



Starr County Multi-Jurisdiction Hazard Mitigation Plan

2019-2024

DEVELOPED BY:



IN ASSOCIATION WITH:



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Executive Summary

This plan was prepared by the participating jurisdictions under the leadership of the Homeland Security and Emergency Management Planning Program of the South Texas Development Council (STDC). This plan addresses a broad range of natural hazards that are common and have an impact to the South Texas area, in particular, Starr County.

One of the most important priorities of the local government officials and community leaders is a resilient community. Therefore, through the efforts of various first responder and law enforcement agencies, and city/county administration, the Starr County Multi- Jurisdiction Hazard Mitigation Plan (The Plan) came to development in July 2017. This plan is comprised of strategies, goals, and risk assessments that identify natural disasters common to the area, in order to reduce or eliminate the loss of life and property.

The Plan was developed in accordance with the provisions of the Disaster Mitigation Act of 2000, Code of Federal Regulations (44 CFR 206), and planning standards adopted by the Texas Division of Emergency Management (TDEM).

Funding for plan development was provided by the Pre- Disaster Mitigation Grant, FY16, and local match share of the participating jurisdictions.

Mission Statement

By identifying goals and actions, through partnerships and community input, Starr County and its participating jurisdictions will address the vulnerability to natural hazards within all participating communities in efforts to reduce or prevent the loss of property and life.

The Planning Area

Background

Starr County, located in the South Texas area, is composed of four incorporated jurisdictions and multiple unincorporated areas that fall under county jurisdiction. The county is served by three school districts, however only Roma Independent School District decided to participate in the development of The Plan. Below is a brief description of each participating jurisdictions' planning area along with a visual representation of the county's boundaries.

Starr County

Starr County is located in the southern part of Texas with an area of 1,229 sq. mi. The county also shares 63.28 mi. of international border with Mexico along the Rio Grande River. The major corridor that runs across the county is US Hwy 83. According to Census.Gov, Starr County has an estimated population of 64,454 as of July 1, 2017.

With over 96% of the residents being Hispanic or Latino, the two predominant languages in the area are English and Spanish.¹

For the most part, the county is mostly a rural area with 4 incorporated jurisdictions: City of Roma, City of Escobares, City of Rio Grande City, and City of La Grulla.

The rest of the county is composed of multiple unincorporated areas or *colonias*, as they are more commonly known in the state. As defined by the Attorney General of Texas, *colonias* are substandard housing developments often found along the Texas- Mexico border.² Several of these *colonias* will be noted throughout this document. For a complete list of *colonias* in Starr County, please refer to **Annex A**.

The majority of the populated cities and areas are located in the southern part of the county on the Rio Grande River.

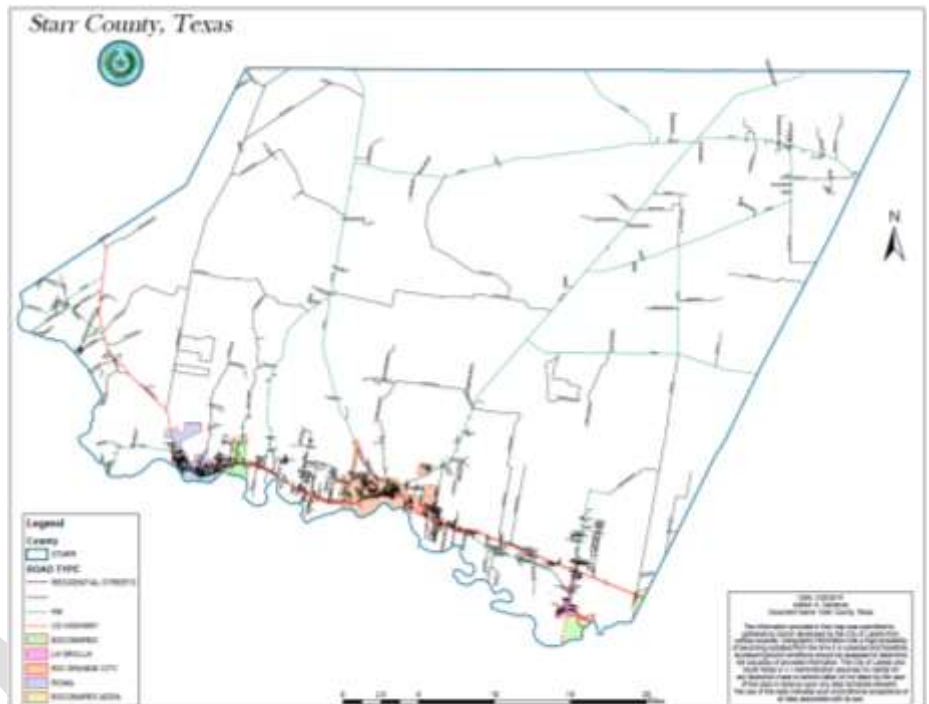


Figure 1. Starr County Map

Located within the county are three international bridges that serve as ports of entry to the US. Falcon Heights Bridge is located in the western part of Starr County. The international bridge serves as port of entry and border crossing to Nuevo Guerrero, Mexico. The other two bridges are located in Roma and Rio Grande City.

Escobares

Incorporated in 2005, City of Escobares is the most recent incorporated jurisdiction within Starr County. The city has an area of 3 sq. mi. and has an estimated population of 2,562 as of July 1, 2017.

Escobares is located east of the City of Roma and on the banks of the Rio Grande River.

Rio Grande City

The City of Rio Grande City acts as the county seat for Starr County. The city has an area of 11.35 sq. mi and has estimated population of 14,518 as of July 1, 2017.

¹ US Census Bureau. "Race and Hispanic Origin.", <https://www.census.gov/quickfacts/starrcountytxas>.

² Attorney General of Texas. "Colonias Prevention.", <https://www.texasattorneygeneral.gov/divisions/colonias-prevention>.

Rio Grande City contains a large historic district important to Starr County and South Texas. Some of the buildings and areas include the Kelsey- Bass Museum and Fort Ringgold. These sites will be further detailed under the section *Community Assets*.

As previously mentioned, Starr Camargo Bridge is located in Rio Grande City. The bridge serves as port of entry and border crossing to and from Ciudad Camargo, Mexico.

Roma

The City of Roma, founded in 1765, has an area of 5.74 sq. mi. As of July 1, 2017, the city has an estimated population of 11,425.

Notable sites located in the city are the Roma Historic District and the Roma Bluffs. These sites are further noted under the section *Community Assets*.

Similar to all other cities and populated areas in Starr County, Roma is located on the Rio Grande River border with Mexico. The Starr County International Bridge is located within the city. The bridge serves as port of entry and border crossing to Ciudad Miguel Aleman, Mexico.



Photo Credit: Ervey Alanis

Roma ISD

Roma Independent School District, primarily located in Roma, serves the student populations of City of Roma, City of Escobares and parts of western Starr County. Established in 1948, Roma ISD has 9 schools throughout their district and serves over 6,400 students. The district is further broken down into 6 elementary schools, 2 middle schools, and 1 high school.

The district also counts with various facilities that support campus productivity. Further details can be found under *Community Assets*.

Participants

Through multiple meetings and presentations at city council and commissioner's court meetings, the following jurisdictions are seeking approval from the Federal Emergency Management Agency (FEMA) and adoption of their respective local governments:

- County of Starr
- City of Escobares
- City of Rio Grande City
- City of Roma
- Roma Independent School District.

Planning meetings were directed and coordinated by STDC staff with the assistance of members of the participants’ planning teams. Each jurisdiction appointed a member(s) to a planning team for their respective entity. A Core Planning Team was also established to discuss details and items that pertained to The Plan as a whole. Participation was varied among the individual planning sub-teams, however at least one member of each jurisdiction was required to attend the Core Planning Team meetings.

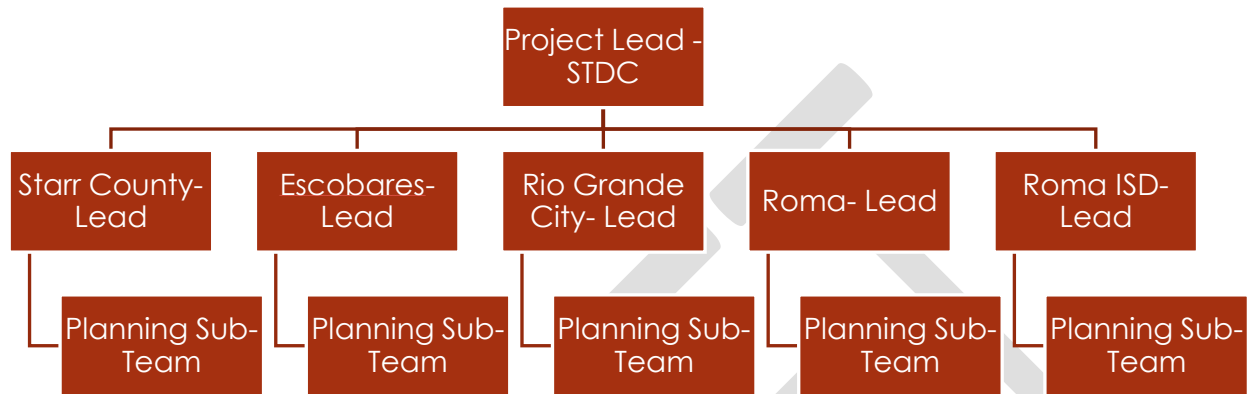


Figure 2. Organizational Chart

Below is a list of the members involved in the development of this plan named by title and agency. These members composed each of the participating jurisdictions’ planning sub-team.

Starr County	
<u>Title/Position</u>	<u>Agency/Department</u>
Emergency Management Coordinator (EMC)	Starr County Judge’s Office
Federal and State Program Director	Starr County Federal and State Program
Fire Marshall	Starr County Fire Department
Assistant Fire Chief	Starr County Fire Department
Gas System Manager	Starr County Gas Department
Planning Director	Starr County Planning Department
911 Administrator	Starr County 911

City of Escobares	
<u>Title/Position</u>	<u>Agency/Department</u>
City Mayor	Mayor’s Office, City of Escobares
Councilman, At-Large	City of Escobares
Assistant Police Chief	Escobares Police Department
Fire Chief	Escobares Fire Department

City of Rio Grande City

Title/Position

Deputy City Manager
 Fire Chief
 Assistant Fire Chief
 Fire Department Administrative Assistant
 Public Works Assistant Director
 Planning Director
 Police Chief
 Building Inspector

Agency

City of Rio Grande City
 Rio Grande City Fire Department
 Rio Grande City Fire Department
 Rio Grande City Fire Department
 Rio Grande City Public Works
 Rio Grande City Planning Department
 Rio Grande City Police Department
 Rio Grande City Planning Department

City of Roma

Title/Position

City Manager
 Assistant City Manager
 Police Chief
 Assistant Police Chief
 Fire Chief
 Planning Director
 Public Works Manager
 Fire Department Clerk

Agency/Department

City of Roma Administration
 City of Roma Administration
 Roma Police Department
 Roma Police Department
 Roma Fire Department
 City of Roma Planning Department
 City of Roma Public Works
 Roma Fire Department

Roma Independent School District

Title/Position

Executive Director
 Grant Writer
 Risk Management Coordinator
 Maintenance Supervisor
 Accounting

Agency/Department

Roma ISD Administration
 Roma ISD Administration
 Roma ISD Administration
 Roma ISD Maintenance Department
 Roma ISD Accounting Department

The Planning Process

As noted previously, participating jurisdictions attended either Core Planning Team meetings or Planning Sub-Team meetings that were coordinated and facilitated by the Project Lead. Plan development followed a Scope of Work (SOW) that consisted of 10 Tasks. Procedures and task description can be found below in **Table 1**.

