry flood proofing, adding hurricane shutters, etc.
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 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, Lightning, Thunderstorm Wind, Hurricane 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):	Moderate
Estimated Cost:	$1,500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Building Maintenance
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Public Works, Direction and Control, Recovery; 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 Port Isabel– Action #17
Proposed Action:	Build breakwater or similar shoreline protection for harbor.
BACKGROUND INFORMATION	
Site and Location:	Entrance of Modern Venice Harbor
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages, risk of injury and fatalities.
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:	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
Priority (High, Moderate, Low):	High
Estimated Cost:	$6,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #22
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Port Isabel– Action #18
Proposed Action:	Implement early warning system for residents to notify of natural disasters; three warning sirens would be installed.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to resident through early warning. Reduce potential loss of life and property.
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, 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):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #25
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Port Isabel– Action #19
Proposed Action:	Upgrade building codes to require anchors, tie-downs, and increased windstorm resistance.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to resident through early warning. Reduce potential loss of life 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 Wind, Thunderstorm 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:	$500
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Building Inspector
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Building Codes

COMMENTS:
Deferred action #26

	City of Port Isabel– Action #20
Proposed Action:	Purchase improved firefighting equipment, including ladder truck, additional SCBAs and cascade system, and additional tanker truck.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure continuity of critical services during and after a severe hazard event. Reduces 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)	Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduces risk to new and 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 Port Isabel Fire Marshal
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Deferred action #27

	City of Port Isabel– Action #21
Proposed Action:	Remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces 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:	Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduces risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Port Isabel Fire Marshal
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #29

CITY OF PRIMERA

	City of Primera– Action #1
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 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:	City of Primera
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.

	City of Primera– Action #2
Proposed Action:	Increase drainage capacity. Including but not limited to upgrade/adding storm water detention/retention ponds, culverts, clearing of debris from bridges/drains/culverts, etc.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce flood risk through improved drainage capacity. Reduce risk of damage and injuries. Reduce emergency response demands.
Type of Action: (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:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Primera / Public Works
Implementation Schedule:	Within 12-60 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 Primera– Action #3
Proposed Action:	Amend subdivision ordinances to require retention or detention ponds in any new subdivision.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury and fatalities. Will assist in reducing damages caused by flooding by maintaining or restoring drainage capacity
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:	Reduce risk to new and existing structures
Priority (High, Moderate, Low):	High
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Primera / Permitting Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #1
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

		City of Primera– Action #4
	Proposed Action:	Construct a large retention/detention pond in the northwest part of town to hold water during heavy rain events.
	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
Priority (High, Moderate, Low):	High
Estimated Cost:	$800,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Primera / Public Works, Cameron County Drainage District
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Drainage Plan

COMMENTS:
Deferred action #2
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Primera– Action #5
Proposed Action:	Construct a new wastewater treatment plan supplied by groundwater for a redundant water source during extreme drought.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injuries or fatalities. Provides alternative source of water.
Type of Action: (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:	$5,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Primera / Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #3. Updated to reflect wastewater based on previous action analysis.

	City of Primera– Action #6
Proposed Action:	Retrofit current non-energy homes to energy efficient homes by providing assistance to better insulate them.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to at-risk and vulnerable populations but reducing costs and reducing risk to the electrical grid.
Type of Action: (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, 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):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Primera / Economic Development
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #6

	City of Primera– Action #7
Proposed Action:	Implement early warning system to new areas of the jurisdiction to alert residents of impending severe weather.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promotes hazard awareness through early warning notification.
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:	Hail, Flood, Hurricane 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:	$25,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Primera / Emergency Management
Implementation Schedule:	Within 12 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 Primera– Action #8
Proposed Action:	Adopt higher floodplain standards such as freeboard and cumulative substantial damage.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury 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:	Flood, Hurricane Wind
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Primera / Permitting Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Flood Damage Prevention Ordinance

COMMENTS:
Deferred action #10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Primera– Action #9
Proposed Action:	Adopt standards from International Code Council (ICC)-600 Standard for Residential Construction in High-Wind Regions.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury 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:	Thunderstorm Wind, Hurricane Wind, Tornado
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:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Primera / Permitting Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #9

	City of Primera– Action #10
Proposed Action:	Increasing tree plantings around public buildings to share parking lots and along public ROWs to provide shade and reduce temperatures.
BACKGROUND INFORMATION	
Site and Location:	City-wide
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)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
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:	$10,000 per site
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Primera / Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #11

	City of Primera– Action #11
Proposed Action:	Develop and implement a schedule for regularly checking water supply system for leaks to minimize water supply loss.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury and fatalities to at-risk and 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
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:	$10,000 annually
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Primera / Public Works
Implementation Schedule:	Within 48 months of plan adoption then annually
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #12

City of Primera– Action #12	
Proposed Action:	Harden/Retrofit critical facilities to hazard resistant level.
BACKGROUND INFORMATION	
Site and Location:	City-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
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:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Primera / Public Works
Implementation Schedule:	Within 24 months of plan adoption then annually
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #13
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation and prevents injury to residents.

TOWN OF RANCHO VIEJO

	Town of Rancho Viejo– Action #1
Proposed Action:	Education outreach program for residents with information on drought impacts, restrictions, and water conservation measures.
BACKGROUND INFORMATION	
Site and Location:	Town-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
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:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Rancho Viejo / Administration, Valley MUD No. 2
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #1

	Town of Rancho Viejo– Action #2
Proposed Action:	Complete assessment on impact of drought history has had on community and water sources through identifying local drought indicators, such as precipitation, temperature, surface water levels, soil moisture; develop a drought emergency plan; adopt an ordinance to restrict the use of public water resources for non-essential usage, such as landscaping, washing cars, filling pools, and require low flow fixtures in new public buildings, etc.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of fatalities and damages related to hazard event.
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:	Reduce risk to existing structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$20,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Rancho Viejo / Administration, Valley MUD No. 2
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Ordinance

COMMENTS:
Deferred action #2

	Town of Rancho Viejo– Action #3
Proposed Action:	Adopt the International Building Code (IBC) and International Residential Code (IRC); revise and update regulatory floodplain maps; adopt higher standards in floodplain ordinances including freeboard, no-rise in the floodplain, cumulative substantial damage, etc.
BACKGROUND INFORMATION	
Site and Location:	Town-wide / Valley MUD locations
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages to infrastructure. Reduce risk of injuries or 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:	Thunderstorm Wind, Hurricane Wind, Tornado, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new 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:	Town of Rancho Viejo / Administration, Valley MUD No. 2
Implementation Schedule:	Within 12months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Drainage Plan, Floodplain Ordinance

COMMENTS:
Deferred action #3

	Town of Rancho Viejo– Action #4
Proposed Action:	Establish a program for all utilities for regular scheduled tree pruning around lines; inspect utility poles to ensure they meet specifications and are wind resistant.
BACKGROUND INFORMATION	
Site and Location:	Town-wide / Valley MUD locations
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)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Thunderstorm Wind, Tornado, Flood, Hail, Lightning, Winter Storm, Wildfire, Hurricane Wind
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:	$20,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Rancho Viejo / Administration, Valley MUD No. 2
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #4

		Town of Rancho Viejo– Action #5
	Proposed Action:	Bury power lines to provide uninterrupted power after hazard events, considering both maintenance and repair issues.
	BACKGROUND INFORMATION	
	Site and Location:	Town-wide / Valley MUD locations
	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:	Extreme Heat, Thunderstorm Wind, Tornado, Flood, Hail, Lightning, Winter Storm, Wildfire, Hurricane Wind
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:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Rancho Viejo / Administration, Valley MUD No. 2
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #5
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Helps ensure critical facilities continue to provide services during a power outage caused by unforeseen events.

		Town of Rancho Viejo– Action #6
	Proposed Action:	Implement education and awareness program on all hazards and hardening/mitigation measures against hazards. For example, utilize media, social media, distribution of flyers and education brochures to educate on the measures residents can take to against severe weather events. Update website with maps and information including StormReady data and links.
	BACKGROUND INFORMATION	
	Site and Location:	Town-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, Drought, 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:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Rancho Viejo / Administration
Implementation Schedule:	Within 12-24 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Deferred actions #6 ,7, 9, 11
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Town of Rancho Viejo– Action #7
	Proposed Action:	Create and implement program to increase tree plantings around buildings to shade parking lots and along public ROWs to reduce temperatures and provide shaded areas for residents.
	BACKGROUND INFORMATION	
	Site and Location:	Town-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:	Extreme Heat
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:	Town of Rancho Viejo / Administration
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #8

	Town of Rancho Viejo– Action #8
Proposed Action:	Update, review, and enforce ordinances, as appropriate, related to building materials (requiring hazard resistant roofing and glass on all new public buildings) and continue to adopt current construction codes.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury, 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:	Hail, Flood, Hurricane Wind, Thunderstorm Wind, Tornado
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:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Rancho Viejo / Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

		Town of Rancho Viejo– Action #9
	Proposed Action:	Revise landscape ordinance to include plants more resistant to fire at public building and new residential developments.
	BACKGROUND INFORMATION	
	Site and Location:	Town-wide
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injury 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:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Rancho Viejo / Administration
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Local Ordinance, Comprehensive Plan

COMMENTS:
Deferred action #12

	Town of Rancho Viejo– Action #10
Proposed Action:	Create and Implement program to remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Site and Location:	Town-wide WUI
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injury 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:	Reduce risk to new and existing structure and infrastructure
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Rancho Viejo / Administration
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #13

	Town of Rancho Viejo– Action #11
Proposed Action:	Educate the public on benefits of utilizing sprinkler system or watering soil around foundation and sidewalks to prevent expansive soils from cracking concrete.
BACKGROUND INFORMATION	
Site and Location:	Town-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injury, and fatalities
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
Effect on new/existing buildings:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000 per site location
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	Town of Rancho Viejo / Administration
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #14

CITY OF RIO HONDO

	City of Rio Hondo– Action #1
Proposed Action:	Harden/Retrofit/Strengthen the Rio Hondo as a Civic Center and Police Station to sustain severe weather events.
BACKGROUND INFORMATION	
Site and Location:	Rio Hondo Civic Center and Police Station: 121 N. Arroyo, Rio Hondo, TX 78583
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Ensure continuity of critical services during and affect 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:	Dam Failure, 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:	$1,500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo
Implementation Schedule:	Within 12 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 Rio Hondo– Action #2
Proposed Action:	Acquire and install generations with hard wired quick connections at all critical facilities.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities and infrastructure, including but not limited to: City Hall Complex, Lift Stations, Water Plant and Sewer Plant.
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:	Dam Failure, 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:	New warming center and storm shelter
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 Rio Hondo
Implementation Schedule:	Within “12” month(s) or year(s) 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 Rio Hondo– Action #3
Proposed Action:	Acquire vacant land, develop land use regulations surrounding fertilizer plant and oil tank farm.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of damages, 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:	Drought, Extreme Heat, Flood, Wildfire, Winter Storms
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduces 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 Rio Hondo
Implementation Schedule:	Within 12-60 months 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 Rio Hondo– Action #4
Proposed Action:	Repair and re-enforce the Rio Hondo Lake Dam.
BACKGROUND INFORMATION	
Site and Location:	Rio Hondo Lake at the end of Parkway Street that drains in the Arroyo Colorado.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the losses of raw water and catastrophic losses of barge damages and spills. Reduces risk of damages, 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:	Dam Failure, 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:	$3,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo, S. Army Corps of Engineers, U.S. Coast Guard, and Texas Emergency Management
Implementation Schedule:	Within 12 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 Rio Hondo– Action #5
Proposed Action:	Replace asbestos and lead water distribution water mains and tank repairs and replacements and new water treatment systems
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of injury and loss of life. Ensures potable water availability during severe weather 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:	Drought
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:	$8,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, Comprehensive Plan

COMMENTS:

	City of Rio Hondo– Action #6
Proposed Action:	Upgrade/Replace clay sewer pipes. Expand sewer services to areas that do not have the sewer infrastructure.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of damages, injury and loss of life. Ensures potable water availability during severe weather 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:	Drought, Flood
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to existing and new structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$8,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation and prevents injury to residents.

	City of Rio Hondo– Action #7
Proposed Action:	Construct a deep water well for raw water.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of damages, injury and loss of life. Ensures potable water availability during severe weather 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:	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:	$1.500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo Public Safety
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
The City receives its raw water from the Rio Grande River 22 miles away and water travels through open canals.

	City of Rio Hondo– Action #8
Proposed Action:	Equip the Rio Hondo Volunteer Fire Department with Wildfire Fighting equipment.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of damages, injury and loss of life. Ensures continuity of critical services. Reduces 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)	Local Plans and Regulations - Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire, 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:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo, Texas Dept. of Wildlife, Texas Emergency Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:

	City of Rio Hondo– Action #9
Proposed Action:	Develop an environmental impact statement on the northwest area of the city and areas along the Arroyo Colorado River. Identify explosive hazards and mitigate the hazards and develop a land use plan for the vacant land.
BACKGROUND INFORMATION	
Site and Location:	City-wide, and areas along the Arroyo Colorado River.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Promotes hazard awareness. Reduces risk of damages, injury and loss of life. Reduces 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)	Education and Awareness, Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	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:	$1,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo, Texas Dept. of Wildlife, Texas Emergency Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Addition new action provided in previous action submission. Please advise if you would still like to include as it was not submitted in new action 15-22 provided. The Arroyo has increase barge traffic, the fertilizer plant is sharing an unload of high-octane fuels to oil depot.
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

City of Rio Hondo– Action #10	
Proposed Action:	Repair and upgrade all waterlines to reduce potable water loss. Implement alternative water sources and ground water wells to augment surface water qualities.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages by maintaining or restoring drainage capacity. Increase potable water throughout city.
Type of Action: (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:	$1,800,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo Water Treatment
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Water Loss Study

COMMENTS:
Deferred action #1

	City of Rio Hondo– Action #11
Proposed Action:	Map and Assess vulnerability to wildfire; identify water sources to fight fires; update Emergency Management Plan of identified vulnerabilities and sources of water.
BACKGROUND INFORMATION	
Site and Location:	City-wide including ETJ locations
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:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	High
Estimated Cost:	$650,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #2

	City of Rio Hondo– Action #12
Proposed Action:	Educate the public on benefits of utilizing sprinkler system or watering around foundation and sidewalks to prevent cracking concrete.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage.
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:	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
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000 per site location
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Water Conservation Plan and Drought Contingency Plan.

COMMENTS:
Deferred action #5, 14

City of Rio Hondo– Action #13	
Proposed Action:	Stabilize the banks of the Arroyo Colorado River by using rock splash pads to direct run off and minimize the potential for erosion.
BACKGROUND INFORMATION	
Site and Location:	Banks of Arroyo Colorado River inside the City of Rio Hondo
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce the risk of erosion. Reduce risk of damages, 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, 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:	$8,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants, USCE
Lead Agency/Department Responsible:	City of Rio Hondo, Army Corps of Engineers
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #6
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Rio Hondo– Action #14
Proposed Action:	Implement education and awareness program on all hazards and mitigation measures against hazards. For example, maintaining a website, PSAs, utilize media, social media, distribution of flyers and education brochures to educate on the measures residents can take to against severe weather events and climate changes in area.
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:	Dam Failure, Extreme Heat, Drought, 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:	$20,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo Administration
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan, Comprehensive Plan

COMMENTS:
Deferred action #7
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Rio Hondo– Action #15
Proposed Action:	Develop and conduct public awareness program related to tree maintenance at commercial and residential home sites. Implements upgrade / replacement of telephone poles, cut trees affecting power lines, and work with local electrical and cable companies replace streetlights and secure overhead wires.
BACKGROUND INFORMATION	
Site and Location:	City-wide
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)	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, 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 Rio Hondo Emergency Management, Local Electric and Cable Companies
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #8

	City of Rio Hondo– Action #16
Proposed Action:	Adopt tree ordinance. Plant trees and vegetation along public ROW and easements to reduce temperatures and provide shade.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces 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, Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Extreme Heat
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:	City of Rio Hondo Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #9

	City of Rio Hondo– Action #17
Proposed Action:	Incorporate drought tolerant or xeriscape practices into landscape ordinances to reduce dependence on irrigation. Develop mini parks with drought tolerant plant / xeriscape practices.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce dependence on irrigation.
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:	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:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo Administration, Permit Division
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #10

		City of Rio Hondo– Action #18
	Proposed Action:	Retrofit portion of City Hall to serve as emergency operation center / safe room including back-up generator and warming shelter for first responders and at-risk populations.
	BACKGROUND INFORMATION	
	Site and Location:	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 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:	Dam Failure, 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
Effect on new/existing buildings:	Reduce risk to existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$1,800,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo Emergency Management
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #11
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Rio Hondo– Action #19
Proposed Action:	Harden/retrofit critical facilities to hazard-resistant levels.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities and infrastructures.
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:	Dam Failure, 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):	Moderate
Estimated Cost:	$25,00 per site
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #12
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Rio Hondo– Action #20
Proposed Action:	Remove dead and downed trees throughout City.
BACKGROUND INFORMATION	
Site and Location:	City-wide and WUI identified areas within City-limits
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages and loss of life. Ensures continuity of critical services during severe storm 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:	Wildfire, Thunderstorm Wind, 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):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Rio Hondo Public Works, Parks and Recreation
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, CWPP

COMMENTS:
Deferred action #13, 14

CITY OF SAN BENITO

	City of San Benito– Action #1
Proposed Action:	Assess the community's critical and public facilities for their ability to protect residents during severe hazard events. Harden/retrofit critical facilities to hazard-resistant levels.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities and infrastructures, included by not limited to schools, businesses, and residential housing.
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)	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):	Moderate
Estimated Cost:	$25,00 per site
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of San Benito Administration, Code Enforcement, and Building Inspectors
Implementation Schedule:	Within 12-36 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #1
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of San Benito– Action #2
Proposed Action:	Implement education and awareness program on all hazards and mitigation measures against hazards. For example, utilize media, social media, distribution of flyers and education brochures to educate on the measures residents can take to against severe weather events and climate changes in area.
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, Drought, 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:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of San Benito Administration, Police and Fire Department, SBOEN
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #2, 10, 11, 12, 17
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of San Benito– Action #3
Proposed Action:	Implement drainage improvements for the entire City of San Benito, drainage watersheds within the city and surrounding the city to increase storm water runoff capacity and protect structures and infrastructure from flood damages
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:	$10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of San Benito Administration, Public Works, Road/Street Department, Irrigation District
Implementation Schedule:	Within 12-60 months of plan adoption
Incorporation into Existing Plans:	Drainage Plan

COMMENTS:
Deferred action #3
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of San Benito– Action #4
Proposed Action:	Designate public buildings as warming / cooling stations during extreme heat events and educate citizens on the availability of cooling stations.
BACKGROUND INFORMATION	
Site and Location:	City-wide – site locations to be determined
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of injury and fatalities to at risk and 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:	Extreme Heat, 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:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of San Benito Administration, Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #4

	City of San Benito– Action #5
Proposed Action:	Incorporate drought tolerant or xeriscape practices into landscape ordinances / building codes for new public and commercial developments.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce dependence on irrigation.
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:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of San Benito Administration, Public Works, Road/Street Department, Irrigation District
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #5

	City of San Benito– Action #6
Proposed Action:	Implement subdivision regulations, new building regulations, building codes and enforcement and development reviews to influence the way land and buildings are developed and built to sustain extreme weather events.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of damage to property, 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:	Hurricane Wind, Thunderstorm Wind, Tornado, Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of San Benito Administration, Code Enforcement, Building Inspector's
Implementation Schedule:	Within 24-36 months of plan adoption
Incorporation into Existing Plans:	Building Codes, Comprehensive Plan

COMMENTS:
Deferred action #6, 7

	City of San Benito– Action #7
Proposed Action:	Adopt land use restrictions for preservation and forest management to minimize damage and losses while preserving natural systems and vegetation.
BACKGROUND INFORMATION	
Site and Location:	City-wide, with emphasis on WUI areas
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury, and loss of life by limiting development in high-risk areas.
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:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of San Benito Administration, Fire Department, Code Enforcement
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, CWPP

COMMENTS:
Deferred action #8

	City of San Benito– Action #8
Proposed Action:	Adopt higher standards into the flood damage prevention ordinance to limit floodplain development and provide higher protection to structures in the floodplain.
BACKGROUND INFORMATION	
Site and Location:	City-wide, with emphasis on FEMA and community identified floodplain
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage, injury, and loss of life by limiting development in high-risk areas.
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:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$10,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of San Benito Administration, Code Enforcement, Building Inspectors
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Flood Damage Prevention Ordinance

COMMENTS:
Deferred action #13
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of San Benito– Action #9
Proposed Action:	Plant trees and vegetation along public ROW and easements to reduce temperatures and provide shade.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of 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
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
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of San Benito Administration, Public Works, Road/Street Department, Irrigation District, ISDs
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #14

	City of San Benito– Action #10
Proposed Action:	Repair and upgrade existing water system to eliminate line breaks, leaks and prevent water loss.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages by maintaining or restoring drainage capacity. Reduce loss of water throughout city.
Type of Action: (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):	Low
Estimated Cost:	$2,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of San Benito Administration, Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
Deferred action #15

		City of San Benito– Action #11
	Proposed Action:	Retrofit critical facilities to hazard-resistant levels to act as safe rooms for vulnerable populations and first responders.
	BACKGROUND INFORMATION	
	Site and Location:	City-wide critical facilities including but not limited to Police Station and/or other public facilities.
	Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Reduce risk of injury to at-risk and vulnerable populations as well as 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:	Hail, Hurricane Wind, Thunderstorm Wind, Tornado
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):	Low
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of San Benito Administration, Code Enforcement
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Deferred action #16

	City of San Benito– Action #12
Proposed Action:	Remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide WUI identified areas
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages and loss of life. Ensures continuity of critical services during severe storm 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:	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:	$25,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of San Benito Fire Department
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, CWPP

COMMENTS:
Deferred action #18

CITY OF SANTA ROSA

	City of Santa Rosa– Action #1
Proposed Action:	Implement education and awareness program utilizing media, social media, bulletins, flyers, etc. to educate residents of hazard that can threaten the area and mitigation measures to reduce injuries, fatalities, and property damages. Include links to weather alerts and departmental listings with contact personnel.
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):	Safety/Security
Effect on new/existing buildings:	N/A
Priority (High, Moderate, Low):	Low
Estimated Cost:	$500
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Santa Rosa Emergency Management
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Hazard Mitigation Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Santa Rosa– Action #2
Proposed Action:	Plant native trees/plants to provide shading in public ROWs and parks to provide shade, help with heat reduction, and reduce water usage.
BACKGROUND INFORMATION	
Site and Location:	City-wide
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:	Drought, Extreme Heat
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
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Santa Rosa Building Maintenance
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:

	City of Santa Rosa– Action #3
Proposed Action:	Upgrade drainage and streets on La Placita, La Jara, and other flood-prone areas by upgrading drainage and utilizing topographic study to improve streets and current drainage issues
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, 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 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 Santa Rosa Public Works
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Santa Rosa– Action #4
Proposed Action:	Improve stormwater detention in La Placita and La Jara neighborhoods.
BACKGROUND INFORMATION	
Site and Location:	La Placita and La Jara neighborhoods
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, 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 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 Santa Rosa Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Santa Rosa– Action #5
Proposed Action:	Improve stormwater conveyance and outfalls.
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, 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 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 Santa Rosa Administration
Implementation Schedule:	Within 36 months of plan adoption
Incorporation into Existing Plans:	Response Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Santa Rosa– Action #6
Proposed Action:	Replace force main on Parker Road to reduce infiltration and allow sanitary sewer to function during flooding
BACKGROUND INFORMATION	
Site and Location:	Parker Road
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages 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, 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 infrastructure
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 Santa Rosa Public Works
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of Santa Rosa– Action #7
Proposed Action:	Purchase portable pumps.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damages, injuries, or fatalities. Ensure continuity of critical services during and after 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
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:	$250,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Santa Rosa Public Works
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Santa Rosa– Action #8
Proposed Action:	Establish cooling center by installing upgraded air conditioners, fans, and a generator; distribute information to residents on the availability of the cooling center during extreme heat events.
BACKGROUND INFORMATION	
Site and Location:	Youth Center
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of injury and fatalities to at-risk and vulnerable populations.
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
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:	$150,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Santa Rosa Administration / Emergency Management
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:

	City of Santa Rosa– Action #9
Proposed Action:	Extend garage bays at fire department and police department to protect emergency response vehicles during disasters.
BACKGROUND INFORMATION	
Site and Location:	Municipal Fire and Police Department
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces risk of damage to critical infrastructures. Ensures continuity of critical services during and after a severe hazard 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:	Hail, Thunderstorm Wind, Hurricane Wind, Flood, Tornado, Extreme Heat
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):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Santa Rosa Fire Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Santa Rosa– Action #10
Proposed Action:	Purchase and Installation of permanent (hard-wired) generators in municipal buildings necessary for continuity during a disaster.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities including but not limited to municipal buildings (EOC, Community Center, Police Station, Fire/EMS, City Hall, Public Works)
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 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 Santa Rosa Fire Department
Implementation Schedule:	Within 12 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 Santa Rosa– Action #11
Proposed Action:	Become a "StormReady" Community as per NOAA standards.
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, 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:	$500
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Santa Rosa Emergency Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Santa Rosa– Action #12
Proposed Action:	Prepare and advertise local evacuation plan.
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:	Flood, Hail, Hurricane Wind, 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):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Santa Rosa Police Department
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Evacuation Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Santa Rosa– Action #13
Proposed Action:	Adopt NFIP model ordinance with higher floodplain standards. Update floodplain management ordinances to include higher standards required to join the CRS program; Join the CRS program upon adoption of ordinance.
BACKGROUND INFORMATION	
Site and Location:	City-wide
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)	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):	High
Estimated Cost:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Santa Rosa Building Department
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Floodplain Ordinance

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of Santa Rosa– Action #14
Proposed Action:	Construct “safe haven” canopies over city parking lots including at municipal buildings and parks to be utilized by public.
BACKGROUND INFORMATION	
Site and Location:	City-wide
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)	Structure and Infrastructure

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Hail, Extreme Heat
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
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Santa Rosa Administration
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Comprehensive Plan, Emergency Management Plan

COMMENTS:

	City of Santa Rosa– Action #15
Proposed Action:	Require roofing products with UL 2218 Hail Resistant Listing for new development.
BACKGROUND INFORMATION	
Site and Location:	City-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 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:	Hail
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new structures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$500
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Santa Rosa Building Inspector
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Building Codes

COMMENTS:

	City of Santa Rosa– Action #16
Proposed Action:	Harden/Retrofit critical facilities to a hazard resistant level including but not limited to improving drainage systems, dry flood proofing, adding hurricane shutters, etc.
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 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, Lightning, Thunderstorm Wind, Hurricane 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):	Moderate
Estimated Cost:	$1,500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Santa Rosa Building Maintenance
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Public Works, Direction and Control, Recovery; Emergency Management Plan

COMMENTS:
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of Santa Rosa– Action #17
Proposed Action:	Implement early warning system for residents to notify of natural disasters; three warning sirens would be installed.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to resident through early warning. Reduce potential loss of life and property.
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, 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):	Moderate
Estimated Cost:	$100,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Santa Rosa Emergency Management, Police and Fire Departments
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.

	City of Santa Rosa– Action #18
Proposed Action:	Upgrade building codes to require anchors, tie-downs, and increased windstorm resistance.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk to resident through early warning. Reduce potential loss of life 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 Wind, Thunderstorm 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:	$500
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Santa Rosa Building Inspector
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Building Codes

COMMENTS:

	City of Santa Rosa– Action #19
Proposed Action:	Purchase improved firefighting equipment, including ladder truck, additional SCBAs and cascade system, and additional tanker truck.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Ensure continuity of critical services during and after a severe hazard event. Reduces 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)	Preparedness

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduces risk to new and 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 Santa Rosa Fire Marshal
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:

	City of Santa Rosa– Action #20
Proposed Action:	Remove dead and downed trees to decrease fire fuels in Wildland Urban Interface (WUI) areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduces 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:	Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduces risk to new and existing structures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$25,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of Santa Rosa Fire Marshal
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:

CITY OF SOUTH PADRE ISLAND

	City of South Padre Island– Action #1
Proposed Action:	Update Master Drainage Plan.
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)	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:	$265,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of South Padre Island Public Works, USCE
Implementation Schedule:	Within 12 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 South Padre Island– Action #2
Proposed Action:	Review and Update Erosion Response Plan based on beach and dune study analysis/results.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of erosion, loss of property, 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:	Flood, Hurricane Wind, 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:	$50,000
Potential Funding Sources:	Local Funds, State and Federal Grants, Beach Maintenance Funds, CEPRA
Lead Agency/Department Responsible:	City of South Padre Island Public Works, Shoreline Management
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Erosion Response Plan, Beach Management Plan, Emergency Response Plan

COMMENTS:
Deferred action #1
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of South Padre Island– Action #3
Proposed Action:	Establish Continuous Dune Line; Plant Vegetation to protect Dunes; Construct walkovers to prevent foot traffic on dunes.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage to property. Reduce risk of damage to dunes within city.
Type of Action: (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, 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:	$500,000 based on site location
Potential Funding Sources:	Local Funds, State and Federal Grants, USCE
Lead Agency/Department Responsible:	City of South Padre Island City Council, Public Works, Shoreline Taskforce
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Erosion Response Plan, Emergency Response Plan

COMMENTS:
Deferred action #2

	City of South Padre Island– Action #4
Proposed Action:	Adoption erosion control ordinance and prohibit development in high-hazard areas. Construction plans to be reviewed by various departments when applicable.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of erosion, loss of property, 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:	Flood, Hurricane Wind, 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:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants, USCE
Lead Agency/Department Responsible:	City of South Padre Island City Council, City of South Padre Island Public Works, Shoreline Department
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Erosion Response Plan, Emergency Response Plan

COMMENTS:
Deferred action #3
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of South Padre Island– Action #5
Proposed Action:	Harden/retrofit critical facilities to hazard-resistant levels. Install back-up generators with hard wire quick connections at designated critical facilities.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities and infrastructures.
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
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):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of South Padre Island Building Division
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #4
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation, and prevents injury to residents.

	City of South Padre Island– Action #6
Proposed Action:	Harden/retrofit Community Center to serve as a Safe Room during Severe weather events; establish the community center as a community cooling center during extreme heat. Educate the public on the availability of the community center as a warming/ cooling station. Install back-up generators with hard wire quick connections at designated critical facilities.
BACKGROUND INFORMATION	
Site and Location:	City-wide critical facilities and infrastructures.
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce damages at critical facilities. Reduce risk of injury to vulnerable and at-risk 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:	Extreme Heat, Flood, Hail, Hurricane Wind, Thunderstorm Wind, Tornado, 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):	Moderate
Estimated Cost:	$500,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of South Padre Island Building Division
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Emergency Management Plan

COMMENTS:
Deferred action #5
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation and prevents injury to residents.