<p>TASK 1 Organize Resources and Convene Planning Team</p>	<p>This task will include the Multi- Jurisdictional Plan Coordination of all participating entities. We will identify the planning team members and leads, who will confirm plan purpose, refine the scope and schedule of the plan, and establish responsibilities.</p>
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	This step will also include an assessment of resources to see what is available among our local partners and within the participating jurisdictions.
TASK 2	This task will focus on creating a strategy to reach out and involve stakeholders and community members in the planning process, and the maintenance and implementation of the plan. Stakeholders include elected officials, business leaders and large employers, colleges and universities, and non-profits; to name a few. The planning team will also create a strategy in which to engage public participation by holding at least one opportunity for involvement during the planning process.
Create an Outreach Strategy	
TASK 3	This task includes assessing the capabilities within each participating jurisdiction. Including, authorities, policies, programs, staff, funding and other sources available to accomplish mitigation. Documentation of what information was reviewed and how it was incorporated in the mitigation plan will be kept.
Review Community Capabilities	
TASK 4	The planning team will conduct risk assessments to determine potential impacts of hazards to the people, economy and environment in the community. Steps within the risk assessment include, description of hazards, identifying community assets, analyzing risks and summarizing vulnerabilities within the planning area.
Conduct a Risk Assessment	
TASK 5	The planning team will identify goals, actions and the implementation of an action plan. These will be developed using risk assessment findings, outreach findings, community goals and state hazard mitigation goals. The implementation strategy will include prioritization of mitigation actions that take consideration of capabilities assessment, benefit-cost review, evaluation criteria, responsible agency and timeframes.
Identify Mitigation Goals and Actions	
TASK 6	The planning team will compile all information and structure the plan to include community capabilities, risk assessments findings and the mitigation strategies. The plan will be structured to address each participating jurisdiction’s mitigation strategy and partake in the plan.
Develop Plan	
TASK 7	Through the development of the plan, the planning team will identify the responsible agencies and/or positions for plan maintenance and the timelines for it. This task includes how and who will monitor the implementation, evaluate the effectiveness and make the necessary updates to the plan.
Identify Plan Maintenance Procedures	
TASK 8	The planning team will conduct a final review prior to submitting the plan to the State Hazard Mitigation Officer (SHMO). At this point, the planning team will encourage comments for final consideration from stakeholders and the general public. This may be done through an open public meeting or direct invitations for comments by phone or email. The planning team will also ensure that the plan meets all requirements of Title 44 CFR 201.6 using the Local Mitigation Plan Review Tool.
Review Final Draft	
TASK 9	

Submit Plan to State and FEMA	Upon completion of the final draft review, the planning team will forward the plan along with all supporting documentation to the SHMO. The planning team will work with the State on any required revisions for approval. The planning team will then wait for the SHMO to forward the plan to the FEMA regional office and see if there are any additional revisions needed.
TASK 10	Upon FEMA notification that the plan is approvable pending adoption; the planning team leads will forward notice to each participating jurisdiction requiring formal adoption by the local governing body. Once all documentation of adoption is submitted to FEMA the planning team will await final plan approval.
Adopt Plan	

Table 1. SOW- Task Description

Meetings were scheduled following the SOW, by task. Due to federal funding being attached to plan development, STDC staff and planning team members followed a project schedule that fell within the project period granted by FEMA. Total time for plan development was 24 months. Estimated timeframes given per task can be seen below under **Table 2**. For a detailed list of when the meetings were held and who attended the planning meetings please see **Annex B**.

Part of the responsibilities of being in the planning teams (whether Core Team or Sub-Team) was participation by providing input for the development of The Plan. Members in either or both teams provided input by various ways, including but not limited to historical knowledge, participation as subject matter experts, or through involvement in disaster planning.

Starting			
Point	Description Of Task	Duration	Unit Of Time
1	Organize Resources and Convene Planning Team	2	MONTHS
2	Create an Outreach Strategy	2	MONTHS
2	Review Community Capabilities	2	MONTHS
3	Conduct Risk Assessment	5	MONTHS
4	Identify mitigation goals and actions	3	MONTHS
5	Develop Plan	3	MONTHS
5	Identify Plan Maintenance Procedures	2	MONTHS
6	Review Final Draft	3	MONTHS
7	Submit Plan to State and FEMA	4	MONTHS
8	Adopt Plan	1	MONTHS
Estimate of total duration of the proposed activity:		24	MONTHS

Table 2. Project Schedule

Community Involvement

All participating jurisdictions coordinated to have 3 different public outreach events in different parts of the planning area for the community. Each event was promoted primarily by the hosting jurisdiction(s), but included all participants collectively. Below is **Table 3** with details of the 3 outreach events, along with the different methods used to promote the events.

Date	Location	Hosting Jurisdictions	Promotion Methods
1-23-18	Roma Community Center	Starr County, City of Escobares, City of Roma, and Roma ISD	Flyers, Newspaper Ad, Facebook, Twitter, Websites
1-25-18	South Texas College Auditorium	Rio Grande City, Starr County	Newspaper Ad, Posters, Facebook
2-6-18	Escobares Community Center	Starr County, City of Escobares, City of Roma, and Roma ISD	Flyers, Newspaper Ad, Facebook, Twitter, Websites

Table 3. Public Outreach Events

The STDC planner facilitated the events which included a presentation on natural disasters, the development of the plan and the differences between preparedness and mitigation. A survey was also handed to the attendees at every event so that the community could have an opportunity to provide input in the development of The Plan.

Attendance throughout all 3 events was varied. Attendees of the events were able to choose between English and Spanish for the presentation, as both languages are prevalent in the area. The survey was also provided in both languages.

Community Survey Findings

After all outreach events had been held, STDC staff compiled the results to present to the planning team. The planning team then used the results to integrate the interests of the community into the plan.

In the survey, the community was asked their level of concern regarding natural disasters relevant to the state of Texas. The results revealed that the top 3 natural hazards of concern were floods, hurricanes, and extreme heat.

Results also revealed that the community views cultural and historic sites to be more susceptible to damage caused by natural disasters. The planning team used this information to ensure that historic and cultural sites were included when listing community assets and analyzing impacts from natural disasters.

Although cultural and historic sites were viewed as being more susceptible to natural disasters, the survey results revealed the community sees hospitals and critical services as the most important community assets.

The outreach events held were used as a direct approach to gather community input. However, all planning meetings were open to the public and input was accepted at any time throughout the planning process. A comment period was also provided prior to submitting The Plan to TDEM for review and FEMA for approval. **Table 4** below shows the different methods on how each participant provided the community with an opportunity to comment.



Figure 3. Public Outreach Promotion

Participant	Document Location
Starr County	County Facebook County Website
Escobares	City Website
Rio Grande City	City Website City Facebook
Roma	City Website City Facebook Hardcopy available at City Hall
Roma ISD	District Website Hardcopy available at the Administration Building

Table 4. Public Commentary Locations

For a more complete look at the results from the surveys gathered, please see **Annex C**.

Organizing Resources

Aside from using community input as a resource, the planning team also reached out to stakeholders, completed capability assessments, and completed a list of community assets. Each of these additional resources was organized by each participant individually and according to their capabilities or needs.

Stakeholder Outreach

Each participant created a list of agencies and organizations with potential knowledge and involvement in hazard mitigation. Each agency and/or organization was sent an invitation by mail on the participants' letterhead. The invitation not only noted that the Starr County Multi-Jurisdiction Hazards Mitigation Plan was under development, but it also invited the stakeholder to participate by either attending planning meetings, being added to a mailing list, or sending any input via email or phone. Invitations were sent in October of 2017. Below are the lists of invitations sent by each participant.

Starr County

- Superintendent, San Isidro Independent School District
- Texas Water Coalition

Escobares

- Mayor, Escobares City Council
- Mayor- Pro Tem, Escobares City Council
- Councilman, Escobares City Council
- Councilwoman, Escobares City Council
- Councilman, Escobares City Council
- President, Economic Development Corporation
- Owners, Garcenos Builders
- Owner, Bema Ice
- Owner, El Valle Medical Supplies
- Owner, Mar Palace
- Physician, Pediatric Clinic
- Owner, Materiales Pena
- Owner, Mr. Nava's Gas Station
- Owner, El Tigre
- Parish Priest, Escobares Sacred Heart
- Community Affairs Manager, AEP
- Owner, Grande Garbage
- Administrator, ST. Luis Angels EMS LLC
- Port Director, CBP Port of Entry
- Area Engineer, Texas Department of Transportation

Rio Grande City

- US Customs at Falcon Dam, Roma, Rio Grande City
- TCEQ (Texas Commission on Environmental Quality)

- County of Starr
- RGC Historic Preservation Commission
- Planning and Zoning Commission
- Planning – Code Enforcement, Animal Control and Vector Control
- RGC Sanitation Department
- RGC Public Utility Department
- Ciudad Camargo, Tamp., Mexico
- City of Sullivan
- Texas Historical Commission
- US Fish & Wildlife Game Wardens
- Environmental Protection Agency
- Texas Department of Health & Human Services
- Payne Ford, Rio Grande City
- Rio Motors Chevrolet
- HEB, Rio Grande City
- Walmart, Rio Grande City
- University of Texas- Rio Grande Valley, Rio Grande City

Roma

- Mayor, Roma City Council
- Council members, Roma City Council
- Chairman and members, Planning and Zoning Commission
- President and members, Economic Development Corporation
- Chairman and members, Historical Commission
- Chairman and members, Parks and Recreation Commission
- Executive Director and members, Roma Housing Authority
- President, Roma Chamber of Commerce
- President, Pena Enterprises
- Owner, Lino's Pharmacy
- Owner, Vida Linda Adult Day Care
- Physician, Roma Family Clinic
- Parish Priest, Our Lady of Refuge Catholic Church
- Church Pastor, Bethel Church
- Executive Director, Falcon Rural Water Supply
- Manager, Medina Electric
- Patrol Agent in Charge, Border Patrol
- Port Director, CBP Port of Entry
- Engineer, International Boundary and Water Commission
- Area Engineer, Texas Department of Transportation

Roma ISD

- All nine Campus Principals, Roma ISD

- Transportation Director, Roma ISD
- Superintendent, Roma ISD
- Deputy Superintendent, Roma ISD
- Peña Enterprises Inc
- Rene's Tire Sales
- VFW Post 9175 Commander
- Periodico Enlace LLC
- Commissioner Precinct 2
- Constable Precinct 2
- Justice of the Peace Precinct 2

While interest in the plan development was shown, participation from local stakeholders was minimal. Input from local stakeholders continued to be solicited throughout the development of The Plan.

Capability Assessments

Each of the planning sub-teams, along with the STDC Planner, completed a capability assessment in which they delineated and indicated local resources in Planning and Regulation, Administrative and Technical, Financial, and Education and Outreach. After reviewing the assessments, the participants analyzed the available resources for information to use in the development of The Plan and how some of these same existing resources could be used in mitigation.

Below is a summary of each of the resources reviewed by the planning sub-teams for each participating jurisdiction.

Starr County

Under planning and regulatory resources, the sub-team reviewed the Regional Economic Development Plan that is currently under update. The Starr County Gas Department provided their emergency plan approved by the Texas Railroad Commission, which not only includes safety procedures but operations and maintenance. This information was used to depict community assets and potential risks in the event of a natural disaster. A document that proved to be important and useful for every participant were the Emergency Operation Plans.

Resolutions and ordinances were also reviewed. Two natural hazard specific resolutions that were reviewed were the Burn Ban and Fireworks Ban. Both of these provided insight in regulation that could be expanded or used to further implement mitigation strategies.

For Administrative and Technical and Financial resources the planning sub-team reviewed existing staff, departments, and funding sources that could be used. These resources will be represented under **Mitigation Strategies**.

Programs available were also listed when reviewing resources. Some of the programs currently available are the awareness campaigns provided by the Gas Department, the CERT (Community Emergency Response Team) program, Fire Prevention Week, and National Night Out.

Escobares

For planning and regulatory resources, the Escobares planning sub-team included the Regional Economic Development Plan and their Capital Improvements Plan that is also under updating. Ordinances reviewed included the Firework Ban and Trash Ban, which prohibits unauthorized trash burning. Throughout the assessment, the planning sub-team and project lead took notes on the areas of improvement and where the city implement their mitigation strategies.

For administrative and technical and financial resources, the planning sub-team noted the available staff, departments, and revenue available for the implementation of mitigation strategies. These resources can be further reviewed in **Mitigation Strategies**.

Some of the programs available that could be used to implement education and outreach in mitigation are the awareness campaigns with AEP, Fire Prevention Week, and National Night Out.



Source: Facebook, Escobares Volunteer Fire Dept.

Rio Grande City

Under planning and regulatory resources, the planning sub-team for Rio Grande City reviewed their local Emergency Operations Plan, the building code that is enforced, and the various ordinances in place. Some of these ordinances include the trash burning ban, the firework ordinance, and the subdivision ordinance. The subdivision ordinance in particular notes the elimination of *colonias* and provides standard for them, including the creation of easement for fire lanes and drainage. Under the same ordinance, the city includes making parks from flood areas, as long as they do not reduce the retention area.

For Administrative and Technical and Financial resources, the planning sub-team reviewed the current staff, departments, revenue available, mutual aid agreements, and systems available that could be used or support mitigation. Some of the mutual aid agreements reviewed were ones with nearby fire departments, Agrilife an Texas A&M AgriLife Extension Service and Happy Paws which is a non-profit organization. Existing warning systems include warning sirens and notifications through utility statements.