	City of South Padre Island– Action #7
Proposed Action:	Upgrade undersized culverts throughout the Island to increase capacity and reduce flood risk.
BACKGROUND INFORMATION	
Site and Location:	City-wide including but not limited to: Laguna Blvd.
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:	$10,000,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of South Padre Island Public Works, USCE
Implementation Schedule:	Within 12 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 South Padre Island– Action #8
Proposed Action:	Review and update all building codes to include mitigation and resilience considering in all new and substantially improved structures and construction development.
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)	Local Plans and Regulations

MITIGATION ACTION DETAILS	
Hazard(s) Addressed:	Flood, Thunderstorm Wind, Hurricane Wind, Tornado, Hail, 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:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of South Padre Island Building Division, ADHOC Committee
Implementation Schedule:	Within 12 months of plan adoption
Incorporation into Existing Plans:	Building Codes

COMMENTS:
Deferred action #7
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects communities and reduces risk of flooding.

	City of South Padre Island– Action #9
Proposed Action:	Implement education and awareness program on all hazards, mitigation measures, and sheltering measures against hazards. For example, utilize media such as SWIFT 911, social media, website, and preparation press releases.
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, Drought, Flood, Hail, Hurricane Wind, Lightning, Thunderstorm Wind, Tornado, Wildfire, Winter Storm, Coastal Erosion
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:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of South Padre Island Administration
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Emergency Response Plan

COMMENTS:
Deferred action #9, 10
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Promotes public safety.

	City of South Padre Island– Action #10
Proposed Action:	Adopt higher floodplain standards in local floodplain ordinance.
BACKGROUND INFORMATION	
Site and Location:	City-wide high-risk 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:	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
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of South Padre City Council, City of South Padre Island Administration
Implementation Schedule:	Within 48 months of plan adoption
Incorporation into Existing Plans:	Flood Damage Prevention Ordinance

COMMENTS:
Deferred action #13
NFIP & WHY MITIGATION ACTION IS APPROPRIATE:
Protects infrastructure, reduces cost of reparation and prevents injury to residents.

	City of South Padre Island– Action #11
Proposed Action:	Adopt an ordinance to restrict the use of public water resources for non-essential usage.
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)	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:	Reduce risk to new and existing structures and infrastructures
Priority (High, Moderate, Low):	Moderate
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of South Padre Island City Council, City of South Padre Island Administration, Laguna Madre Water District
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	Local Ordinance

COMMENTS:
Deferred action #14

City of South Padre Island– Action #12	
Proposed Action:	Education outreach program to educate residents on water conservation methods including adjusting sprinkler systems to water lawn and not sidewalks, turning water off during cleaning activities; checking for plumbing leaks or dripping faucets, and installing rain capturing devices for irrigation.
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
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:	$1,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of South Padre Island Administration, Laguna Madre Water District
Implementation Schedule:	Within 24 months of plan adoption
Incorporation into Existing Plans:	N/A

COMMENTS:
Deferred action #15

	City of South Padre Island– Action #13
Proposed Action:	Develop and implement dune restoration and beach renourishment in high-risk areas.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce erosion and impacts through restoration and renourishment
Type of Action: (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, 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):	Moderate
Estimated Cost:	$400,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of South Padre Island Public Works, Shoreline Management, USCE, FLO, Cameron County
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	Erosion Response Plan, Emergency Response Plan

COMMENTS:
Deferred action #20

City of South Padre Island– Action #14	
Proposed Action:	Encourage the use of fire-resistant materials for new construction.
BACKGROUND INFORMATION	
Site and Location:	City-wide
Risk Reduction Benefit (Current Cost/Losses Avoided)**:**	Reduce risk of damage to new 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:	Wildfire
Community Lifeline (Safety/Security, Health/Medical, Energy (Power/Fuel), Communication):	Safety/Security
Effect on new/existing buildings:	Reduce risk to new structures and infrastructures
Priority (High, Moderate, Low):	Low
Estimated Cost:	$5,000
Potential Funding Sources:	Local Funds, State and Federal Grants
Lead Agency/Department Responsible:	City of South Padre Island Parks and Recreation
Implementation Schedule:	Ongoing
Incorporation into Existing Plans:	International Fire Code

COMMENTS:
Deferred action #18

SECTION 20: PLAN MAINTENANCE

PLAN MAINTENANCE PROCEDURES

The following is an explanation of how the participating jurisdictions within Cameron 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 Cameron 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 Cameron 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 20: PLAN MAINTENANCE

Participating jurisdictions within Cameron 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 amendments in light of the approved Plan. The planning team will review all comprehensive land use plans, capital improvement plans, 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 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.

Cameron 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 20-1 identifies types of planning mechanisms and examples of methods for incorporating the Plan Update into other planning efforts. Table 20-1A identifies types of planning mechanisms and examples of methods for incorporating the Plan Update into other planning efforts for the additional participating jurisdictions. The team members, listed in Table 20-2 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. The team members for the additional participating jurisdictions, listed in Table 20-2A 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 20-1. Methods of Incorporation of the Plan

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
Annual Budget Review	Cameron County: EMC City of Harlingen: Assistant City Manager City of Palm Valley: Police Chief	Various departments and key personnel that participated in the planning process for participating jurisdictions within Cameron County will review the Plan and mitigation actions therein when conducting their

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
		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	Cameron County: EMC City of Harlingen: Assistant City Manager City of Palm Valley: Police Chief	Participating jurisdictions within Cameron County have a Capital Improvement Plan (CIP) in place. Prior to any revisions to the CIP, County and City 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	Cameron County: EMC City of Harlingen: Assistant City Manager City of Palm Valley: Police Chief	Participating jurisdictions within Cameron County have a Long-term Comprehensive Development Plan 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	Cameron County: Floodplain Manager City of Harlingen: Floodplain Manager City of Palm Valley: Floodplain Manager	Floodplain management plans include preventative and corrective actions to address the flood hazard. Therefore, the actions for flooding and information found in Section 5 of this Plan Update discussing the people and property at risk to flood will be reviewed and revised when participating jurisdictions within Cameron County update their management plans or develops new plans.
Grant Applications	Cameron County: EMC City of Harlingen: Assistant City Manager City of Palm Valley: Police Chief	The Plan will be evaluated by participating jurisdictions within Cameron County when grant funding is sought for mitigation projects. If a project is not in the Plan Update, an amendment may be necessary to include the action in the Plan.

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
Regulatory Plans	Cameron County: EMC City of Harlingen: Assistant City Manager City of Palm Valley: Police Chief	Currently, participating jurisdictions within Cameron 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 and City departments review or revise their current regulatory planning mechanisms, or in the development of regulatory plans that are not currently in place.

Table 20-1A. Methods of Incorporation of the Plan

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
Annual Budget Review	Town of Indian Lake: Chief of Police City of La Feria: Fire Chief Town of Laguna Vista: City Manager City of Los Fresnos: EMC City of Port Isabel: Fire Marshal City of Primera: EMC Town of Rancho Viejo: Town Administrator City of Rio Hondo: City Administrator City of San Benito: Court Administrator City of Santa Rosa: City Administrator City of South Padre Island: Fire Chief	Various departments and key personnel that participated in the planning process for participating jurisdictions within Cameron County, along with additional participating jurisdictions, 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	Town of Indian Lake: Chief of Police City of La Feria: Fire Chief Town of Laguna Vista: City Manager City of Los Fresnos: EMC City of Port Isabel: Fire Marshal City of Primera: EMC	Participating jurisdictions within Cameron County, along with additional participating jurisdictions, have a Capital Improvement Plan (CIP) in place. Prior to any revisions to the CIP, County and City departments will review the risk assessment and mitigation strategy sections of the HMAP, as limiting public spending in

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
	Town of Rancho Viejo: Town Administrator City of Rio Hondo: City Administrator City of San Benito: Court Administrator City of Santa Rosa: City Administrator City of South Padre Island: Fire Chief	hazardous zones is one of the most effective long-term mitigation actions available to local governments.
Comprehensive Plans	Town of Indian Lake: Chief of Police City of La Feria: Fire Chief Town of Laguna Vista: City Manager City of Los Fresnos: EMC City of Port Isabel: Fire Marshal Town of Rancho Viejo: Town Administrator City of Rio Hondo: City Administrator City of San Benito: Court Administrator City of Santa Rosa: City Administrator City of South Padre Island: Fire Chief	Participating jurisdictions within Cameron County, along with additional participating jurisdictions, have a Long-term Comprehensive Development Plan 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	Town of Indian Lake: Floodplain Administrator City of La Feria: Floodplain Administrator Town of Laguna Vista: Floodplain Administrator City of Los Fresnos: Floodplain Administrator City of Port Isabel: Floodplain Administrator City of Primera: Floodplain Administrator Town of Rancho Viejo: Floodplain Administrator City of Rio Hondo: 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 5 of this Plan Update discussing the people and property at risk to flood will be reviewed and revised when participating jurisdictions within Cameron County, along with additional participating jurisdictions, update their management plans or develops new plans.

PLANNING MECHANISM	DEPARTMENT / TITLE RESPONSIBLE	INCORPORATION OF PLAN
	City of San Benito: Floodplain Administrator City of Santa Rosa: Floodplain Administrator City of South Padre Island: Floodplain Administrator	
Grant Applications	Town of Indian Lake: Chief of Police City of La Feria: Fire Chief Town of Laguna Vista: City Manager City of Los Fresnos: EMC City of Port Isabel: Fire Marshal City of Primera: EMC Town of Rancho Viejo: Town Administrator City of Rio Hondo: City Administrator City of San Benito: Court Administrator City of Santa Rosa: City Administrator City of South Padre Island: Fire Chief	The Plan will be evaluated by participating jurisdictions within Cameron County, along with additional participating jurisdictions, when grant funding is sought for mitigation projects. If a project is not in the Plan Update, an amendment may be necessary to include the action in the Plan.
Regulatory Plans	Town of Indian Lake: Chief of Police City of La Feria: Fire Chief Town of Laguna Vista: City Manager City of Los Fresnos: EMC City of Port Isabel: Fire Marshal City of Primera: EMC Town of Rancho Viejo: Town Administrator City of Rio Hondo: City Administrator City of San Benito: Court Administrator City of Santa Rosa: City Administrator City of South Padre Island: Fire Chief	Currently, participating jurisdictions within Cameron County, along with additional participating jurisdictions, 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 and City departments review or revise their current regulatory planning mechanisms, or in the 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 20-2 indicates the department and title of the party responsible for Plan monitoring, evaluating, updating, and review of the Plan. Table 20-2A indicates the department and title of the party responsible from the additional participating jurisdictions for Plan monitoring, evaluating, updating, and review of the Plan.

Table 20-2. Team Members Responsible for Plan Monitoring, Evaluating, Updating, and Review of the Plan

JURISDICTION	TITLE
Cameron County	EMC
Cameron County	Fire Marshal
Cameron County	Planner
City of Harlingen	Assistant City Manager
City of Palm Valley	Police Chief

Table 20-2A. Additional Participating Jurisdictions Team Members Responsible for Plan Monitoring, Evaluating, Updating, and Review of the Plan

JURISDICTION	TITLE
Town of Indian Lake	Chief of Police
City of La Feria	Fire Chief
Town of Laguna Vista	Interim City Manager
City of Los Fresnos	Chief of Police / EMC
City of Port Isabel	Fire Marshal
City of Primera	EMC
Town of Rancho Viejo	Town Administrator
City of Rio Hondo	City Administrator
City of San Benito	Court Administrator
City of Santa Rosa	City Administrator
City of South Padre Island	Fire Chief

SECTION 20: PLAN MAINTENANCE

MONITORING

Designated Planning Team members are responsible for monitoring, evaluating, updating, and reviewing the Plan, as shown in Table 20-2 and in Table 20-2A. Individuals holding the title listed in Table 20-2 and in Table 20-2A 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 and City and Town 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 AMENDMENTS

At any time, minor technical changes may be made to update the Cameron County Hazard Mitigation Action Plan Update 2021. 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.

The participating jurisdictions within Cameron County will review proposed amendments and vote to accept, reject, or amend the proposed change. Upon ratification, the amendment will be transmitted to TDEM.

In determining whether to recommend approval or denial of a Plan amendment 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 Cameron 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) along with the Additional Participating Jurisdictions Executive Planning Team and the Additional Participating Jurisdictions Advisory Planning Team (Section 2, Tables 2-1A and 2-2A) 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 amendment process outlined herein. Upon completion of the review, update, and amendment 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: PLANNING TEAM

PLANNING TEAM MEMBERS

The Cameron County Hazard Mitigation Action Plan 2021 was organized using a direct representative model. An Executive Planning Team from the participating jurisdictions, shown in Table A-1, was formed to coordinate planning efforts and request input and participation in the planning process. Shown in Table A-1A, is the Executive Planning Team for the additional participating jurisdictions in Cameron County that participated in the amended Cameron County Hazard Mitigation Action Plan Update 2021. Table A-2 reflects the Advisory Planning Team, consisting of area organizations and departments that participated throughout the planning process. Table A-2A, reflects the Advisory Planning Team for the additional participating jurisdictions in Cameron County that participated in the amended Cameron County Hazard Mitigation Action Plan Update 2021. Table A-3 is comprised of stakeholders who were invited to provide Plan input. Public outreach efforts and meeting documentation is provided in Appendix E. Table A-3A reflects a list of stakeholders who were invited to provide Plan input in the amended Cameron County Hazard Mitigation Action Plan Update 2021 and public outreach efforts and meeting documentation is provided in Appendix E.

Table A-1. Executive Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Cameron County	EMC
Cameron County	Fire Marshal
Cameron County	Planner
City of Harlingen	Assistant City Manager
City of Palm Valley	Police Chief

Table A-1A. Additional Participating Jurisdictions Executive Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Town of Indian Lake	Chief of Police
City of La Feria	Fire Chief
Town of Laguna Vista	Interim City Manager
City of Los Fresnos	Chief of Police / Emergency Management Coordinator
City of Port Isabel	Fire Marshal

APPENDIX A: PLANNING TEAM

ORGANIZATION / DEPARTMENT	TITLE
City of Primera	Emergency Management Coordinator
Town of Rancho Viejo	Town Administrator
City of Rio Hondo	City Administrator
City of San Benito	Court Administrator
City of Santa Rosa	City Administrator
City of South Padre Island	Fire Chief

Table A-2. Advisory Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Cameron County	Deputy Fire Marshal
Cameron County	Assistant Deputy Fire Marshal
Cameron County	County Judge
Cameron County	County Administrator
Cameron County	County Engineer
Cameron County	Assistant Engineer
Cameron County	Public Relations Officer
Cameron County	Administrative Assistant Pct. 2
Cameron County	County Commissioner Pct. 4
Cameron County	Administrative Assistant Pct. 4
Cameron County	Building Official
Cameron County	Cartographer
Cameron County	Bridge Manager
Cameron County	Parks Director
Cameron County	Deputy Parks Director
Cameron County	Public Works Superintendent
Cameron County	Foreman Pct. 4
Cameron County	Planning Director

APPENDIX A: PLANNING TEAM

ORGANIZATION / DEPARTMENT	TITLE
Cameron County	Natural Resources Coordinator
City of Harlingen	City Manager
City of Harlingen	Executive Administrative Assistant
City of Harlingen	City Engineer
City of Harlingen	Special Projects Director
City of Harlingen	Media Contact
City of Harlingen	Fire Chief
City of Harlingen	Chief of Police
City of Harlingen	Assistant Chief of Police
City of Harlingen	Police Commander
City of Harlingen	Police Commander
City of Harlingen	Deputy Chief of Police
City of Harlingen	Public Works Director
City of Harlingen	Water Works - System Engineer
City of Harlingen	Assistant City Manager
City of Harlingen	Assistant City Engineer
City of Harlingen	Accreditation
City of Harlingen	Assistant Fire Chief
City of Harlingen	Planning Director
City of Palm Valley	Mayor
City of Palm Valley	Public Works Director
City of Palm Valley	City Secretary

Table A-2A. Additional Participating Jurisdictions Advisory Planning Team

ORGANIZATION / DEPARTMENT	TITLE
Town of Indian Lake	City Secretary
Town of Indian Lake	Mayor
City of La Feria	City Manager

APPENDIX A: PLANNING TEAM

ORGANIZATION / DEPARTMENT	TITLE
Town of Laguna Vista	Chief of Police / Emergency Management Coordinator
Town of Laguna Vista	Mayor
City of Los Fresnos	City Manager
City of Port Isabel	City Manager / Emergency Management Coordinator
City of Primera	City Manager
City of Primera	Mayor
Town of Rancho Viejo	Chief of Police
City of Rio Hondo	Director of Public Safety
City of San Benito	Interim City Manager
City of South Padre Island	Assistant Director of Public Works
City of South Padre Island	Chief of Police
City of South Padre Island	City Manager
City of South Padre Island	City Secretary
City of South Padre Island	Director of Operations
City of South Padre Island	Director of Public Works
City of South Padre Island	Emergency Management Coordinator / Fire Marshal
City of South Padre Island	Management Assistant
City of South Padre Island	Operations Captain
City of South Padre Island	Shoreline Director

STAKEHOLDERS

The following groups listed in Table A-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 A-3A represents a list of organizations invited to stakeholder meetings, public meetings, and workshops throughout the 2021 Amended Cameron County planning process.

[1] Information contained in Appendix E is exempt from public release under the Freedom of Information Act (FOIA).

Table A-3. Stakeholders

AGENCY	TITLE
Arroyo City – Volunteer Fire Department	Public Information Officer
Brownsville ISD	Superintendent
Cameron County Drainage District #1	Chief of Operations
Cameron County Drainage District #3 & Irrigation #2	Manager
City of Brownsville	EMC
City of Brownsville	EM Planner
East Rio Hondo Water Supply	President of the Board
EPA	Border Office
La Feria Irrigation District #3	District Manager
Los Fresnos ISD	Superintendent
Rio Hondo ISD	Superintendent
San Benito ISD	Superintendent
San Benito ISD	Student Services
SWG Engineering	Project Engineer
TAMU	Planning Specialist, Texas Sea Grant
TAMU	County Extension Agent
Texas Legislators	Representative
Texas Legislators	Representative
Texas Legislators	Representative
Texas Legislators	Senator
Valley Baptist Medical Center	Nurse Director
Valley International Airport	Police Chief
Valley International Airport	Assistant Airport Director

Table A-3A. Additional Participating Jurisdictions Stakeholders

AGENCY	TITLE
American Red Cross	Executive Director
Brownsville Emergency Management	Emergency Management Coordinator
Brownsville Emergency Management	Superintendents
Cameron County Drainage District #1	Chief of Operations / General Manager
Capital Area Council of Governments	Director of Regional Planning
Capital Area Council of Governments	Regional Service Program Specialist
Department of Homeland Security	General Representative
Environmental Protection Agency, Region 6	Regional Administrator
Government Capital Corporation	Vice President
Hidalgo County	Deputy Emergency Management Coordinator
La Feria Chamber of Commerce	President
La Feria Economic Development Corporation (LFEC)	Executive Director
La Feria Independent School District	Assistant Superintendent of Support Services
La Feria Independent School District	Board President
La Feria Independent School District	Board Secretary
La Feria Independent School District	Board Vice President
La Feria Independent School District	Principals of Elementary Schools
La Feria Independent School District	Principal of High School
La Feria Independent School District	Principal of Junior High School
La Feria Independent School District	Principal of La Feria Academy
La Feria Independent School District	School Board Members
La Feria Independent School District	Superintendent
La Feria Irrigation District #3	District Manager
Local Ministries	Pastors
Local Ministries	Reverend
Los Fresnos ISD	ISD Representative

APPENDIX A: PLANNING TEAM

AGENCY	TITLE
Lower Rio Grande Valley Development Council	District Coordinator
NOAA	Chief of Policy, Planning, & Communications
Rio Grande Valley	Director
South Texas Collaborative for Housing Development, Inc (STCHD)	Director of Operations
South Texas Collaborative for Housing Development, Inc (STCHD)	Executive Director
South Texas Emerging Market Development Fund (STEMDF)	Administrative Assistant
South Texas Emerging Market Development Fund (STEMDF)	Executive Director
South Texas Emerging Market Development Fund (STEMDF)	Vice President
SWG Engineering	Project Engineer
SWG Engineering	Vice President
Telemudo 40 News	Assignment Desk Editor
Texas A&M Agrilife Extension	District 12 Representative
Texas Commission on Environmental Quality	Executive Assistant
Texas Commission on Environmental Quality	Regional Director
Texas Department of Transportation	District Engineer
Texas Division of Emergency Management	District Coordinator
Texas Forest Service	Regional Fire Coordinator
Texas Legislator	District 35 Representative
Texas Legislator	District 37 Representative
Texas Legislator	District 38 Representative
Texas Parks and Wildlife	Park Superintendent
Texas Senate	District 27 Senator
Texas Water Board	Outreach Specialist
Texas Windstorm Associations	General Representative
U.S. Army Corps of Engineers	Southwest Division Representative

APPENDIX A: PLANNING TEAM

AGENCY	TITLE
U.S. Fish and Wildlife	Regional Outreach Coordinator
Valley International Airport	Assistant Airport Director
Valley International Airport	Police Chief
Willacy County	Emergency Management Coordinator

APPENDIX B: PUBLIC SURVEY RESULTS

OVERVIEW

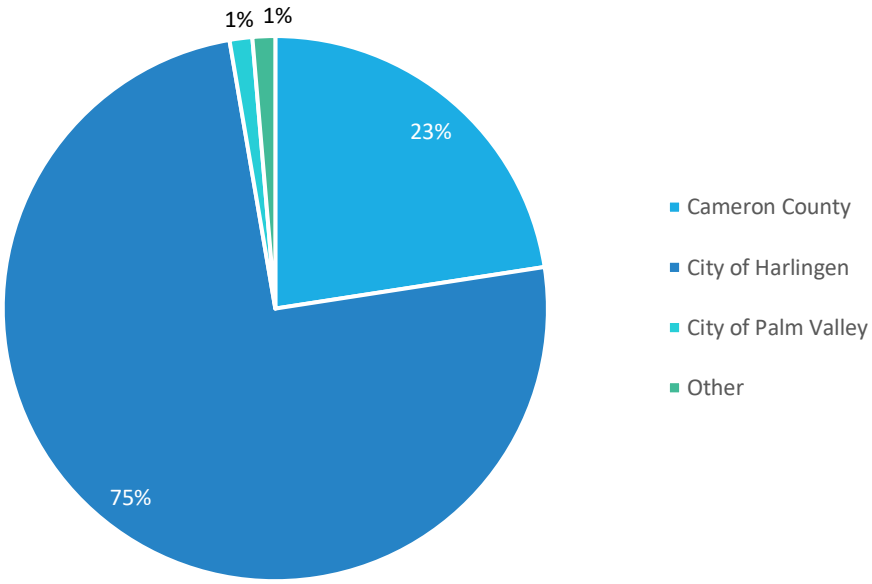
Cameron County prepared a public survey that requested public opinion on a wide range of questions relating to natural hazards. The survey was made available via the County's websites, along with participating jurisdictions. This survey link was also distributed at public meetings and stakeholder events throughout the planning process. The participating jurisdictions within the amended Cameron County Plan prepared a secondary survey that requested public option on the same questions relating to natural hazards.

A total of 297 surveys were collected, the results of which are analyzed in Appendix B. A total of 33 secondary survey responses were collected, and additional results are reflected here as secondary graphs titled as the corresponding question number #-A. 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.

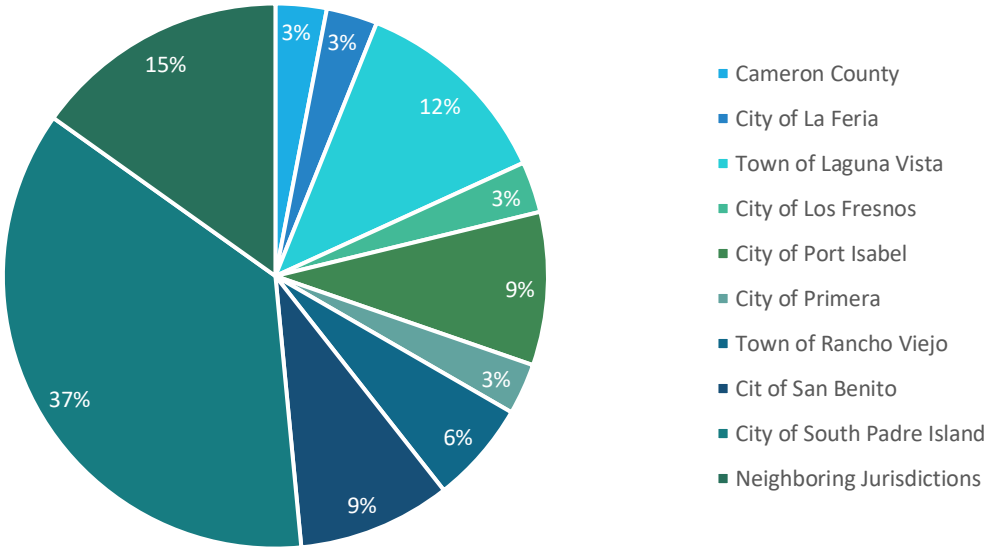
The following survey results depict the percentage of responses for each answer. Similar responses have been summarized for questions that did not provide a multiple-choice answer or that required an explanation.

PUBLIC SURVEY RESULTS

1. Please state the jurisdiction (city or community) where you reside.[1]

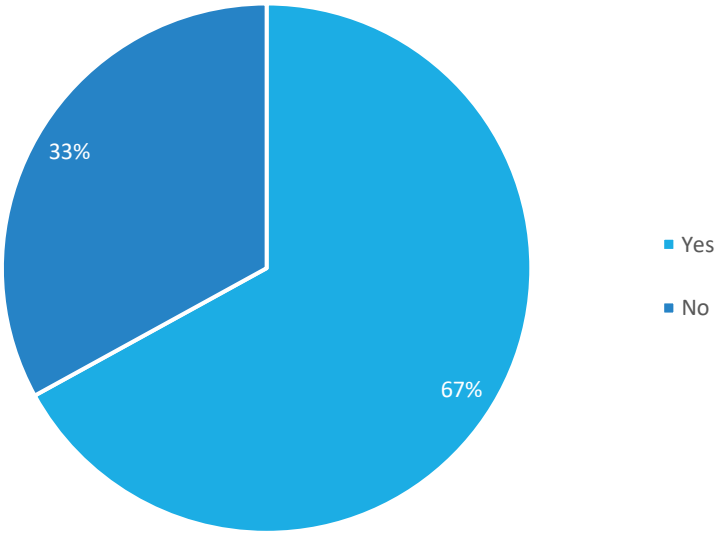


1A. Please state the jurisdiction (city or community) where you reside.

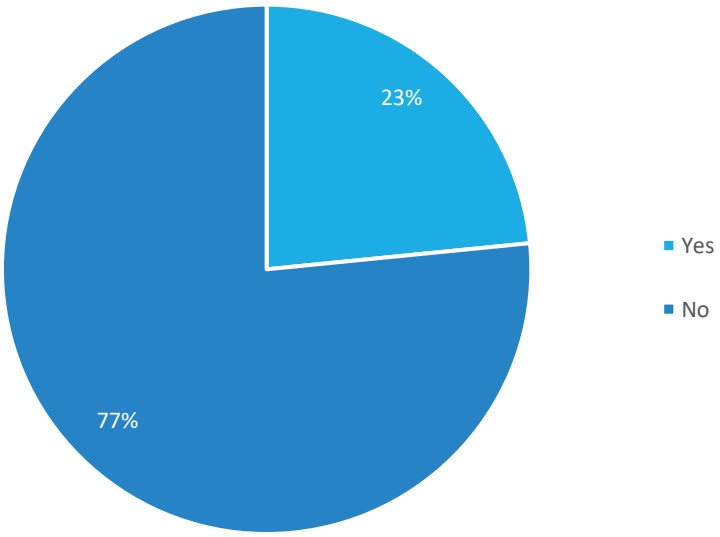


[1] Some respondents were in neighboring counties, however due to their proximity to Cameron County, their responses were included in the survey results.

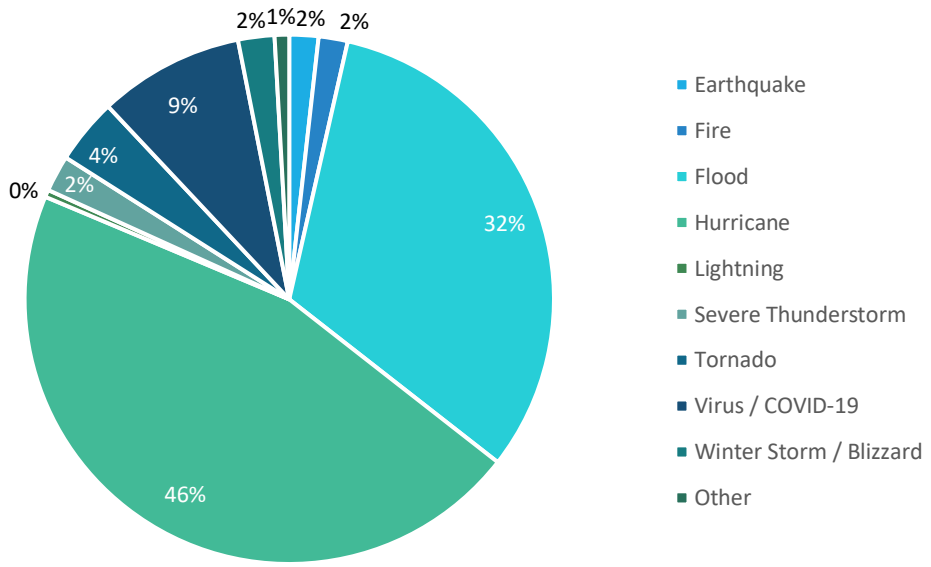
2. Have you ever experienced or been impacted by a disaster?



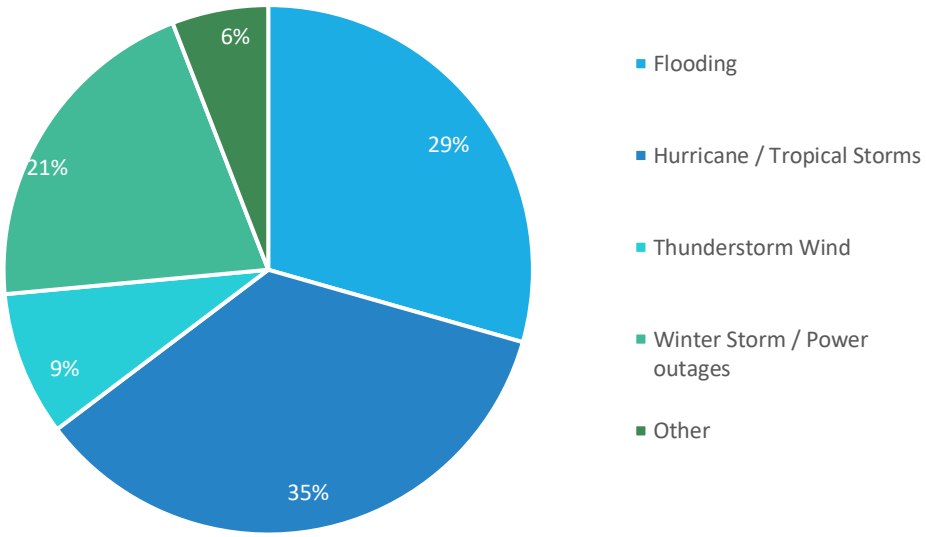
2A. Have you ever experienced or been impacted by a disaster?