The city also partners with various organizations programs that provide awareness in the community. Some of these organizations and programs are SCAN, Operation Lone Star, National Night Out, Fire Prevention Week, and Hurricane Preparedness with the Kelsey Bass Museum.

Roma

The planning sub-team for Roma reviewed several documents under planning and regulatory resources, including the Comprehensive Plan, the Capital Improvements Plan, local Emergency Operations Plan and Transportation Plan. The 2000 Comprehensive Plan includes a drainage study that addresses flooding throughout the area. It includes drainage projects that mitigate natural hazards. Certain elements of the drainage study have been implemented and are still very relevant. The Capital Improvements Plan calls for funds to be designated for drainage improvements tied to the Comprehensive Plan, while the Transportation plan calls for drainage improvements to be in conjunction with street design.

The Zoning Ordinance is actively administered and enforced. It reduced construction on hazard areas by zoning them as open space. The Floodplain ordinance helps reduce the risk associated with building on a floodplain. Other regulations reviewed were the fireworks ban and the burn permit and ordinance placed to ban outdoor burning.

Under administrative and technical resources, the planning sub-team reviewed available staff, committees, and departments that are and could support the city's mitigation strategies. One for example would be the public works department which actively monitors the drainage system for debris and conducts routine maintenance.

For financial resources, the planning sub-team reviewed various sources of revenue that could be of aid for future mitigation projects. These findings will be further noted under **Mitigation Strategies**.

Various programs of education and outreach the city is part of include Fire Prevention Week and National Night Out, as well as presentations to the general public by fire and police departments. These resources were noted to be useful when promoting mitigation to the community.

Roma ISD

Roma ISD shares several of their planning and regulatory resources with the city of Roma. However, some of the plans and regulations reviewed were the Roma ISD Emergency Operations Plan, Transportation Plan, and Evacuation Plans. These documents provide information that are useful in the development of The Plan and most importantly when securing the safety of the staff and students of the school district.

Under administrative and technical resources, the planning sub-team noted the available staff and departments that can be part of the implementation of the district's implementation of mitigation strategies. Financial resources were also reviewed to note the revenue available when discussing mitigation projects. These resources will be further noted in **Mitigation Strategies**.

The district also has various clubs and programs within their schools that could be used when trying to provide the community with education and outreach. Some of these clubs and programs include, the Earth Club which deals with environmental protection, Fire Prevention Week, the National Honor Society, JROTC, and the Student Council.

Community Assets

Prior to conducting the risk assessment for each of the hazards identified, each of the participating jurisdictions completed a list of community assets. This list helped the planning team identify assets at risk within their respective communities. Assets were broadly defined and anything important to the function of the community was listed.

In identifying community assets, the participants completed a worksheet that provided the Asset Name, Category (People, Economy, Built Environment, and Natural Environment), Location, Function, and Structure Type.

Below is a list of the community assets listed by each participant. The assets are only listed by name. Any additional information regarding the assets listed should be requested to the respective jurisdiction.

Starr County

- Starr County Sheriff's Office
- Starr County Detention Center
- La Casita Fire Dept.
- San Isidro Fire Dept.
- La Rosita Vol. Fire Dept.
- Salineno Fire Dept
- Starr County Memorial Hospital (Special District)
- Precinct 3 Offices
- Precinct 4 Offices
- Starr County Courthouse
- Starr County Courthouse Annex
- Starr County Probation Office (Adult)
- Precinct 1 Offices
- Precinct 2 Offices
- Starr County Precinct 2 Memorial Cemetery, Starr County Veterans Cemetery
- Starr County International Bridge
- Starr County Parks
- Roads and Streets
- Starr County Natural Gas

Escobares

- Escobares Fire Dept.
- Escobares Community Center
- City of Escobares City Hall
- Escobares Police Department
- Escobares Economic Development Center
- Sacred Heart Catholic Church
- Farmland
- Garza Properties
- Escobares Public Works
- Escobares Sanitation
- Roads, Streets, & Bridges
- Elderly Population
- City Park (Future Development)

Rio Grande City

- Rio Grande City City Hall
- Starr County Memorial Hospital (Special District)
- Rio Grande City Police Dept
- Rio Grande City Police Substation
- Kelsey Bass Museum and Event Center (Old City Hall)
- RGC Public Works Dept.

- Rio Grande City Public Utilities Dept.
- Rio Grande City Fire Dept.
- First Baptist Church
- Rio Grande City Municipal Airport
- Rio Grande City Parks (5)
- Chachalaca Wildlife Refuge
- Rio Grande City Historical District
- Hiking Trails
- Rio Grande City Public Library
- Roads & Street
- Walmart, HEB Plus, Shopping Centers Strip (Ringgold Corners Shopping Center)
- Retama Manor Nursing Home
- Rio Nursing and Rehabilitation Center
- Farmland (Old Shuford Property)
- Rio Grande City Port of Entry
- Communication Tower on Eisenhower Street
- AEP Electrical Substation
- Medina Electric Co-op
- Rio Grande City Animal Kennels
- 3G Livestock Yard
- US Army Reserve
- Rio Grande Valley Rehabilitation Center
- Fresnius Dialysis Center

Roma

- Roma Police Dept.
- Roma Communications Tower
- Roma Vol. Fire Dept.
- Roma City Hall
- City of Roma Natural Gas Dept.
- Roma Water Treatment Plant
- City of Roma Waste Water Plant
- City of Roma Landfill
- AEP Electrical Substation
- Roma Community Center
- World Birding Center/Visitors Complex
- Roads and Bridge
- Roma International Bridge
- Roma National Historic Landmark District
- Pena Enterprises
- Roma Municipal Park

Roma ISD

- Roma High School
 - Band Hall
 - JROTC Building
 - Baseball Stadium
 - Softball Stadium
 - Football Stadium
 - Field House
- Roma Middle School
- Ramiro Barrera Middle School
- Instruction & Guidance School
- Emma Vera Elementary
- Florence J. Scott Elementary
- Roel & Celia Saenz Elementary
- Ynes B. Escobar Elementary
- Veterans Memorial Elementary
- Rafaela T. Barrera Elementary
- Manuel Guerra Building (Central Office)
- Roma ISD Police Building
- Bus Barn
- Delia Gonzalez Garcia Elementary
- Roma Intermediate Campus including Special Education and LA Building
- Performing Arts Building
- Roma ISD Receiving Center

The completion of this list provided further insight to what potential impacts a natural hazard can have on a community. Assets listed above provide important roles in the function of the community. Functionality refers to critical facilities, recreational use, historical significance, or educational use, amongst others.

The next section incorporates some of the details and additional elements that were captured during the completion of the Community Assets worksheet.

The Risk Assessment

Based on the natural hazards that affect the state of Texas, all participating jurisdictions decided to conduct a risk assessment for the hazards commonly recognized to the area. The hazards are listed below:

- Floods
- Hurricanes/Tropical Storms
- Fire
- Tornadoes

- Drought
- Extreme Heat
- Extreme Cold
- Thunderstorms

The participating jurisdictions gathered information from previous occurrences (which will be discussed and presented later) and community feedback from the public outreach events that were held. Each hazard will be assessed individually by each of the participating jurisdictions using scenario or historical analysis. Results of the assessment will be composed as problem statements that will help summarize the vulnerabilities in that specific area.

The participating jurisdictions came to agreement to use the following terms and definitions to determine the probability of occurrence for each hazard. Although all jurisdictions will use the same list of terms, each jurisdiction will define their area individually.

Probability of Occurrence

- Highly Likely- Event occurring more than once in a year.
- Likely- Event occurring once every 3 years.
- Occasional- Event occurring once every 5 years.
- Unlikely- Event occurring once every 10 years.

Floods

Defined as the general and temporary condition of partial or complete inundation of normally dry areas, floods are one of the most common hazards in the United States. Flooding to the area can be stemmed from river floods, flash flooding, and dam/levee failures or releases.

For this hazard, the planning team will be using the FEMA Flood Zone Designations that are included below. These zones are depicted on a community’s Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map which can be found using the link below. Each zone reflects the severity or type of flooding in the area.

FEMA Flood Map Service Center

<https://msc.fema.gov/portal/home>

Moderate to Low Risk Areas

Zone	Description
B and X (shaded)	Area of moderate flood hazard, usually the area between the limits of the 100- year and 500-year floods. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile
C and X (unshaded)	Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage

	problems that don't warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100- year flood.
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High Risk Areas

Zone	Description
A	Areas with a 1% annual chance of flooding and a 26% 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.
AE	The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
A1-30	These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a BFE (old format).
AH	Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% 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.
AO	River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
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.
A99	Areas with a 1% 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.

The chart below gives a list of previous occurrences of flooding that have affected some or all participants.

Type	Date	Description	Location
Flash Flood	September 23 rd , 1993	Arroyo Roma. 1 Fatality, 4 injuries. 7 inches.	Roma
Flash Flood	June 22 nd , 2007	An upper level low pressure trough centered over Texas combined with abundant tropical moisture produced periods of scattered showers and thunderstorms over the western Counties of Deep South Texas on	All participants

		June 22. The heavier showers and thunderstorms produced localized flash flooding in Starr and Jim Hogg Counties. The Rio Grande City Fire Department recorded 1.90 inches of rainfall June 22. The Roma area experienced significant flooding as a stationary thunderstorm produced 8 to 11 inches of rain over rural areas.	
<u>Flash Flood</u>	August 18 th 2008	Widespread flooding in Roma and nearby communities of Garceño and Escobares. Estimate 1100 homes had some degree of flooding ranging from 2 to 3 in. up to 5 feet. Repair cost estimated to be in excess of \$1 million.	Roma, Escobares, Starr County: Garceño
<u>Flooding</u>	August 22 nd 2008	From the cities of Roma to Zapata and points north. Living in the east side of Roma, extending into Escobares, torrential rains, estimated to be at least 15 inches or more in a few spots. Widest street flooding but no structures were threatened. Duration was 1 week.	Roma, Escobares, Starr County: Garceño
<u>Flooding</u>	July 23 rd , 2008	Heavy rains associated with hurricane Dolly resulted in flooding over the Rio Grande Valley. No injuries or deaths were directly attributed to the flooding. Loss of home and infrastructure. In Roma, 15 homes got destroyed.	All participants
<u>Flooding</u>	July 11 th 2010	Rainfall from hurricane Alex, water level peaked at 57.63 feet. Secondary peak 16 th result of continue discharges, downstream in Starr and hidalgo county from July 8 th to august 10 th . Damage was at \$19 million. City of La Grulla was under evacuation by July 16 th .	All participants
<u>River Flood</u>	July 8 th 2010	Major flooding due to river overflow lasting from 2 weeks to 2 months. Homes, infrastructure, farmland and agriculture damage.	All participants
<u>Flooding</u>	May 11 th , 2015	7-8 in of rain causing flood in various Communities. Roma, \$9,600 in public assistance.	Roma, Escobares, Rio Grande City, Starr County: Las Lomas, Los Velas
<u>Flash Flood</u>	June 21 st , 2018	Complex thunderstorms would spin in from the northeast overnight and reach Starr County, eventually dropping more than 7 inches from the ranches north of Rio Grande City to Rio Grande City itself, where local arroyos reached and overtopped their banks	All participants

		and at least one swift water rescue was required during the pre-dawn hours of the 21st	
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Starr County

Location and Probability of Occurrence

As viewed in **Figure 1**, most of the populated areas of Starr County are located near or at the riverbank of the Rio Grande River. However not all of inundations come from river floods. Low lying areas within the planning area are susceptible to flash flooding.

For a visual of the Starr County floodplain maps please use the link for the FEMA Flood Map Service Center provided above.

Probability of Occurrence: **LIKELY**

Risk Analysis

The planning sub-team used two scenarios for this hazard to determine the impacts of river floods and flash floods.

River Floods

July/August 2010- Torrential rainfall from Hurricane Alex remains fell across the Sierra Madre in Mexico, along with 50 inches of rain across Coahuila, Mexico from remnants of Tropical Depression Number 2 causing major overflow to the Rio Grande Basin. As a result, water releases of Amistad Dam and ultimately Falcon Dam caused major flooding along the Rio Grande River in Starr County. The highest release at Falcon Dam reached 60,000 cfs (cubic feet per second). Water levels in Starr County reached a peak of 57.63 feet at 7:00AM on July 11, 2010. Flooding lasted from July 9th through August 3rd.

Flash Floods

June 2007- Two weeks of intermittent rainfall and runoff from surrounded hills caused swelled creeks in and around Rio Grande City and Precinct 1 of Starr County. Rainfall estimated within those two weeks went over 18 inches.