3. If you answered “Yes” to Question #2, please explain.[2]

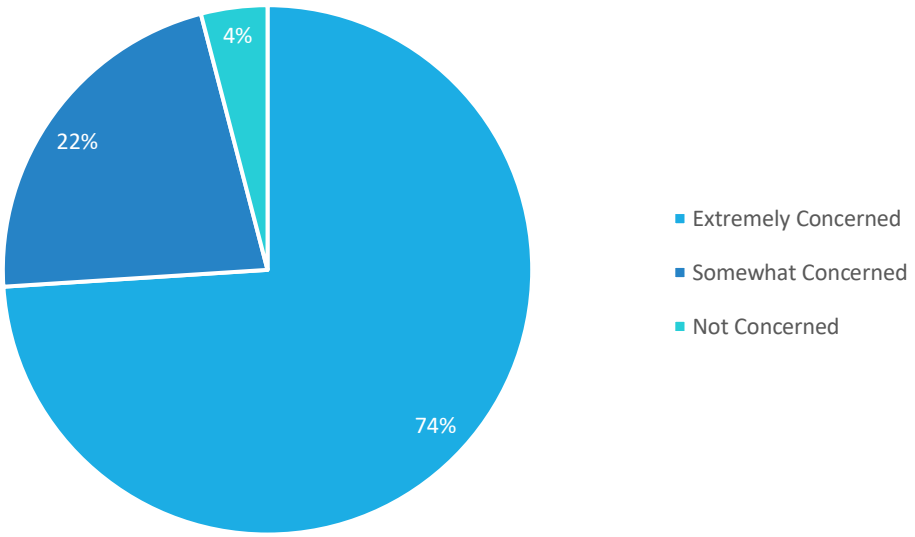


3A. If you answered “Yes” to Question #2, please explain.

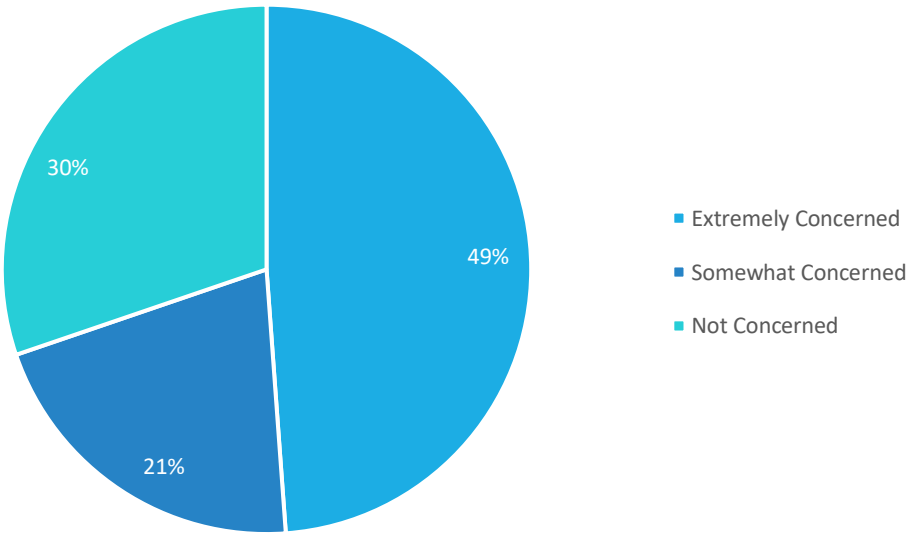


[2] Those who experienced Earthquakes were not living within the Planning Area when they were impacted by them.

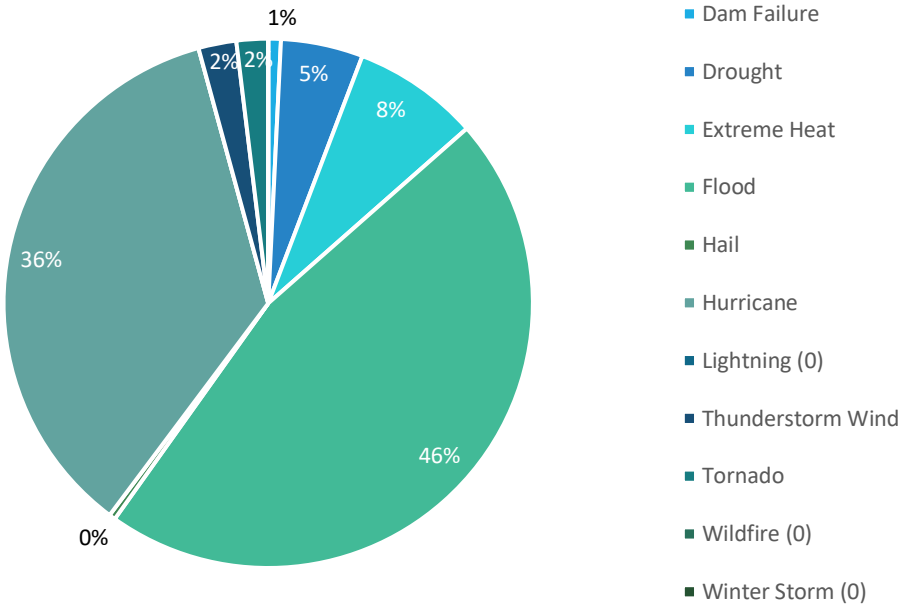
4. How concerned are you about the possibility of your community being impacted by a disaster?



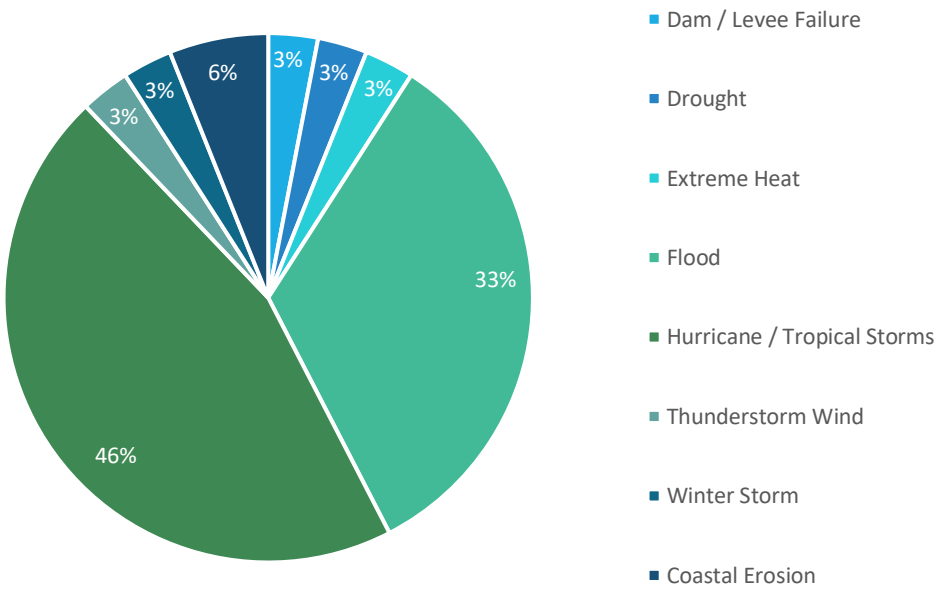
4A. How concerned are you about the possibility of your community being impacted by a disaster?



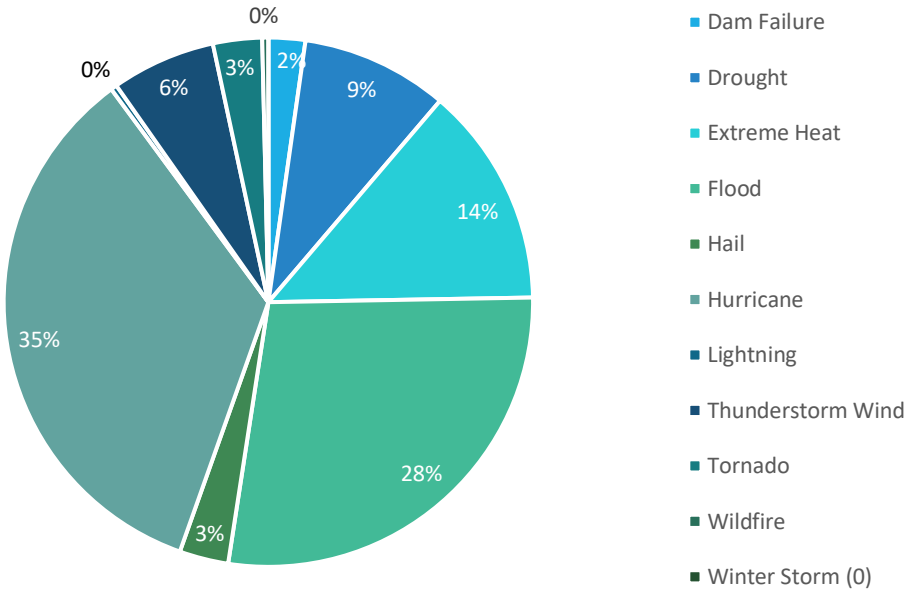
5. Please select the one hazard you think is the highest threat to your neighborhood:



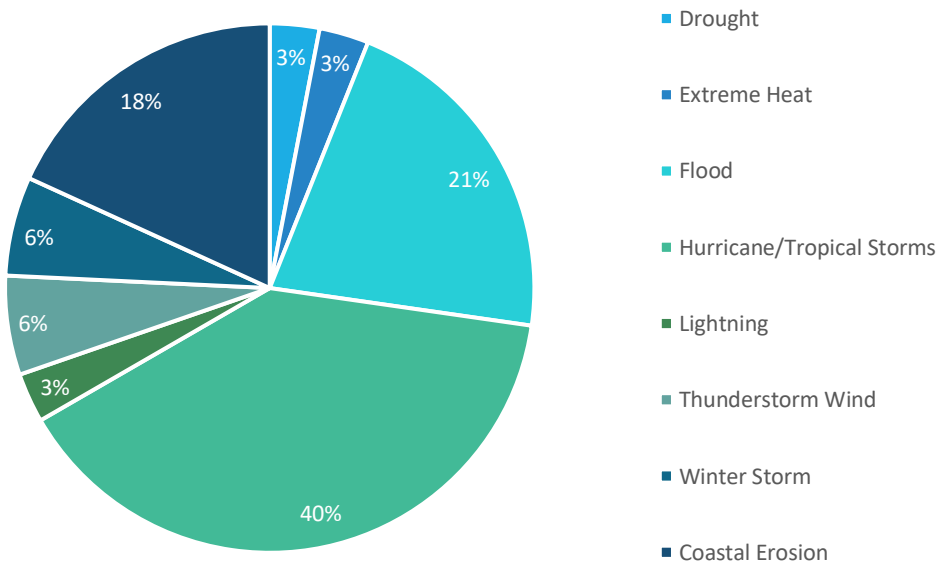
5A. Please select the one hazard you think is the highest threat to your neighborhood:



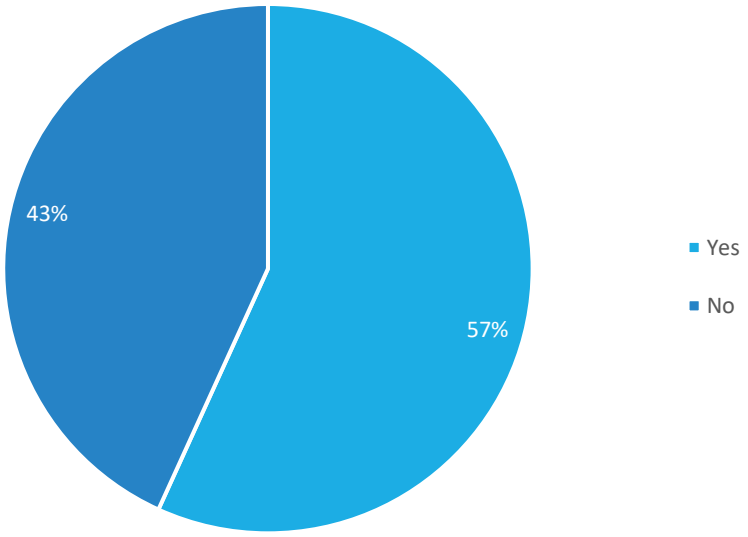
6. Please select the one hazard you think is the second highest threat to your neighborhood:



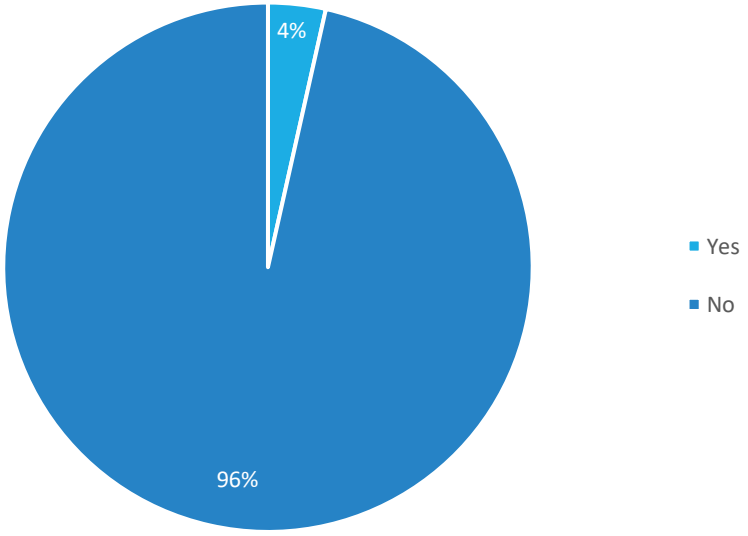
6A. Please select the one hazard you think is the second highest threat to your neighborhood:



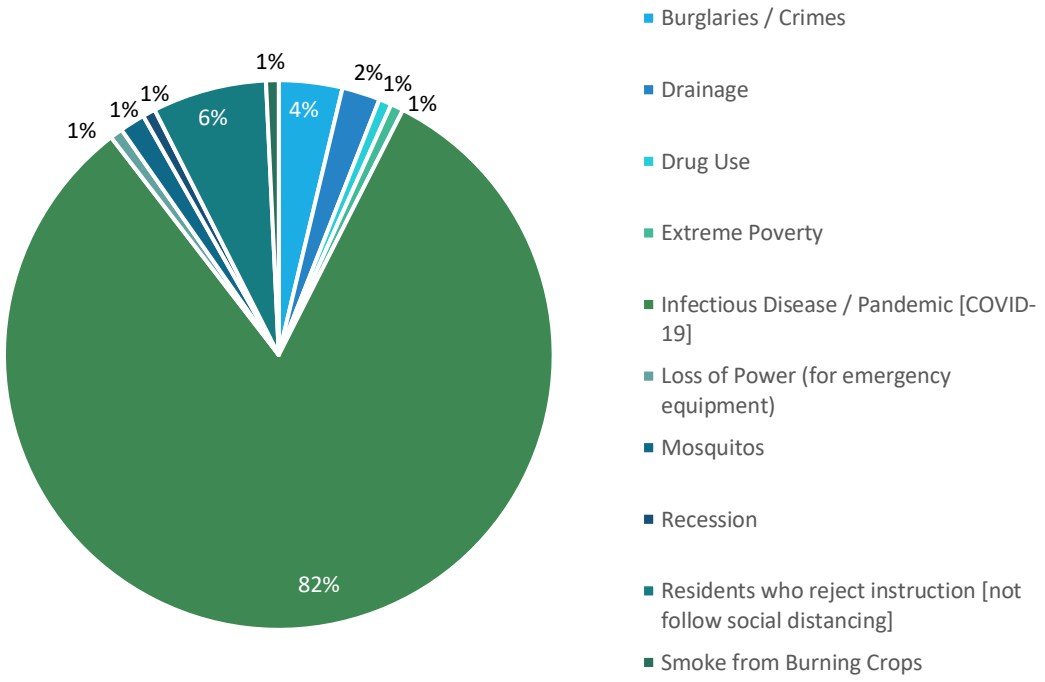
7. Is there another hazard not listed above that you this is a wide-scale threat to your neighborhood?