These events had impacts to critical infrastructure, residential and commercial areas, and agriculture. As a result of the river floods, La Grulla lost water supply for 1 week due to pump failure and facility flooding. Mandatory evacuation of 15 homes were conducted, leaving around 60 people sheltered at Alto Bonito Elementary School for 3 weeks. 5,000 acres of farmland along the Rio Grande River were flooded for 42 days. La Union Water Plant was under 6ft of water and was shut down for 3 weeks leaving 8,000 residents without water for the same 3 weeks.

Impacts resulting from the flash flooding event included the Starr County Juvenile Justice Center basement floor which was under 1 ft of water. 10 juveniles had to be relocated to the Sheriff's Office.

Brook St., Embassy St., and Elliot St., were under about 1.5 ft of water, causing inaccessibility to the public. The Sheriff's Department evacuated an elderly resident from her home in Las Lomas.

Problem Statements

The 2010 floods led to inundation variation of 100ft to 1 mi. in from the Rio Grande River causing damages of approximately \$250K to the water plant, including loss of water supply for 1 week.

City of La Grulla, located within the 100-year floodplain, had 15 homes and 60 people evacuated and sheltered for 3 weeks.

River flooding in 2010 resulted in 86 miles of inundated farmlands, some of which were under 40 ft. of water. Flooding led to loss of livestock that amounted to approximately \$45K and the relocation of 300 heads of livestock.

La Union Water Plant was under 6ft of water and was shut down for 3 weeks leaving 8,000 residents without water for the same 3 weeks. The water plant is located within the 100- year floodplain.

Due to the same floods, FM 1430 was closed for 2 days preventing accessibility to the unincorporated areas of La Casita and Garciasville.

Poor drainage at the Starr County Juvenile Justice Center caused flooding of 1 foot of water to the basement. The Sheriff's Office had to relocate 10 juveniles to their offices. Repair costs to the basement ran over \$10K back in the 2007 floods.

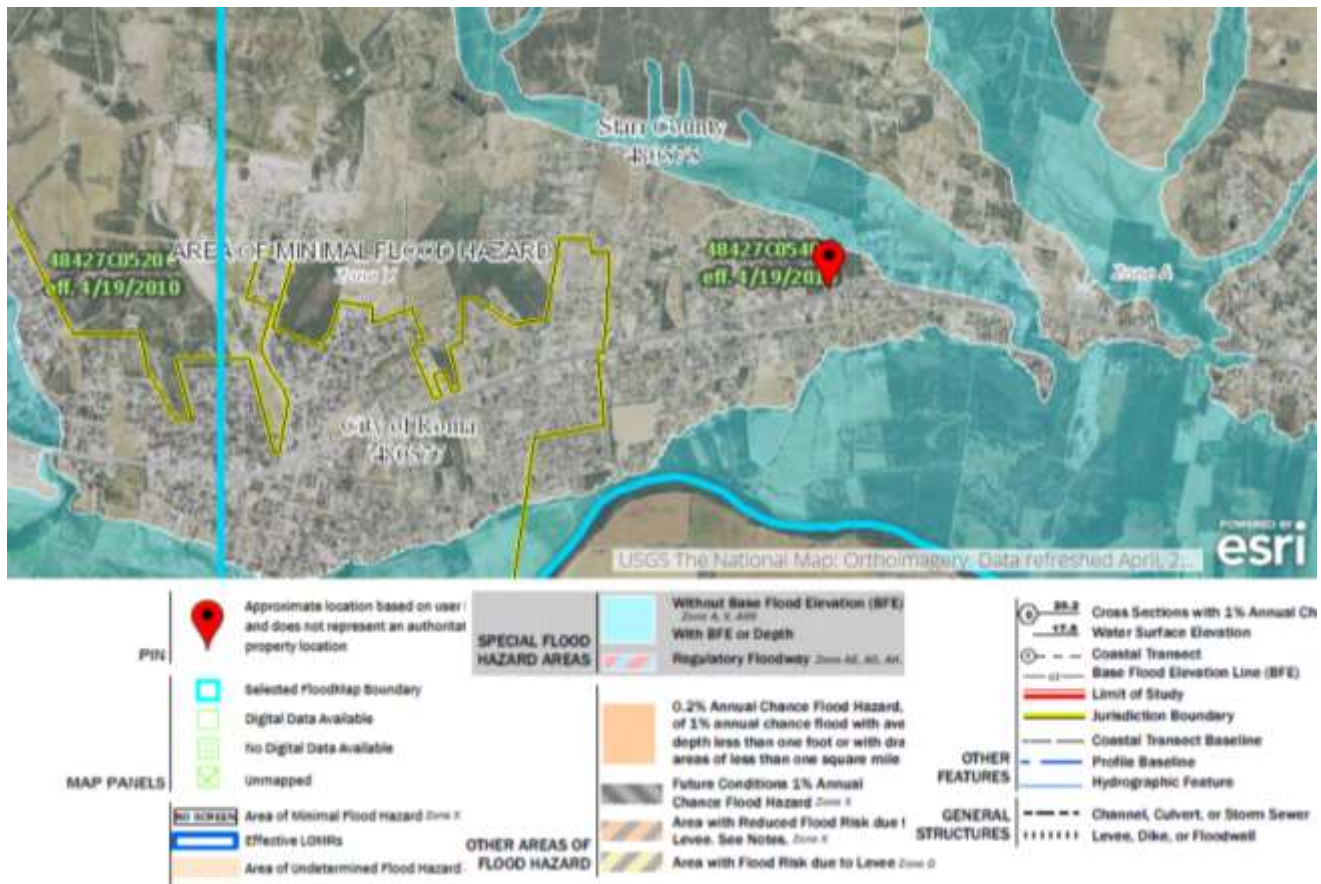
Due to poor drainage and low-lying areas, Brook St., Embassy St., and Elliot St., were under 1.5 ft. of water causing inaccessibility to the public.

Garcia's Camp made up of 50 homes are susceptible to flash floods due to lack of drainage and low-lying area.

Mike's Subdivision is at risk to flash flooding (200 homes). Retention pond was built in 2015 to alleviate flooding, however, poor drainage to the area still places the community at risk.

Escobares

Location and Probability of Occurrence



Probability of Occurrence: River floods, **OCCASIONAL**

Probability of Occurrence: Flash floods, **LIKELY**

Risk Analysis

The planning sub-team used two scenarios for this hazard to analyze the potential impacts of river floods and flash floods

River Floods

July/August 2010- Torrential rainfall from Hurricane Alex remains fell across the Sierra Madre in Mexico, along with 50 inches of rain across Coahuila, Mexico from remnants of Tropical Depression Number 2 causing major overflow to the Rio Grande Basin. As a result, water releases of Amistad Dam and ultimately Falcon Dam caused major flooding along the Rio Grande River in Starr County. The highest release at Falcon Dam reached 60,000 cfs (cubic feet per second). Water levels in Starr County reached a peak of 57.63 feet at 7AM on July 11, 2010. Flooding lasted from July 9th through August 3rd.

Flash Floods

August 2008- Rains in amounts of 11-14 inches caused major flash flooding in the areas of Roma, Escobares, Garceño and the overflow of Arroyo Quiote (Creek). Other effects included water levels of up to 5 ft in some areas and a river gauge reading of 32.6 ft.

Impact from river floods include, farmland (70 acres) under water, with a potential loss of crops valued at \$100K. Southeast Escobares neighborhood of El Rincon would be under a max. of 3 ft of water affecting 70 homes and 240 residents. People would need to be evacuated and homes would be uninhabitable for 1 week. Rincon Rd., Roel St., and Retonda St would be inaccessible due to inundation. Damage amount to these streets would range from \$100K- \$200K.

Potential impacts form flash flooding includes, Pena Subdivision which would be affected due to Moreno's Creek overflow (caused with anything over 5 inches in an hour). 50 homes would be uninhabitable and 360 people would be evacuated and displaced. Eli St., Soaring Dove St., Leticia St., Capula St., Pena St., Comal St., Liliana St., would be inundated, inaccessible, and damaged. San Julian St. inundates from Garceño Creek preventing accessibility to 40 residences and 120 people.

Problem Statements

70 acres of farmland located within the 100-year floodplain are susceptible to river flooding resulting in loss of crops valued at \$100K.

El Rincon Subdivision located in the SE part of the City is within the 100- year floodplain and has been previously affected with a max of 3 ft. of water, resulting 70 homes to be uninhabitable for about 1 week and causing the evacuation and displacement of 240 residents.

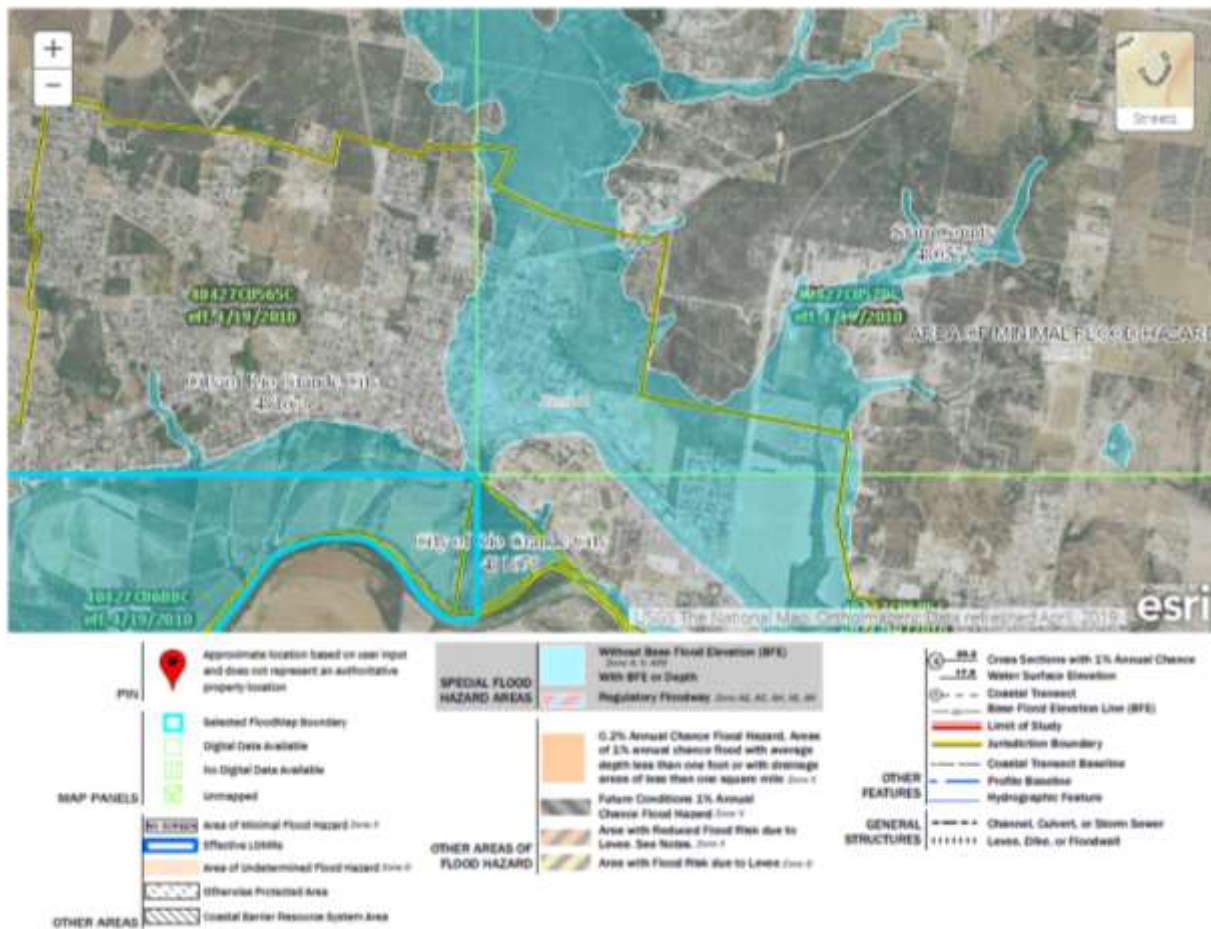
River flooding has continuously damaged Rincon Rd., Roel St., and Retonda St. causing inaccessibility and costing \$100K- \$200K in repairs.

Heavy rains over the low-lying Moreno's Creek causes overflow into Pena Subdivision causing 50 homes to be uninhabitable and the evacuation and displacement of 360 people.

Lack of drainage in Eli St., Soaring Dove St., Leticia St., Capula St., Pena St., Comal St., Liliana St. results in rapid flooding caused by the overflow of Moreno's Creek. Damages to these streets is estimated in \$100-\$200k per event.

Low crossing on San Julian St. allows for easy flooding from Garceño Creek overflow preventing the accessibility and/or evacuation of 40 homes and 120 people.

Rio Grande City
Location and Probability of Occurrence



Probability of Occurrence: River flooding, **UNLIKELY**

Probability of Occurrence: Flash flooding, **LIKELY**

Risk Analysis

The planning sub-team used two scenarios for this hazard to analyze the impacts from river floods and flash floods.

River Floods

July/August 2010- Torrential rainfall from Hurricane Alex remains fell across the Sierra Madre in Mexico, along with 50 inches of rain across Coahuila, Mexico from remnants of Tropical Depression Number 2 causing major overflow to the Rio Grande Basin. As a result, water releases of Amistad Dam and ultimately Falcon Dam caused major flooding along the Rio Grande River in Starr County. The highest release at Falcon Dam reached 60,000 cfs (cubic feet per second). Water levels in Starr County reached a peak of 57.63 feet at 7AM on July 11, 2010. Flooding lasted from July 9th through August 3rd.

Flash Floods

June 2007- Two weeks of intermittent rainfall and runoff from surrounded hills caused swelled creeks in and around Rio Grande City and Precinct 1 of Starr County. Rainfall estimated within those two weeks went over 18 inches.

Impacts from river flooding include 3 pumps located 30 ft from the river bank had damage to electrical panels with repair costs of \$15K. Los Velas Ranch Rd. (only EGRESS) which becomes inaccessible to 20 people. A neighborhood located on the east side of Rio Grande City and south of US Hwy 83 is affected by overflow of Los Olmos Creek, inundating 10 homes causing the evacuation and displacement of 40 people. 8 miles of farmland along the river are prone to river flooding. 50 to 60 acres are potentially affected, resulting in an estimated \$500K crop loss. Thirty-four (34) units of public housing were condemned because they were flooded to the rooftops. The City lost four (4) acres of land. The Bluebonnet Street Drainage Culvert was washed away, and the South Fordyce Road and drainage pipes were washed out.

Impacts to flash floods include Garza-Salinas Subdivision which becomes inundated, affecting 10 homes. The property had to be bought out. Southwest of Rio Grande City, Cox St, Water St, Bluebonnet St and Kane were flooded by 2-3 ft of water resulting inaccessible and costing thousands in repairs. Avasolo St, Gonzalez St, Margo St, Clark St, Hidalgo St are affected on the east side causing closures and evacuation of 15 homes and displacement of 40 people. The police substation is inundated with a foot of water causing structural damages.

Problem Statements

City of Rio Grande City has 3 water pumps with electrical panels located near the river bank that have been subject to damages in amounts of \$15K.

Due to its low-lying area, Los Velas Ranch Rd. gets flooded preventing accessibility to 20 people.

El Arroyo Subdivision is in a low-lying area located to the west of Los Olmos Creek where 25 homes are vulnerable to flash floods.

Neighborhood located on the east side of RGC and south of US Hwy 83 is affected by overflow of Los Olmos Creek, inundating 10 homes causing the evacuation and displacement of 40 ppl.

8 miles of farmland along the river are prone to river flooding. 50-60 acres of said area are affected, resulting in an estimated \$500K crop loss.

Due to natural runoff from higher ground levels, areas Southwest of Rio Grande City are subject to flash floods of up to 3 ft of water. Flooding in the area causes inaccessibility to Cox St., Water St., Bluebonnet St., and Kane St., and up to \$300K in repairs.

Flooding, due to the natural runoff from higher ground levels, causes road closures to the east side of Avasolo St., Gonzalez St., Margo St., Clark St., and Hidalgo St.; prompting the evacuation of 15 homes and 40 people.

Due to poor drainage, the Police substation is susceptible to flooding up to 1 ft. of water, averaging \$10K in repairs.

Roma
Location and Probability of Occurrence



Probability of Occurrence: **OCCASIONAL**

Risk Analysis

The planning sub-team created a worst-case scenario for this hazard to depict the impacts of both river flooding and flash flooding.

Excessive flooding in northern Mexico on the Rio Grande River water shed causing river to reach record flood stage reading of 65 ft on the IBWC river gauge at the Bravo & Roma Suspension Bridge. In combination with heavy rains throughout the City of Roma (10-15 inches in a matter of an hour) causing flash flooding and major backflow.

Impacts from the combination of river flood and flash flood within the city would include a lot of structural damage to critical facilities and infrastructure. Part of these damages consist of complete paralysis of waste water collection system. All (29) lift stations become inoperable, while 23 of them are damaged by inflow of stormwater in amounts of \$30K per lift station and \$100k to the Lift Station K. Waste water treatment plant inoperable for 12 hours. 3 submersible pumps would become inoperable due to debris and mud accumulation. Damages to streets in amounts of over \$5 million to streets located within the 100-year floodplains and low-lying neighborhoods within Roma Creek, Rau-Con, De la Cruz Subdivision., Escandon, El Bosque, Robinson, Las Flores, Hillside Terrace, Mi Ranchito, Margarita Subdivision, Los Saenz, Hacienda, and Mesquite. The fire station would be under 18 in. of water causing \$100K in structural damage and \$30K loss of cascade system. \$1,000 K to air compressor. Facility would become inoperable for 2 days. The police station would be under 18 in. of water causing \$100K in structural damage and \$150K in equipment loss/damage (computers and generator).

Problem Statements

De La Cruz Subdivision is susceptible to major river flooding based on its proximity to the Rio Grande River. Flooding would cause 80 residences to become uninhabitable due to 10 ft. of inundation for a time of approximately 2 weeks and the evacuation of 320 people.

Over 2,730 acres of water shed of Arroyo Roma makes it prone to major river flooding and flash flooding causing 400 homes to become uninhabitable and the evacuation 1600 people within 51 blocks of Roma Creek Subdivision, Rau- Con 1,2, &3, and Madrigal Subdivision.

Overflow of Arroyo Roma (creek) cause flood damages to 17 streets within its vicinity, racking up repair costs of approximately \$3 million.

Heavy rains over the 4,000 acres of watershed of Los Morenos Creek & Gongora Creek cause inaccessibility of 6 streets (Escandon St., Ebony St., Obregon St., Robert Lee St., Efren Ramirez St., & Eagle St.) of neighborhood exits due to flooding, preventing the prompt evacuation of 4800 people in the surrounding subdivisions (Escandon, Humberto Saenz, El Bosque, Mirasoles, Robinson, Las Flores, Hillside Terrace, & Margarita).

Watershed overflow of Los Morenos Creek and Gongora Creek cause flood damage to roads, streets, and exits costing approximately \$2.5 million in repairs.

Residences on 6th and 7th street in Los Saenz subdivision are located within the 100-year floodplain and have been subject to inundation of up to 3ft., resulting in the immediate

evacuation and sheltering of 30 homes and 120 people and road damages of approximately \$1 million.

Roma ISD

Location and Probability of Occurrence



Probability of Occurrence: **LIKELY**

Risk Analysis

The planning sub-team used a historical scenario to analyze the impact of flash floods throughout their campus.

August 2008- Rains in amounts of 11-14 inches caused major flash flooding in the areas of Roma, Escobares, Garceño and the overflow of Arroyo Quiote (creek). Other effects included water levels of up to 5 ft in some areas and a river gauge reading of 32.6 ft.

Impacts from flash flooding include damages to several facilities and the evacuation of staff and students. Jesus O. Guerra Gym was flooded in 2008 with an approximate 4-5 inches of water. Repair costs to replace floors ran to about \$300K. Structure with potential to be impacted include the Roma ISD Receiving Center, Special Education Dept., Instructional and Guidance School, and Intermediate Gym and LA Building causing structural damage to those facilities. Damage costs could run over \$1 million in repairs. In the Instructional and Guidance 43 students and 11 staff would have inaccessibility or would need to be evacuated. In the Special Education Dept., 16 staff would need to be evacuated or would have inaccessibility to the facility. The Receiving Center has 90 staff personnel that would need evacuation and/or have inaccessibility to the facility. The corner of Garfield Ave and Rau-Con street would close due to flooding from run off from higher ground levels and overwhelm the drainage system, gages would become full and cause staff from the ING center to be relocated to Roma High School.

Problem Statements

The close proximity of the Jesus O. Guerra Gym to the Roma Creek caused flood damages to the gym floors which resulted in about \$300K in repairs.

Roma ISD Receiving Center, Special Education Dept., Instructional and Guidance, and Intermediate Gym and LA Building are along the path of the Roma Creek causing potential flooding that could raise \$1 million dollar in damages.

Roma Creek overflow would cause flooding to the Instructional and Guidance Center, Special Education Dept. and Receiving Center resulting in immediate evacuation of 43 students, and 11 staff members.

Hurricanes/Tropical Storms

Hurricanes are massive storm systems that form over the water and move toward land. Threats from hurricanes include high winds, heavy rainfall, storm surge, coastal and inland flooding, rip currents, and tornadoes. Hurricane season runs from June 1st to November 30th.

The planning team will be using the Saffir-Simpson Hurricane Wind Scale (SSHWS) to describe the extent of a hurricane's impact. The SSHWS is a 1 to 5 rating based on a hurricane's sustained wind speed. The table below defines each of the ratings.

Category	Sustained Winds	Types of Damage to Hurricane Winds
1	74-95 mph 64-82 kt 119-153 km/h	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutter. Large branches of trees will snap and shallowly rooted may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 83-95 kt 154-177 km/h	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph 96-112 kt 178-208 km/h	Devastating damage will occur: Well-built frame homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph 113-136 kt 209-251 km/h	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph or higher 137 kt or higher 252 km/h or higher	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Below is a list of previous hurricane events that have affected one or more of the participating jurisdictions.

Type	Date	Description	Location
<u>Hurricane Beulah</u>	1967	Last recorded winds were observed at 136 mph. Gusts of 109 mph were recorded at the Brownsville Airport. Beulah's slow movement and relatively large size dropped tremendous rains across Starr, Hidalgo, and Brooks County.	All participants
<u>Hurricane Dolly</u>	2008	Rain of 12 to 18 inches or more produced widespread flooding in Cameron, Hidalgo, Willacy and even Starr County.	All participants
<u>Hurricane Alex</u>	June 30 th , 2010	Far reaching impacts from a tropical cyclone, as days of torrential rainfall in the Sierra Madre ultimately led to severe river flooding along the Rio Grande. Floodway levels reached highest value.	All participants

Many of the problem statements composed by the participating jurisdictions are similar to those described in other hazards as the impacts are greatly related.

Starr County

Location and Probability of Occurrence

As defined, some of the threats occurring from hurricanes include high winds and heavy rainfall. Due to the nature of this hazard, the entire county is at risk for this hazard.

Probability of Occurrence: **LIKELY**

Risk Analysis

The county will be using Hurricane Dolly to analyze the impacts of hurricanes in the area.

Hurricane Dolly was the first storm since Bret (1999) to make landfall along the Deep South Texas barrier islands on July 23rd, 2008. Starr County experienced persistent heavy rains from late afternoon and early evening on the 23rd. Much of central and northern Starr County was remnant southern and western eyewall, where winds were likely 35 to 45 mph with frequent gusts between 50 and 60 mph.

Impacts from this event included property damages, power outages, and agricultural losses due to winds and flash flooding.

Below are specified vulnerabilities that can be associated in any hurricane event.

Problem Statements

Poor drainage at the Starr County Juvenile Justice Center caused flooding of 1 foot of water to the basement. The Sheriff's Office had to relocate 10 juveniles to their offices. Repair costs to the basement ran over \$10K back in the 2007 floods.

Due to poor drainage and low-lying areas, Brook St., Embassy St., and Elliot St., were under 1.5 ft. of water causing inaccessibility to the public.

Garcia's Camp made up of 50 homes are susceptible to flash floods due to lack of drainage and low-lying area.

Mike's Subdivision is at risk to flash flooding (200 homes). Retention pond was built in 2015 to alleviate flooding, however, poor drainage to the area still places the community at risk.

90% of homes in La Gloria and San Isidro (unincorporated areas of Starr County) are susceptible to high wind damage due to their construction prior to building code adoption.

Homes in El Rucio, Los Garzas, El Sauz, and La Victoria (unincorporated areas of Starr County) are sparsely located with no windbreaks making the areas high risk for wind damage.

Starr County maintains MOUs for public shelter as the county does not have community shelters of their own.

The Sheriff's Office, Fire Department and Precinct 4 substations are mobile homes at risk to high winds due to their weak structure.

Escobares

Location and Probability of Occurrence

Due to the nature of this hazard, the entire city is at risk for this hazard.

Probability of Occurrence: **LIKELY**

Risk Analysis

The city will be using Hurricane Dolly to analyze the impacts of hurricanes in the area.