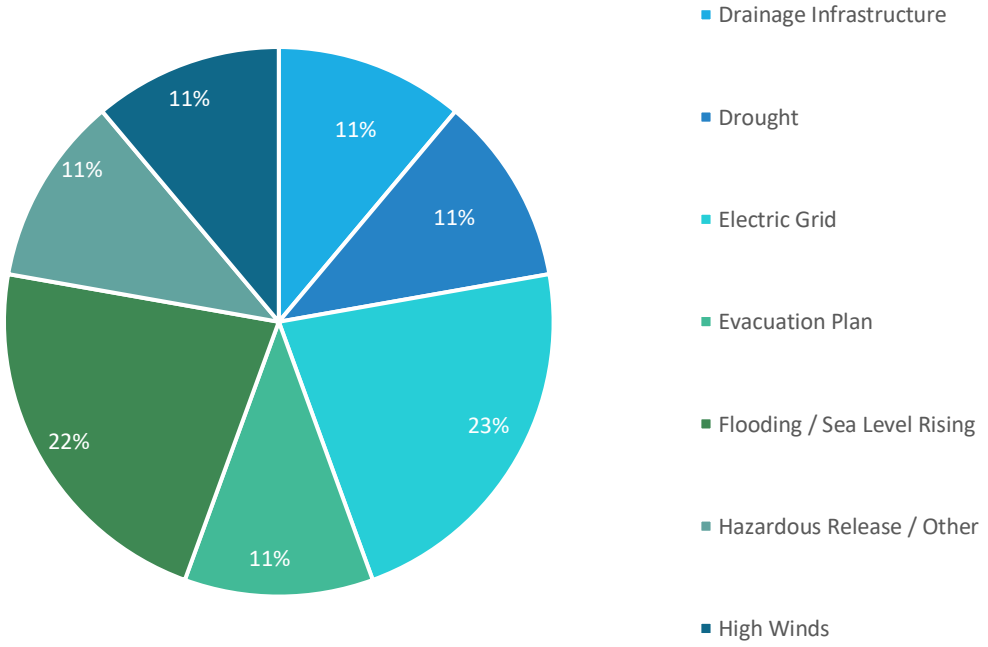
7A. Is there another hazard not listed above that you this is a wide-scale threat to your neighborhood?



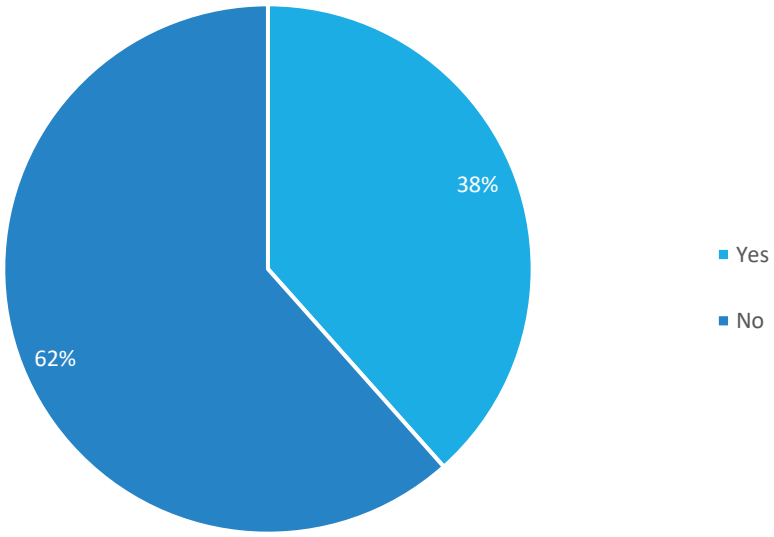
8. If you answered “Yes” to Question #7, please explain.



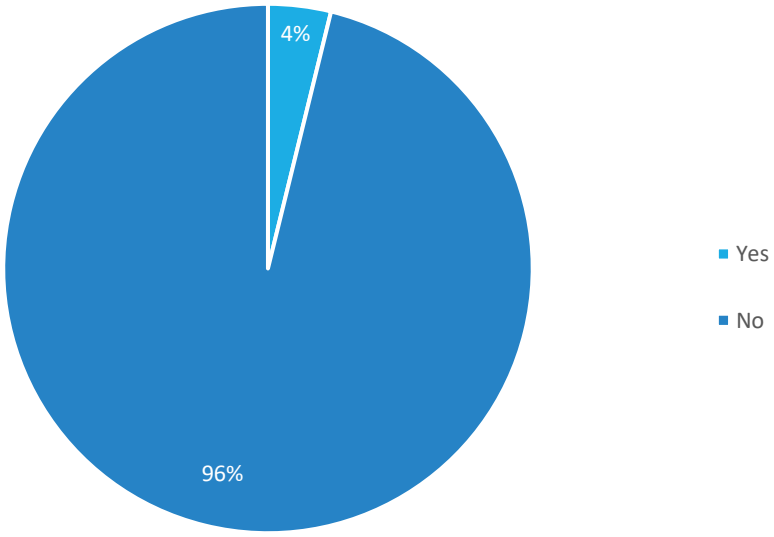
8A. If you answered “Yes” to Question #7, please explain.



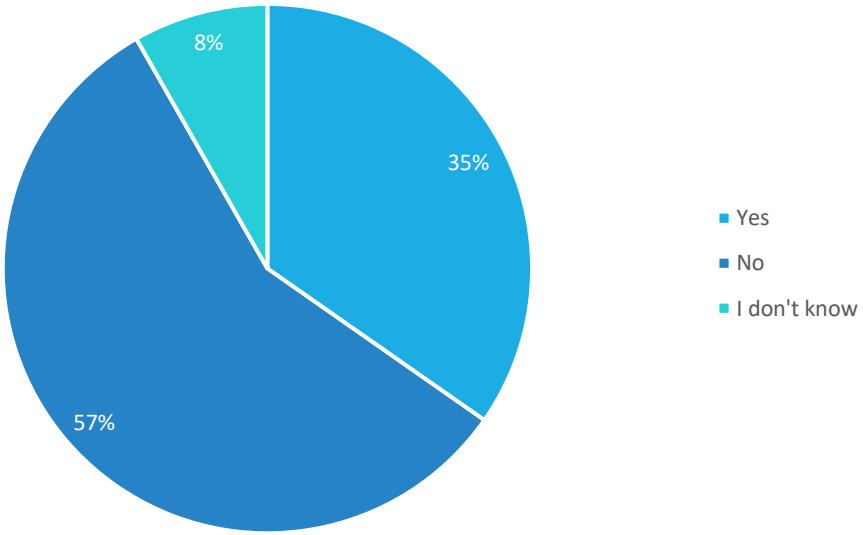
9. Is your home located in a floodplain?



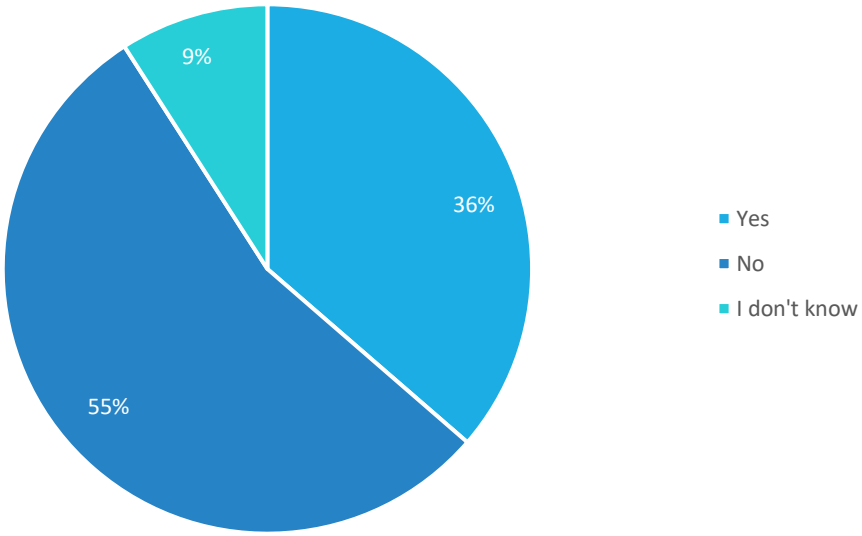
9A. Is your home located in a floodplain?



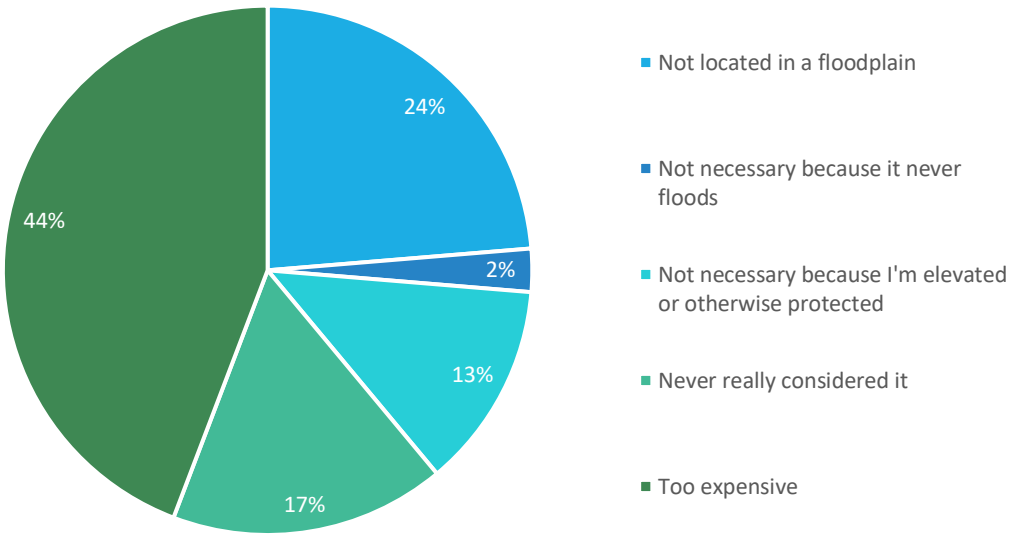
10. Do you have flood insurance?



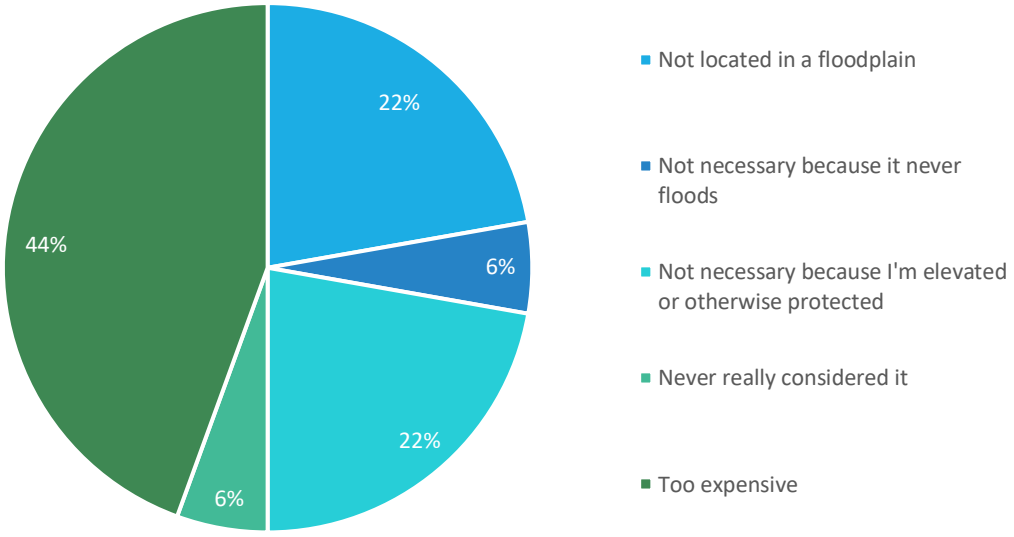
10A. Do you have flood insurance?



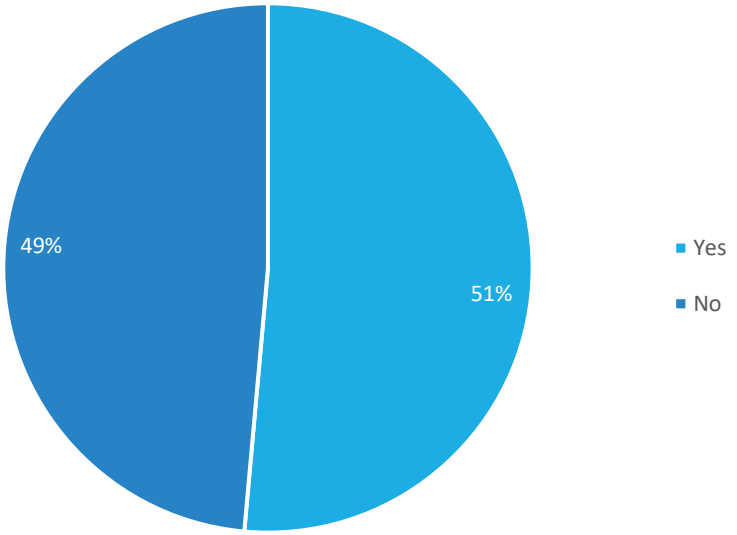
11. If you do not have flood insurance, why not?



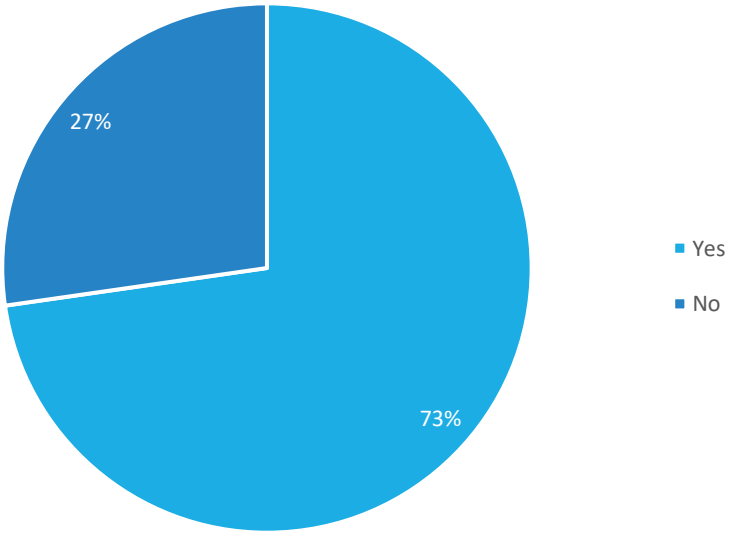
11A. If you do not have flood insurance, why not?