Hurricane Dolly was the first storm since Bret (1999) to make landfall along the Deep South Texas barrier islands on July 23rd, 2008. Starr County experienced persistent heavy rains from late afternoon and early evening on the 23rd. Much of central and northern Starr County was remnant southern and western eyewall, where winds were likely 35 to 45 mph with frequent gusts between 50 and 60 mph.

Impacts from this event included property damages, power outages, and agricultural losses due to winds and flash flooding.

Below are specified vulnerabilities that can be associated in any hurricane event.

Problem Statements

Heavy rains over the low-lying Moreno's Creek causes overflow into Pena Subdivision causing 50 homes to be uninhabitable and the evacuation and displacement of 360 people.

Lack of drainage in Eli St., Soaring Dove St., Leticia St., Capula St., Pena St., Comal St., Liliana St. results in rapid flooding caused by the overflow of Moreno's Creek. Damages to these streets is estimated in \$100-\$200k per event.

Low crossing on San Julian St. allows for easy flooding from Garceño Creek overflow preventing the accessibility and/or evacuation of 40 homes and 120 people.

65% of homes within city limits were built prior to building codes making them highly susceptible to intense winds.

Homes in Manuel Lopez Ln. and Las Palmas subdivision have no buffer to high winds. Increased risk is added when noted that homes were build prior to the building codes established in 2005.

Lack of shelters within the city leave community vulnerable in times of evacuation.

City hall and the police department are composed of portable offices not made to withstand intense winds.

Rio Grande City

Location and Probability of Occurrence

Due to the nature of this hazard, the entire city is at risk for this hazard.

Probability of Occurrence: **LIKELY**

Risk Analysis

The city will be using Hurricane Dolly to analyze the impacts of hurricanes in the area.

Hurricane Dolly was the first storm since Bret (1999) to make landfall along the Deep South Texas barrier islands on July 23rd, 2008. Starr County experienced persistent heavy rains from late afternoon and early evening on the 23rd. Much of central and northern Starr County was remnant southern and western eyewall, where winds were likely 35 to 45 mph with frequent gusts between 50 and 60 mph.

Impacts from this event included property damages, power outages, and agricultural losses due to winds and flash flooding.

Below are specified vulnerabilities that can be associated in any hurricane event.

Problem Statements

Due to natural runoff from higher ground levels, areas Southwest of Rio Grande City are subject to flash floods of up to 3 ft of water. Flooding in the area causes inaccessibility to Cox St., Water St., Bluebonnet St., and Kane St., and up to \$300K in repairs.

Flooding, due to the natural runoff from higher ground levels, causes road closures to the east side of Avasolo St., Gonzalez St., Margo St., Clark St., and Hidalgo St.; prompting the evacuation of 15 homes and 40 people.

Due to poor drainage, the Police substation is susceptible to flooding up to 1 ft. of water, averaging \$10K in repairs.

Homes and buildings built prior to 2007 do not building code that requires windstorm construction to withstand winds of 80mph.

Rio Grande City Historic District has structures from the 1840s that are vulnerable to intense winds from tornadoes due to the old age of the structures.

Monarch Subdivision on FM 3167 is being development on flat land, north of the city where there is no break from high winds.

Roma

Location and Probability of Occurrence

Due to the nature of this hazard, the entire city is at risk for this hazard.

Probability of Occurrence: **OCCASSIONAL**

Risk Analysis

The city will be using Hurricane Dolly to analyze the impacts of hurricanes in the area.

Hurricane Dolly was the first storm since Bret (1999) to make landfall along the Deep South Texas barrier islands on July 23rd, 2008. Starr County experienced persistent heavy rains from late afternoon and early evening on the 23rd. Much of central and northern Starr County was remnant southern and western eyewall, where winds were likely 35 to 45 mph with frequent gusts between 50 and 60 mph.

Impacts from this event included property damages, power outages, and agricultural losses due to winds and flash flooding.

Below are specified vulnerabilities that can be associated in any hurricane event.

Problem Statements

De La Cruz Subdivision is susceptible to major river flooding based on its proximity to the Rio Grande River. Flooding would cause 80 residences to become uninhabitable due to 10 ft. of inundation for a time of approximately 2 weeks and the evacuation of 320 people.

Over 2,730 acres of water shed of Arroyo Roma makes it prone to major river flooding and flash flooding causing 400 homes to become uninhabitable and the evacuation 1600 people within 51 blocks of Roma Creek Subdivision, Rau- Con 1,2, &3, and Madrigal Subdivision.

Overflow of Arroyo Roma (creek) cause flood damages to 17 streets within its vicinity, racking up repair costs of approximately \$3 million.

Heavy rains over the 4,000 acres of watershed of Los Morenos Creek & Gongora Creek cause inaccessibility of 6 streets (Escandon St., Ebony St., Obregon St., Robert Lee St., Efren Ramirez St., & Eagle St.) of neighborhood exits due to flooding, preventing the prompt evacuation of 4800 people in the surrounding subdivisions (Escandon, Humberto Saenz, El Bosque, Mirasoles, Robinson, Las Flores, Hillside Terrace, & Margarita).

Watershed overflow of Los Morenos Creek and Gongora Creek cause flood damage to roads, streets, and exits costing approximately \$2.5 million in repairs.

Residences on 6th and 7th street in Los Saenz subdivision are located within the 100-year floodplain and have been subject to inundation of up to 3ft., resulting in the immediate evacuation and sheltering of 30 homes and 120 people and road damages of approximately \$1 million.

Building codes require construction to withstand winds of 85 mph, making homes and public places susceptible to damages from tornadoes above an F1.

12 businesses within the city are prone to damages from high winds affecting gas canopies and store front windows. Damages run up to \$2.5M.

Power substation and high voltage power lines north of Roma, on Grant St and FM 650, supply power to the entire city and are not equipped to withstand impacts from high winds leave the majority of the city without power.

Buildings within the Roma Historical District that date back to the 1830s are at risk to structural damage of high winds due to age and instability.

Roma ISD

Location and Probability of Occurrence

Due to the nature of this hazard, the entire district is at risk for this hazard.

Probability of Occurrence: **OCCASSIONAL**

Risk Analysis

The district will be using Hurricane Dolly to analyze the impacts of hurricanes in the area.

Hurricane Dolly was the first storm since Bret (1999) to make landfall along the Deep South Texas barrier islands on July 23rd, 2008. Starr County experienced persistent heavy rains from late afternoon and early evening on the 23rd. Much of central and northern Starr County was remnant southern and western eyewall, where winds were likely 35 to 45 mph with frequent gusts between 50 and 60 mph.

Impacts from this event included property damages and power outages due to winds and flash flooding.

Below are specified vulnerabilities that can be associated in any hurricane event.

Problem Statements

The close proximity of the Jesus O. Guerra Gym to the Roma Creek caused flood damages to the gym floors which resulted in about \$300K in repairs.

Roma ISD Receiving Center, Special Education Dept., Instructional and Guidance, and Intermediate Gym and LA Building are along the path of the Roma Creek causing potential flooding that could raise \$1 million dollar in damages.

Roma Creek overflow would cause flooding to the Instructional and Guidance Center, Special Education Dept. and receiving center resulting in immediate evacuation of 43 students, and 11 staff members.

Poor construction in Roel and Celia Saenz Elementary are at risk to high winds, damages include walls collapsing and roof caving in. Immediate evacuation of students would be required.

Roma ISD lacks a district wide warning system and is reliant on individual campus system placing students, faculty and staff at risk during an emergency.

Campus scoreboards at 4 fields are inadequate to sustain high winds and are susceptible to damage at high winds.

Fire

A wildfire is an unplanned, unwanted fire burning in a natural area, such as forest, grassland, or prairie. As building development expands into these areas, homes and businesses may be situated in or near areas susceptible to fires.

The rural nature and dry conditions of the planning area further aggravate the planning area's susceptibility to fires.

The planning team will be using the Fire Intensity Scale (FIS) Classes described below to demonstrate the intensity and extent of fires in the area. Other risks, such as wind and drought, add complexity in determining a dominant extent scale.

Fire Intensity Scale (FIS) Classes	
Class 1 (Very Low)	Very small, discontinuous flames, usually less than one foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and non-specialized equipment.
Class 2 (Low)	Small flames, usually less than two feet long; small amount of very short-range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.
Class 3 (Moderate)	Flames up to 8 feet length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.
Class 4 (High)	Large flames, up to 30 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property.
Class 5 (Very High)	Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

Below is a list of fire events within the planning area that may have affected some or all participants.

Type	Date	Description	Location
<u>Wildfires</u>	May 18 th , 2012	100 Acres. Farmland affected. Grass/ brush fire	Roma
<u>Wildfires</u>	February 09 th , 2016	10 acres. Grass/brush fire. Isla San Francisco.	Roma
<u>Wildfires</u>	May 01 st , 2014	5 Acres of grass and brush fire.	Roma
<u>Wildfires</u>	May 22 nd , 2014	15 acres of grass and brush.	Roma
<u>Wildfires</u>	02/24/2016	Fire located within Pct. 3 between La Paloma Rd. and Liebre St. resulting in 812 acres burned.	Starr County: La Casita
<u>Wildfires</u>	07/6/2016	Fire located within Pct. 3 Between 2360 Rd. and Antonio Flores St. resulting in 500 acres burned.	Starr County: La Casita

<u>Wildfires</u>	07/08/2016	Fire located within Pct. 4 between Sanchez Rd. and FM 649 Rd. resulting in 200 burned acres.	Starr County: La Rosita
<u>Wildfires</u>	07/16/2016	Fire located within Pct. 4 between Las Brisas Rd. and FM 755 Rd. resulting in 250 acres burned.	Starr County: San Isidro
<u>Wildfires</u>	02/07/2017	Fire located within Pct. 3 between Produce Rd. and Old Military Rd. resulting in 130 acres burned.	Starr County: La Casita
<u>Wildfires</u>	02/11/2018	Fire located within Pct. 3 between Produce Rd. and Old Military Rd. resulting in 75 acres burned.	Starr County: La Casita
<u>Wildfires</u>	02/28/2017	Fire located within Pct. 3 between 2360 Rd and Elias & Fela Solis Rd. resulting in 801 acres burned.	Starr County: La Casita
<u>Grass Fire</u>	08/12/2015	Grass Fire resulting in 1 burned acre.	Escobares
<u>Grass Fire</u>	08/26/2015	Grass Fire resulting in 7 acres burned.	Escobares
<u>Grass Fire</u>	02/25/2016	Grass Fire resulting in 3 acres burned.	Escobares
<u>Grass Fire</u>	01/18/2017	Grass Fire resulting in 1 burned acre.	Escobares
<u>Brush Fire</u>	08/14/2017	Brush fire resulting in 1 burned acre.	Escobares
<u>Grass/Wildfire</u>	01/12/2018	Less than one acre burned.	Rio Grande City
<u>Grass/Wildfire</u>	02/14/2018	Less than one acre burned.	Rio Grande City
<u>Grass/Wildfire</u>	02/15/2018	Less than one acre burned.	Rio Grande City
<u>Grass/Wildfire</u>	02/16/2015	Less than one acre burned.	Rio Grande City

Starr County

Location and Probability of Occurrence

The majority of the planning area is made up of or surrounded by brush. The added dry conditions predispose residential or any populated areas to the probability of fires. The rural nature of the county and the inaccessibility to all areas allow fires to expand rapidly and occasionally delay response.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The county will be using an actual event to analyze the impact of fires within the planning area.

Event occurred on July 16, 2016 where a fire of 500 acres occurred within the planning area. 1 home was severely affected and 3 homes were mildly damaged. Evacuations were made at a 2-mile radius in efforts to prevent smoke inhalation. 8 departments assisted in the incident.

Impacts for this event include evacuations due to radiated heat, relocation of livestock, road closures, and property damage.

Below is a list of vulnerabilities related specifically to the planning area.

Problem Statements

Lack of easement and high brush areas place communities at risk for fires.

Lack of road access and uneven terrain prevents quick access to areas with high risk to fires.

Neighborhoods in high risk areas force the evacuation of homes and public facilities to prevent effects of heat radiation and smoke inhalation.

Escobares

Location and Probability of Occurrence

The majority of the planning area is made up of or surrounded by brush. The added dry conditions predispose residential or any populated areas to the probability of fires. The whole planning area is at risk.

Probability of Occurrence: **LIKELY**

Risk Analysis

The city will be using an actual event to analyze the impact of fires within the planning area.

August 26, 2015, Escobares Volunteer Fire Department and La Rosita Volunteer Fire Department responded to a brush fire that reached 7 acres southeast of the City near the Rio Grande River riverbank. Situation exasperated by winds of 10-12 mph from the southeast.