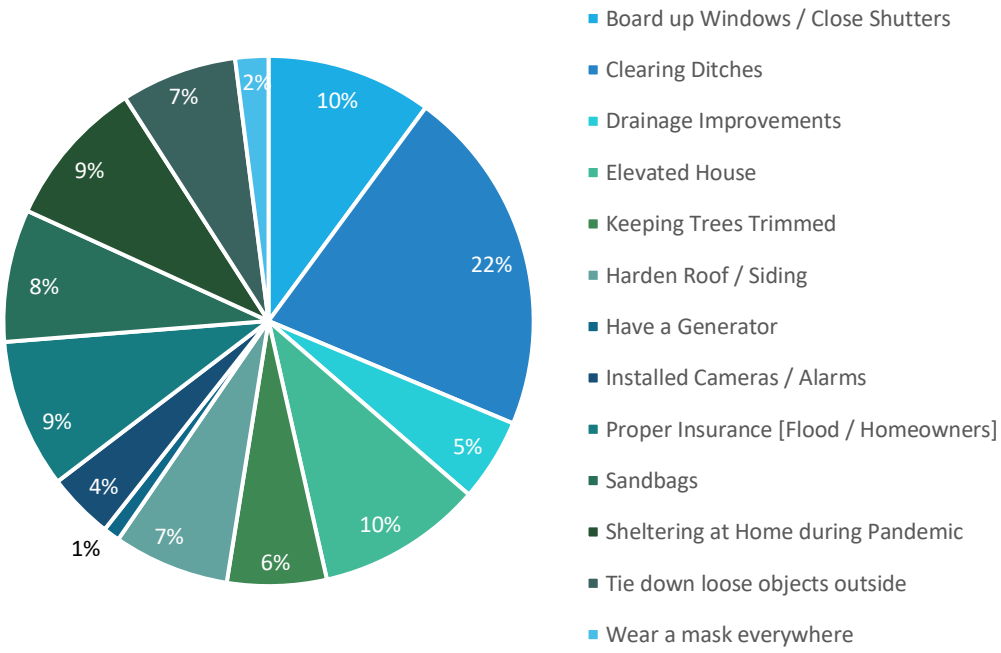
12. Have you taken any actions to make your home or neighborhood more resistant to hazards?



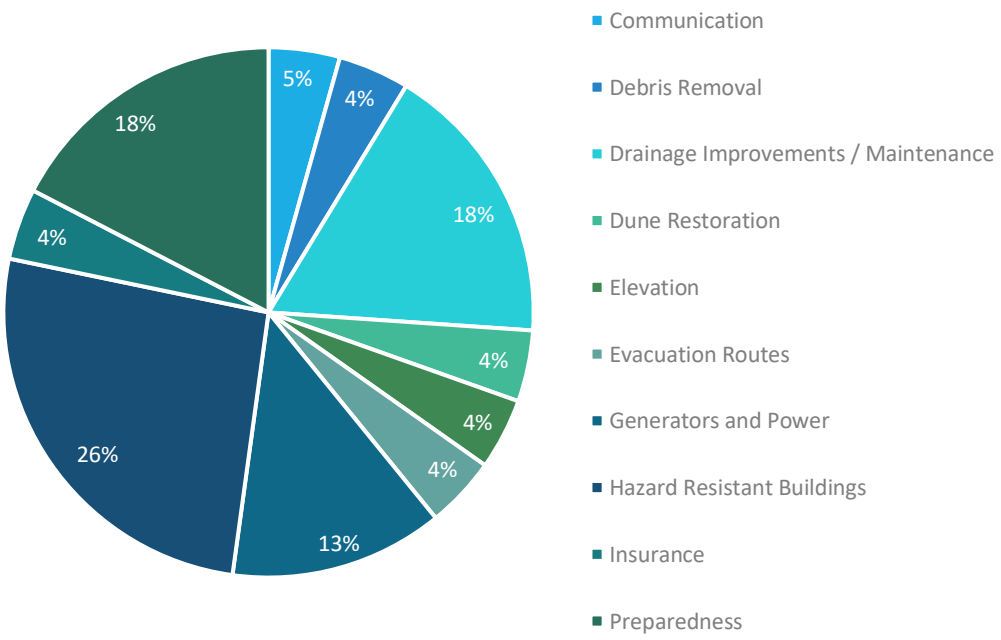
12A. Have you taken any actions to make your home or neighborhood more resistant to hazards?



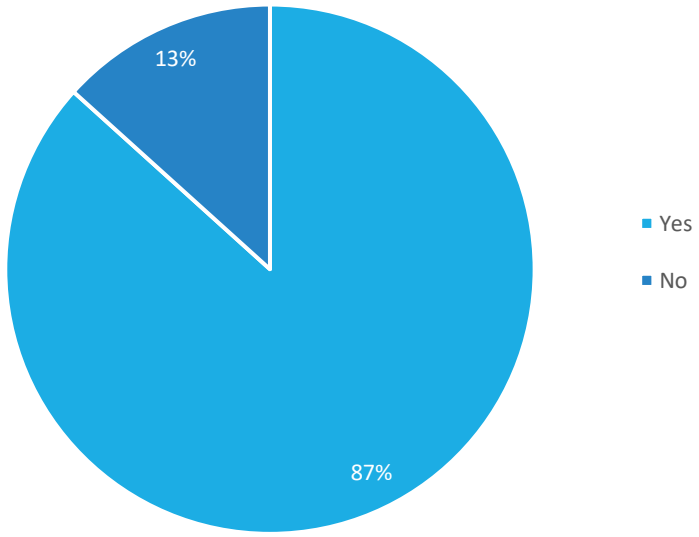
13. If you answered “Yes” to Question #12, please explain.



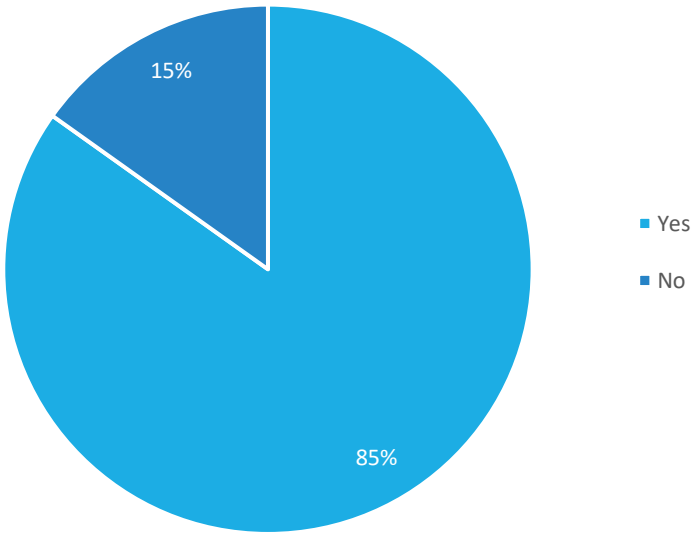
13A. If you answered “Yes” to Question #12, please explain.



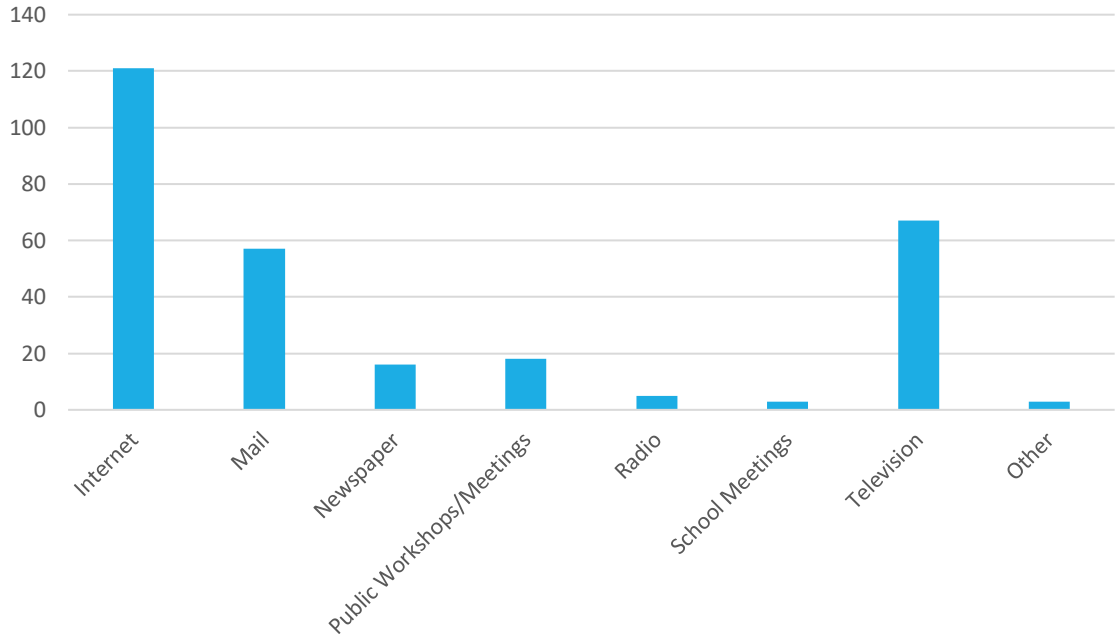
14. Are you interested in making your home or neighborhood more resistant to hazards?



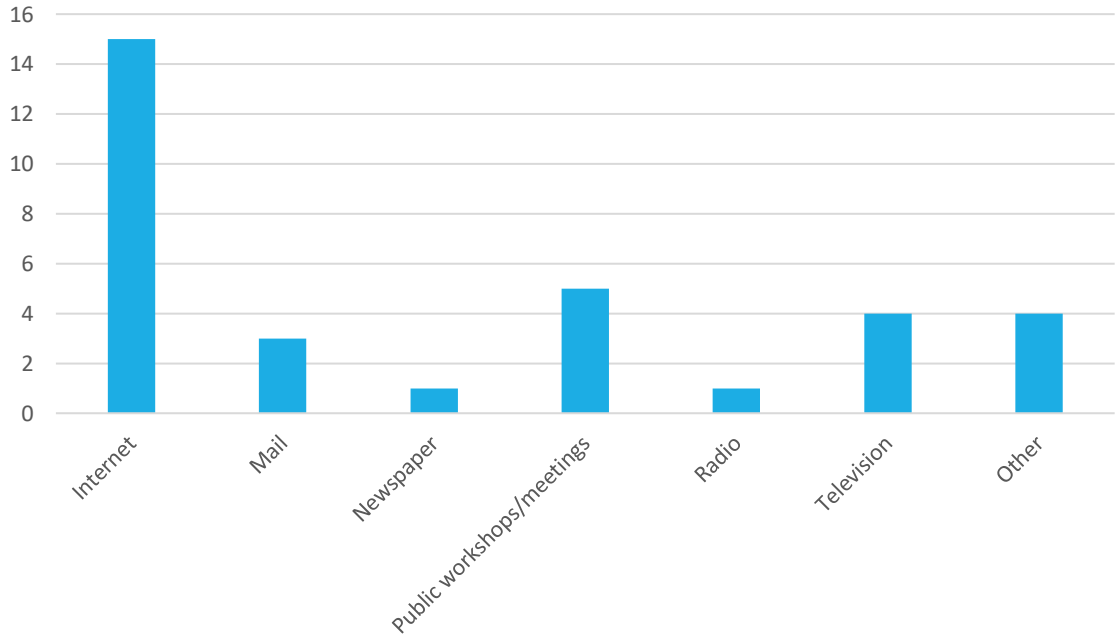
14A. Are you interested in making your home or neighborhood more resistant to hazards?



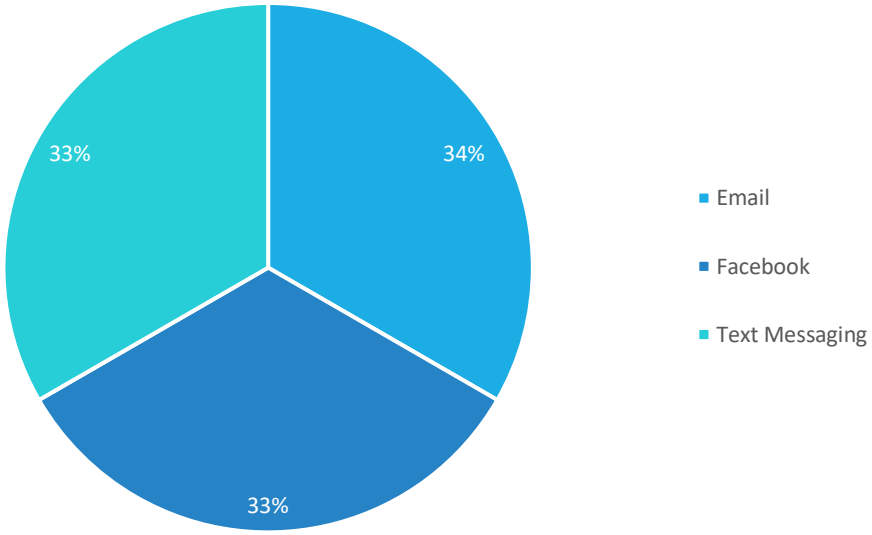
15. What is the most effective way for you to receive information about how to make your home and neighborhood more resistant to hazards?



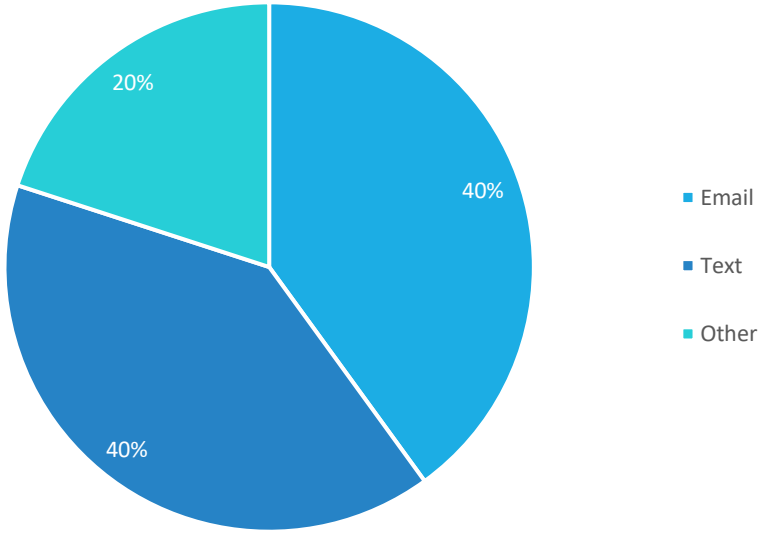
15A. What is the most effective way for you to receive information about how to make your home and neighborhood more resistant to hazards?



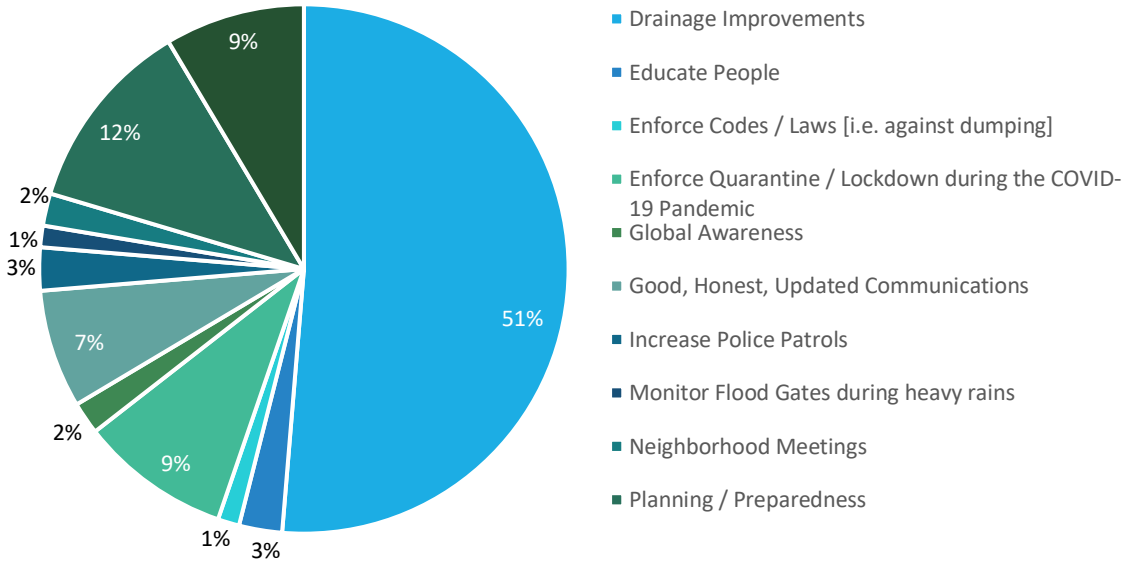
16. If you answered “Other” to Question #15, please explain.