Impacts events like these include, evacuations due to radiated heat and smoke inhalation, relocation of livestock, agricultural losses, and property damage.

Below is a list of vulnerabilities related specifically to the planning area.

Problem Statements

El Rincon subdivision sits on the edge of the city limits next to 150 acres of brush land. 100 homes with 400 residents are exposed to fire smoke and fire damage. Homes built in the neighborhood have a 5-8 feet buffer between them.

Ramirez and Eli St. sit next to 32 acres of brush land. 75 homes on Ramirez St. valued at \$20K, and 10 homes valued at \$20K including 2 local businesses on Eli St are at risk to fire. Evacuation of 425 people would be needed in case of incident in order to prevent effects of smoke inhalation.

Homes on Martinez St. and Naranjo St. are located near large areas of brush land that make the area very vulnerable to fire damages.

Dry conditions increase fire risk to wildlife refuge areas located near acres of dry brush.

Rio Grande City

Location and Probability of Occurrence

The majority of the planning area is made up of or surrounded by brush. The added dry conditions predispose residential or any populated areas to the probability of fires. The whole planning area is at risk.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The city will be using an actual event to analyze the impact of fires within the planning area.

February 26, 2016, Rio Grande City Fire Department, U.S. Fish & Wildlife, and Texas Forest Service responded to a fire located on the south area of 632 W. Eisenhower. Situation exasperated by winds of 25 mph from the southeast. 7 acres of brush land burned. Incident contained within 2 hours.

Impacts events like these include, evacuations due to radiated heat and smoke inhalation, agricultural losses, and property damage.

Below is a list of vulnerabilities related specifically to the planning area.

Problem Statements

Starr County Housing Authority located (50 multi-family units) and apartment complex of 20 units are located between 100 acres of brush land with great susceptibility to wildfires. Any event deems the evacuation of 300 people with risk to fire or smoke inhalation.

Northwest of Rio Grande City, 140 acres of brush land located between N. Fairgrounds Rd. and N. San Antonio St. 10 homes valued at \$120K located around the area at risk to fire damage. 3 homes valued at \$220K located within concern area are at risk to fire damage. 25 people would need evacuation from potential smoke inhalation.

Rio Grande City Animal Kennels located within city owned 14 acres (brush land). Kennel capacity of 15-20 animals that would need to be relocated to prevent suffocation.

Southwest of Rio Grande City, west of N. Charco Blanco Rd., are 80 acres of brush land. 30 homes valued at approximately \$80K are at risk to fire damage. 100 residents would need evacuation from potential smoke inhalation.

Roma

Location and Probability of Occurrence

The majority of the planning area is made up of or surrounded by brush. The added dry conditions predispose residential or any populated areas to the probability of fires. The whole planning area is at risk.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The city will be using an actual event to analyze the impact of fires within the planning area.

May 18th, 2012, City of Roma Volunteer Fire Department responded to a brush fire located southeast of the city near the riverbank. Situation exasperated by winds of 10-12 mph from the southeast stretching fires to residential areas of Rancho Nuevo and Los Saenz neighborhoods. Fire contained within 8 hours. Area affected reached 100 acres.

Impacts events like these include, evacuations due to radiated heat and smoke inhalation, agricultural losses, and property damage.

Below is a list of vulnerabilities related specifically to the planning area.

Problem Statements

Dry conditions and high brush areas have made agriculture land susceptible to fire risk. Previous events have resulted in 100 acres of agriculture land burned and approximately \$750K in monetary loss.

Old Town Site in City of Roma, has 10 acres vulnerable area to wildfire. City Hall is adjacent to area, Old Custom House, various structures in the National Historic Landmark District (14 blocks) are also susceptible to fires.

Lift station located on Sebastian street, is susceptible to fire damage with costs of \$75K due to proximity to brush area.

Lift station on La Bahia St. is located within the 10-acre brush area and is susceptible to fire damage. Repairs run up to \$75K.

Roma Creek Subdivision is surrounded in the center of 95 acres of undeveloped land composed of dry brush making it susceptible to brush fires. Evacuation of 100 homes would be required for evacuation. 40 homes susceptible to fire damage.

Regal Hills and Rio Vista Subdivisions are surrounded by 17 acres of undeveloped brush area. 70 homes would need evacuation due to smoke. 25 homes in Rio Vista would be susceptible to damage.

16 acres of brush land located between Escandon St. and Canales St. make area susceptible to fire damage and smoke exposure. Homes susceptible include, 10 single family units and 10 multi-family units.

5-acre strip of brush land in the center of El Bosque Subdivision has been affected by previous fires requiring the evacuation of 5 homes.

Roma ISD

Location and Probability of Occurrence

The majority of the planning area is made up of or surrounded by brush. The added dry conditions predispose the campus to the probability of fires. The whole planning area is at risk.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The district will be using an actual event in the city of Roma to determine the impacts within the planning area.

May 18th, 2012, City of Roma Volunteer Fire Department responded to a brush fire located southeast of the city near the riverbank. Situation exasperated by winds of 10-12 mph from the southeast stretching fires to residential areas of Rancho Nuevo and Los Saenz neighborhoods. Fire contained within 8 hours. Area affected reached 100 acres.

Impacts events like these include, evacuations due to radiated heat and smoke inhalation, agricultural losses, and property damage.

Below is a list of vulnerabilities related specifically to the planning area.

Problem Statements

The majority of campuses lie in or close to brush area placing schools at risk to fires.

Evacuation of faculty, staff, and students would be required for any incident in order to prevent smoke inhalation due to lack of easement between campuses and brush areas.

Tornadoes

A tornado is a violently rotating column of air extending from a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more.

Damage paths can be in excess of one mile wide and 50 miles long.

The planning team will be using the Enhanced Fujita Scale to describe the extent of a potential event.

EF Rating	Wind Speeds	Expected Damage	
EF-0	65-85 mph	'Minor' damage: shingles blown off or parts of a roof peeled off, damage to gutters/siding, branches broken off trees, shallow rooted trees toppled.	
EF-1	86-110 mph	'Moderate' damage: more significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged.	
EF-2	111-135 mph	'Considerable' damage: roofs torn off well constructed homes, homes shifted off their foundation, mobile homes completely destroyed, large trees snapped or uprooted, cars can be tossed.	
EF-3	136-165 mph	'Severe' damage: entire stories of well constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose their bark.	
EF-4	166-200 mph	'Extreme' damage: Well constructed homes are leveled, cars are thrown significant distances, top story exterior walls of masonry buildings would likely collapse.	
EF-5	> 200 mph	'Massive/incredible' damage: Well constructed homes are swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain severe structural damage, trees are usually completely debarked, stripped of branches and snapped.	

Source: NOAA/NWS

Below is a list of previous events that have occurred within the planning area. Due to location and intensity, not all events may have been recorded.

Type	Date	Description	Location
Tornado	June 03 rd , 2009	Scale: F0. Length was 1.43 miles, width 20 yards. Starr County EMC reported seeing a funnel cloud briefly near the intersection of 755 and 490 just east of 755 and approximately ¼ mile north of 490 near the city of Rincon.	Eastern Starr County

Tornado	April 02 nd , 2004	Scale: F0. Length of 0.1 miles and width of 30 yards. There were no fatalities or injuries during this event.	Eastern Starr County
Tornado	May 05 th , 1991	Scale: F2. A tornado cut a mile-long path through the village of La Victoria. The path was 200 yards wide at its maximum. Over 40 mobile homes, houses, and barns were damaged or destroyed. Power lines were down for several hours and numerous trees were uprooted.	Starr County, La Victoria

Starr County

Location and Probability of Occurrence

Due to the nature of this hazard, the entire planning area is at risk for impacts from tornadoes.

Probability of Occurrence: **UNLIKELY**

Risk Analysis

The planning team will use a historic event to analyze the impacts of tornadoes within the planning area.

May 5th, 1991- A tornado cut a mile-long path through the area of La Victoria. The path was 200 yards wide at its maximum. Over 40 mobile homes, houses, and barns were damaged or destroyed. Power lines were downed for several hours and numerous trees were uprooted.

Impacts from events such as these are property damages from high winds, power outages, and uprooted trees.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

90% of homes in La Gloria and San Isidro (unincorporated areas of Starr County) are susceptible to high wind damage due to their construction prior to building code adoption.

Homes in El Rucio, Los Garzas, El Sauz, and La Victoria (unincorporated areas of Starr County) are sparsely located with no windbreaks making the areas high risk for wind damage.

Starr County maintains MOUs for public shelter as the county does not have community shelters of their own.

The Sheriff’s Office, Fire Department and Precinct 4 substations are mobile homes at risk to high winds due to their weak structure.

Escobares

Location and Probability of Occurrence

Due to the nature of this hazard, the entire planning area is at risk for impacts from tornadoes.

Probability of Occurrence: **LIKELY**

Risk Analysis

The planning team will use a historic event to analyze the impacts of tornadoes within the planning area.

May 5th, 1991- A tornado cut a mile-long path through the area of La Victoria. The path was 200 yards wide at its maximum. Over 40 mobile homes, houses, and barns were damaged or destroyed. Power lines were downed for several hours and numerous trees were uprooted.

Impacts from events such as these are property damages from high winds, power outages, and uprooted trees.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

65% of homes within city limits were built prior to building codes making them highly susceptible to intense winds from tornadoes.

Homes in Manuel Lopez Ln. and Las Palmas subdivision have no buffer to high winds. Increased risk is added when noted that homes were build prior to the building codes established in 2005.

Lack of shelters within the city leave community vulnerable in times of evacuation.

City hall and the police department are composed of portable offices not made to withstand intense winds from tornadoes.

Rio Grande City

Location and Probability of Occurrence

Due to the nature of this hazard, the entire planning area is at risk for impacts from tornadoes.

Probability of Occurrence: **UNLIKELY**

Risk Analysis

The planning team will use a historic event to analyze the impacts of tornadoes within the planning area.

May 5th, 1991- A tornado cut a mile-long path through the area of La Victoria. The path was 200 yards wide at its maximum. Over 40 mobile homes, houses, and barns were damaged or destroyed. Power lines were downed for several hours and numerous trees were uprooted.

Impacts from events such as these are property damages from high winds, power outages, and uprooted trees.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

Homes and buildings built prior to 2007 do not follow building codes that require windstorm construction to withstand winds of 80mph.

Rio Grande City Historic District has structures from the 1840s that are vulnerable to intense winds from tornadoes due to the old age of the structures.

Monarch Subdivision on FM 3167 is being developed on flat land, north of the city where there is no break from high winds, making them prone to direct impacts from tornadoes.

Roma

Location and Probability of Occurrence

Due to the nature of this hazard, the entire planning area is at risk for impacts from tornadoes.

Probability of Occurrence: **UNLIKELY**

Risk Analysis

The planning team will use a historic event to analyze the impacts of tornadoes within the planning area.

May 5th, 1991- A tornado cut a mile-long path through the area of La Victoria. The path was 200 yards wide at its maximum. Over 40 mobile homes, houses, and barns were damaged or destroyed. Power lines were downed for several hours and numerous trees were uprooted.

Impacts from events such as these are property damages from high winds, power outages, and uprooted trees.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

Building codes require construction to withstand winds of 85 mph, making homes and public places susceptible to damages from tornadoes above an F1.

12 businesses within the city are prone to damages from tornado winds affecting gas canopies and store front windows. Damages run up to \$2.5M.

Power substation and high voltage power lines north of Roma, on Grant St and FM 650, supply power to the entire city and are not equipped to withstand impacts from high winds leave the majority of the city without power.

Buildings within the Roma Historical District that date back to the 1830s are at risk to structural damage of high winds due to age and instability.

Roma ISD

Location and Probability of Occurrence

Due to the nature of this hazard, the entire planning area is at risk for impacts from tornadoes.

Probability of Occurrence: **UNLIKELY**

Risk Analysis

The planning team will use a historic event to analyze the impacts of tornadoes within the planning area.

May 5th, 1991- A tornado cut a mile-long path through the area of La Victoria. The path was 200 yards wide at its maximum. Over 40 mobile homes, houses, and barns were damaged or destroyed. Power lines were downed for several hours and numerous trees were uprooted.