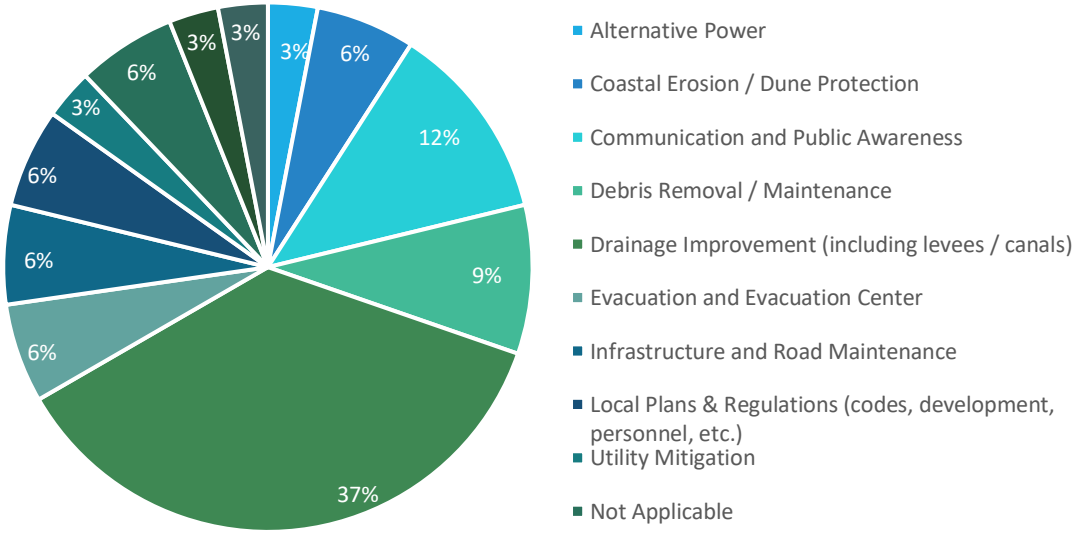
16A. If you answered “Other” to Question #15, please explain.



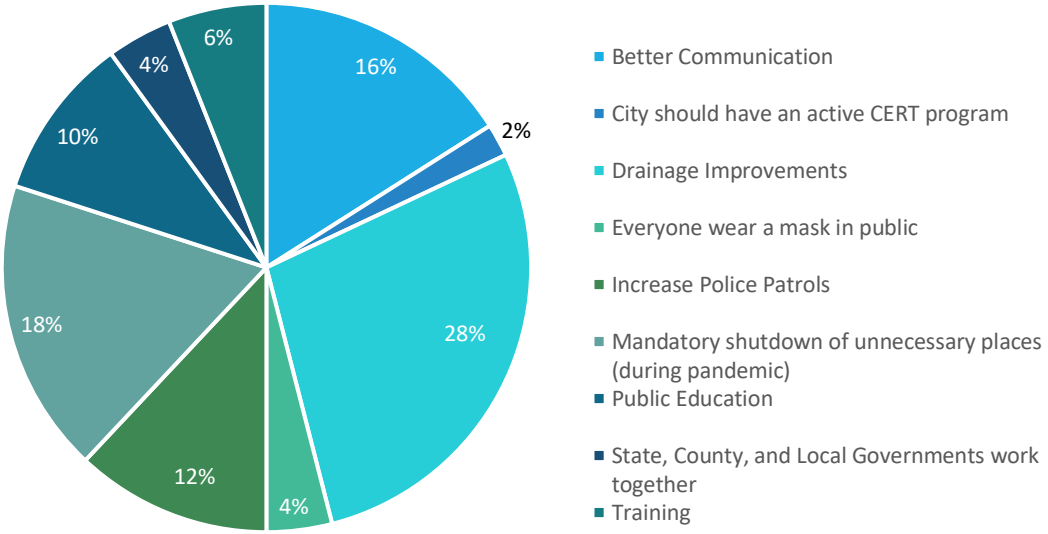
17. In your opinion, what are some steps your local government could take to reduce or eliminate the risk of future hazard damages in your neighborhood?



17A. 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?



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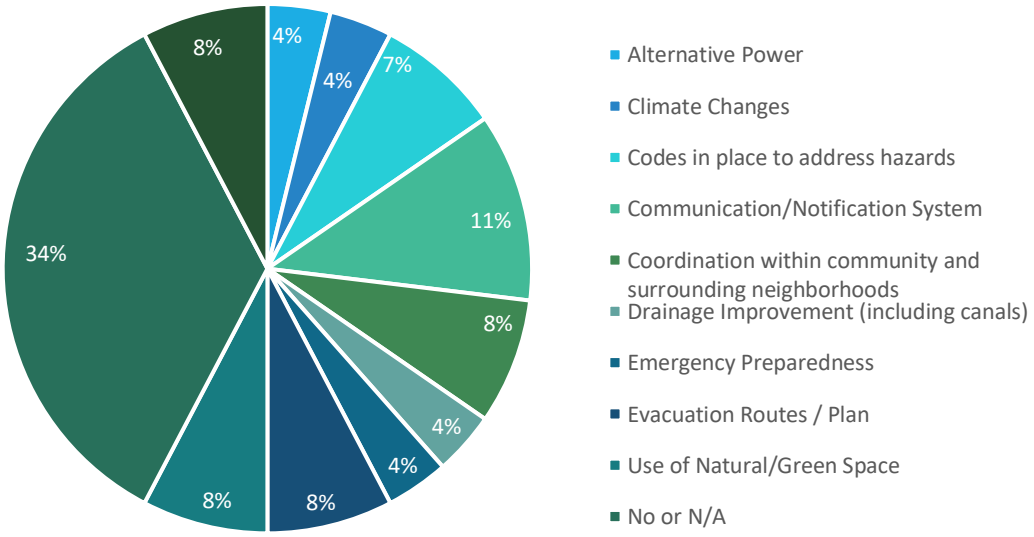
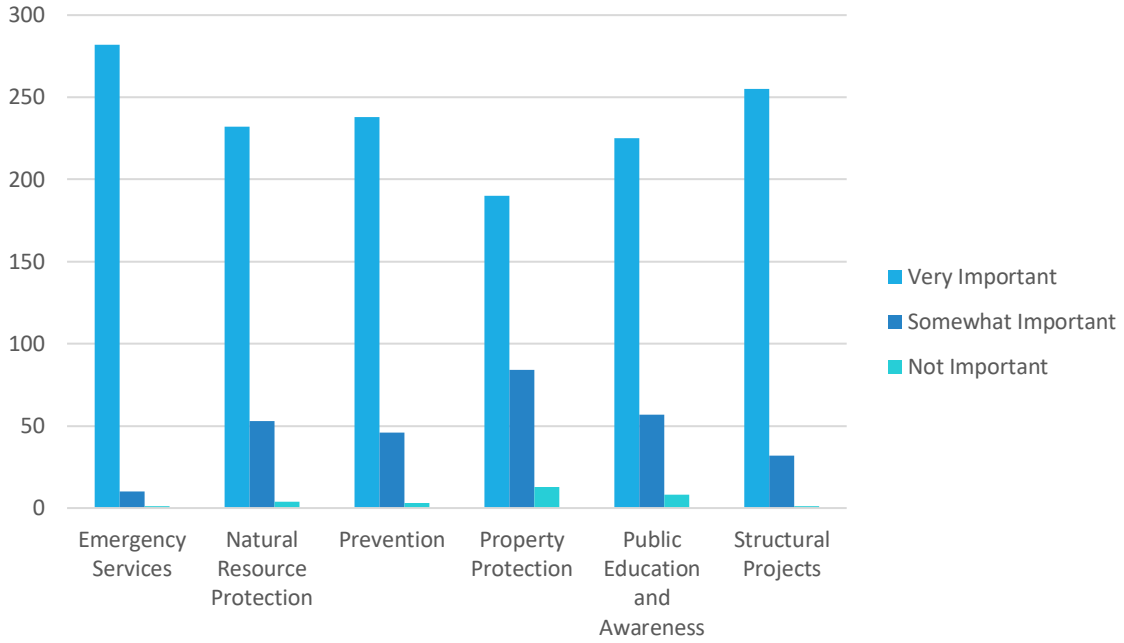


19. A number of community-wide activities can reduce our risk from hazards. In general, these activities fall into one of the following six broad categories. Please tell us how important you think each one is for your community to consider pursuing.



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.

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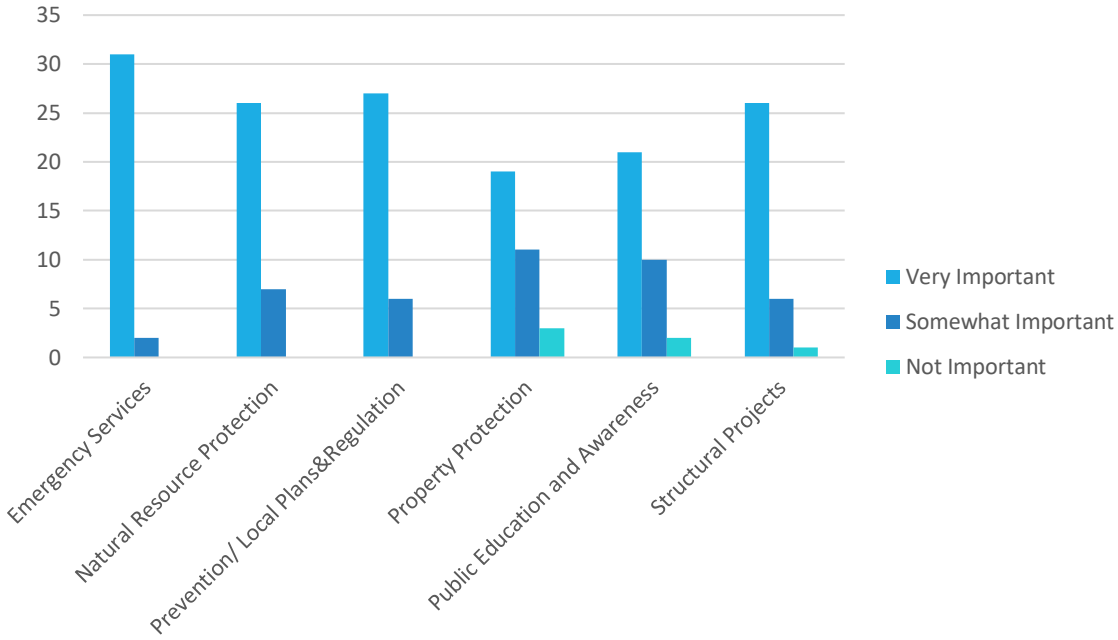

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APPENDIX C: CRITICAL FACILITIES

This Appendix is **For Official Use Only (FOUO)** and may be exempt from public release under FOIA.

APPENDIX D: DAM LOCATIONS

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 D 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 E is **For Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).

APPENDIX G: LRGVDC-REGIONAL WATER PROJECT LIST

OVERVIEW

Appendix G is **For Official Use Only (FOUO)** and may be exempt from public release under the Freedom of Information Act (FOIA).

The Lower Rio Grande Valley Development Council, in coordination with Cameron County, has created regional action plan to address flooding in the Lower Rio Grande Valley and have a direct impact on flood hazards in the Cameron County planning area. These projects are included under **Section 19**, Cameron County-wide Action #22. Additional details for each individual action are listed in the table below.

REGIONAL PROJECT LIST

Table G-1. Regional Project List

Entity	County	Project Name	Project Description	Estimated Cost
Cameron County Drainage District #1	Cameron	Study Watershed	Study watershed drainage in Ditch #2 - Main Ditch	$500,000
Cameron County Drainage District #1	Cameron	Enhance SCADA System	Enhance SCADA System to include critical points in additional ditches	$500,000
Cameron County Drainage District #1	Cameron	Grated Culverts	Design and construct 4 grated culverts	$750,000
Cameron County Drainage District #1	Cameron	Concrete Drainage Pipes	Purchase and install 6 concrete drainage pipes	$50,000
City of Harlingen	Cameron	Hickory Hill Regional Facility	Construct a regional facility to reduce runoff and flooding for the City of Harlingen and Cameron County, and capture secondary water supply for future drought event.	$11,252,000
City of Edinburg	Hidalgo	UTRGV West Drainage Improvements		$1,715,150

APPENDIX G: LRGVDC-REGIONAL WATER PROJECT LIST

Entity	County	Project Name	Project Description	Estimated Cost
City of Edinburg	Hidalgo	Freddy Gonzalez & Mon Mack Rd. Drainage Improvements		$6,417,190
City of Edinburg	Hidalgo	Hobbs & Second St. Flooding Improvements		$1,159,558
City of Edinburg	Hidalgo	Hidalgo County Irrigation District #1 Canal Replacement Project		$5,416,597
HCDD1	Hidalgo	Raymondville Drain	Project consists of a new drainage ditch connecting to existing channels. Existing channels will be improved to the approximate 63-mile drainage system of in-line and off-line detention reservoirs, and control structures that stretches from Edinburg Lake (Hidalgo County) to the Laguna Madre (Willacy County)	$417,617,336
HCDD1	Hidalgo	Delta Region Water Management Project	The Delta Region Water Management Project is a regional mitigation project that will provide increased flood control for the northernmost area of Hidalgo County, increase the water supply for the region, provide enhanced water quality to the Laguna Madre, promote and support economic development and establish a process to reclaim the water for municipal use. It is proposed to be constructed in three phases and includes an off-line stormwater detention pond/reservoir and treatment facility at the following locations: Phase I-Delta Reservoir, Phase II-Santa Cruz Reservoir & Phase III-Carlton Barth Reservoir.	$94,000,000
HCDD1	Hidalgo	East Mercedes Ditch 23	Channel, culvert, and IBWC structure improvements to the existing Ditch 23 drainage system. Project commences at the IBWC structure	$930,001

Entity	County	Project Name	Project Description	Estimated Cost
			into the Arroyo Colorado and extends north crossing I2 at Capasillo Terrace to the east of FM 1425.	
City of San Perlita	Willacy	City-Wide Public Facilities Upgrade	Harden of city-owned Facilities	$300,000
City of San Perlita	Willacy	City-Wide Drainage Project #1c	Construction of drainage controls and gates to ease flooding within the city jurisdiction	$1,000,000
City of San Perlita	Willacy	City-County Drainage Project #1b	Joint city-county construction of drainage pump stations to alleviate flooding overflow in Raymondville Drain	$600,000
City of San Perlita	Willacy	City-County Drainage Project #1a	Joint city-county construction of detention ponds to alleviate flooding overflow in Raymondville Drain.	$400,000
City of San Perlita	Willacy	City-Wide Sewer System Upgrade #1	Conduct improvements to sewer plant and service lines replacement and upgrades	$2,500,000
City of San Perlita	Willacy	City-Wide Street Improvements #1	Construction/upgrade of city streets, including surface, drainage culverts, and curb and gutter.	$2,300,000
Willacy County	Willacy	Widen Existing and Construct New Drainage Laterals (County Wide)	This action proposes the widening of existing canal/drainage laterals, as well as construction of new laterals, across the entire County of Willacy. This may include land acquisition, installation of critical flood control gates, and pumping stations, all of which may be needed to ensure additional lateral capacity and to assist in flood mitigation. The proposed drainage infrastructure will provide substantial regional drainage relief by assisting with the draining of upper Rio Grande Valley storm waters, as well as reducing the potential impact of future regional flood events. (Existing and New Infrastructure	$15,000,000
				$562,407,832