Impacts from events such as these are property damages from high winds, power outages, and uprooted trees.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

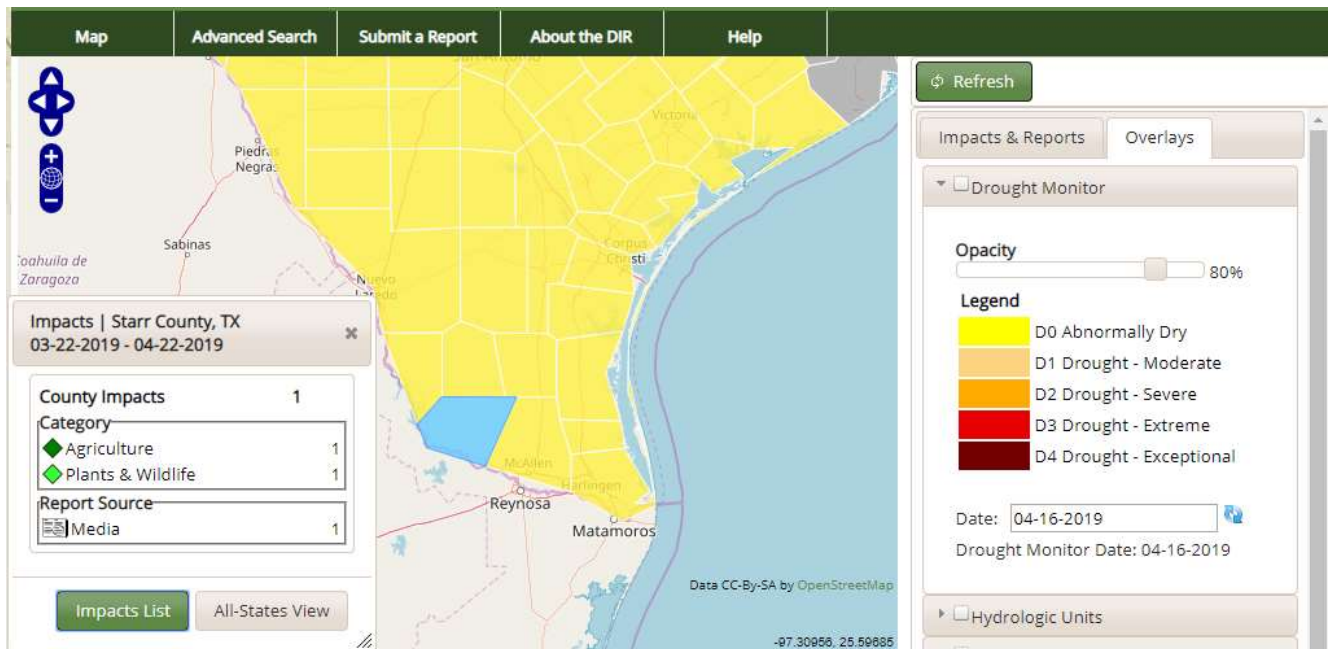
Poor construction in Roel and Celia Saenz Elementary are at risk to high winds, damages include walls collapsing and roof caving in. Immediate evacuation of over 500 students would be required.

Roma ISD lacks a district wide warning system and is reliant on individual campus system placing students, faculty and staff at risk during an emergency.

Campus scoreboards at 4 fields are inadequate to sustain high winds and are susceptible to damage at high winds.

Drought

A drought is a period of unusually constant dry weather that persists long enough to cause deficiencies in water supply (surface or underground). Droughts increase the risk of other hazards like wildfires and flash floods.



Source: National Drought Mitigation Center

As most of south Texas, Starr County is typically dry and susceptible to droughts. Conditions and levels of drought vary depending on climate and weather. The table below further describes the drought classifications using the Palmer Drought Index.

Drought Classifications

Category	Description	Possible Impacts	Ranges				
			Palmer Drought Severity Index (PDSI)	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	<ul style="list-style-type: none"> Going into drought: <ul style="list-style-type: none"> short-term dryness slowing planting, growth of crops or pastures Coming out of drought: <ul style="list-style-type: none"> some lingering water deficits pastures or crops not fully recovered 	-1.0 to -1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30
D1	Moderate Drought	<ul style="list-style-type: none"> Some damage to crops, pastures Streams, reservoirs, or wells low, some water shortages developing or imminent Voluntary water-use restrictions requested 	-2.0 to -2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20
D2	Severe Drought	<ul style="list-style-type: none"> Crop or pasture losses likely Water shortages common Water restrictions imposed 	-3.0 to -3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10
D3	Extreme Drought	<ul style="list-style-type: none"> Major crop/pasture losses Widespread water shortages or restrictions 	-4.0 to -4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5
D4	Exceptional Drought	<ul style="list-style-type: none"> Exceptional and widespread crop/pasture losses Shortages of water in reservoirs, streams, and wells creating water emergencies 	-5.0 or less	0 to 2	0 to 2	-2.0 or less	0 to 2

Source: United States Drought Monitor

Below is a list of relevant drought event periods that have occurred within the planning area. The events listed below may have affected one or all participating jurisdictions and may not represent all drought periods recorded.

Type	Date	Description	Location
Drought (D4)	06/01/1995	Classified as a D4, this drought lasted 21 months.	All participants
Drought (D3)	08/01/2009	Classified as a D3, this drought lasted 1 month.	All participants
Drought (D3)	02/01/2006	Classified as a D3, this drought lasted 10 months.	All participants
Drought (D3)	07/01/2000	Classified as a D3, this drought lasted 24 months.	All participants
Drought (D2)	06/01/2009	Classified as a D2, this drought lasted 3 months.	All participants
Drought (D2)	03/01/2008	Classified as a D2, this drought lasted 4 months.	All participants
Drought (D2)	10/01/2005	Classified as a D2, this drought lasted 14 months.	All participants
Drought (D1)	01/01/2009	Classified as a D1, this drought lasted 8 months.	All participants
Drought (D1)	12/1/2007	Classified as a D1, this drought lasted 7 months.	All participants
Drought (D1)	09/01/2005	Classified as a D1, this drought lasted for 15 months.	All participants
Drought (D1)	07/01/2004	Classified as a D1, this drought lasted 12 months.	All participants

Starr County

Location and Probability of Occurrence

Due to the nature of this hazard, the entire planning area is at risk for droughts.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The planning team will use an actual event to determine the impacts of drought to the planning area.

In August of 2000, during a D3 classification drought, Starr County suffered severe drought conditions that persisted throughout the planning area. According to the USDA and Farm Service Agency, Starr county received a disaster declaration because of damages and losses to livestock and acreage used for planting purposes. Up to that point, the property damage was at \$508K and crop losses were at a \$1.9M loss.

Impacts from this hazard include property damage, agricultural loss, water scarcity, and heat related illnesses.

Below is a list of vulnerabilities that are specific to the planning area.

Problem Statements

Dry conditions and high brush increase brush fires by 50% during droughts.

The county does not have a resolution in place to reduce water consumption during drought months.

The County and community residents rely on independent water districts and have no alternate water supplies creating limited sources for water during droughts.

Escobares

Location and Probability of Occurrence

Due to the nature of this hazard, the entire planning area is at risk for droughts.

Probability of Occurrence: **LIKELY**

Risk Analysis

The planning team will use an actual event to determine the impacts of drought to the planning area.

In August of 2000, during a D3 classification drought, Starr County suffered severe drought conditions that persisted throughout the planning area. According to the USDA and Farm Service Agency, Starr county received a disaster declaration because of damages and losses to livestock and acreage used for planting purposes. Up to that point, the property damage was at \$508K and crop losses were at a \$1.9M loss.

Impacts from this hazard include property damage, agricultural loss, water scarcity, and heat related illnesses.

Below is a list of vulnerabilities that are specific to the planning area.

Rio Grande City

Location and Probability of Occurrence

Due to the nature of this hazard, the entire planning area is at risk for droughts.

Probability of Occurrence: **LIKELY**

Risk Analysis

The planning team will use an actual event to determine the impacts of drought to the planning area.

In August of 2000, during a D3 classification drought, Starr County suffered severe drought conditions that persisted throughout the planning area. According to the USDA and Farm Service Agency, Starr county received a disaster declaration because of damages and losses to livestock and acreage used for planting purposes. Up to that point, the property damage was at \$508K and crop losses were at a \$1.9M loss.

Impacts from this hazard include property damage, agricultural loss, water scarcity, and heat related illnesses.

Below is a list of vulnerabilities that are specific to the planning area.

Problem Statements

Water demand causes maximum use of allocated water rights creating a burden to the city in renting water rights to supply the city and 3 water districts.

Climate changes cause water line breaks resulting in 20% of water leaks in the city. In 2018, Rio Grande City lost 3 million gallons of water due to water leaks.

10% of water lines in the city are over 50 years old making them at risk to breaks during dry conditions.

Drought reduces production of cattle feed, forcing ranchers to sell their cattle below their value.

Roma

Location and Probability of Occurrence

Due to the nature of this hazard, the entire planning area is at risk for droughts.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The planning team will use an actual event to determine the impacts of drought to the planning area.

In August of 2000, during a D3 classification drought, Starr County suffered severe drought conditions that persisted throughout the planning area. According to the USDA and Farm Service Agency, Starr county received a disaster declaration because of damages and losses to livestock and acreage used for planting purposes. Up to that point, the property damage was at \$508K and crop losses were at a \$1.9M loss.

Impacts from this hazard include property damage, agricultural loss, water scarcity, and heat related illnesses.

Below is a list of vulnerabilities that are specific to the planning area.

Problem Statements

City of Roma is water supplier for not only the city but outside its jurisdictional boundaries where drought causes shortage in water supply to over 6,500 meters.

Water lines from the city average at or above 35 years of age putting them at a higher risk to breaks/leaks from dry weather. Average cost for repairs to a main distribution line is \$60k.

Lack of alternate water sources and dry conditions in the downtown area have let the city susceptible to water breaks that resorted to the shutdown of the water plant for a day and leaving consumer without water for 8 hours and a loss of revenue of about \$10K.

Lack of water and feed, during drought conditions, lead ranchers to take a 25% loss when forced to sell cattle.

Low water supply and dry conditions rise prices of hay bales to 70% for ranchers in the area. Condition for ranchers become unsustainable.

Roma ISD

Location and Probability of Occurrence

Due to the nature of this hazard, the entire planning area is at risk for droughts.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The planning team will use an actual event to determine the impacts of drought to the planning area.

In August of 2000, during a D3 classification drought, Starr County suffered severe drought conditions that persisted throughout the planning area. According to the USDA and Farm Service Agency, Starr county received a disaster declaration because of damages and losses to livestock and acreage used for planting purposes. Up to that point, the property damage was at \$508K and crop losses were at a \$1.9M loss.

Impacts from this hazard include property damage, agricultural loss, water scarcity, and heat related illnesses.

Below is a list of vulnerabilities that are specific to the planning area.

Problem Statements

Dry conditions cause breaks to water lines causing potential dismissal to schools.

Not all athletic fields have artificial turf and water conservation ordinances prevent proper irrigation resulting in extra costs to the districts when replacing grass.

Extreme Heat

Extreme heat is typically recognized as the condition where temperatures consistently stay ten degrees or more above a region's average high temperature for an extended period.



South Texas is recognized for its hot weather. The Heat Index is a measure of how hot it feels when relative humidity is factored in with the actual air temperature. The Heat Index chart provided below is offered for areas with high heat but low relative humidity. Since heat index values were devised for shady, light wind conditions, exposure to full sunshine can increase heat index values by up to 15°F.³

DRAFT

³ National Weather Service, National Oceanic and Atmosphere Administration. "Heat Index", <https://www.weather.gov/safety/heat-index>.

Temperature (°F)	Relative Humidity (%)																			
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
80	77	78	78	79	79	79	80	80	80	81	81	82	82	83	84	84	85	86	86	87
81	78	79	79	79	79	80	80	81	81	82	82	83	84	85	86	86	87	88	90	91
82	79	79	80	80	80	80	81	81	82	83	84	84	85	86	88	89	90	91	93	95
83	79	80	80	81	81	81	82	82	83	84	85	86	87	88	90	91	93	95	97	99
84	80	81	81	81	82	82	83	83	84	85	86	88	89	90	92	94	96	98	100	103
85	81	81	82	82	82	83	84	84	85	86	88	89	91	93	95	97	99	102	104	107
86	81	82	83	83	83	84	85	85	87	88	89	91	93	95	97	100	102	105	108	112
87	82	83	83	84	84	85	86	87	88	89	91	93	95	98	100	103	106	109	113	116
88	83	84	84	85	85	86	87	88	89	91	93	95	98	100	103	106	110	113	117	121
89	84	84	85	85	86	87	88	89	91	93	95	97	100	103	106	110	113	117	122	
90	84	85	86	86	87	88	89	91	92	95	97	100	103	106	109	113	117	122	127	
91	85	86	87	87	88	89	90	92	94	97	99	102	105	109	113	117	122	126	132	
92	86	87	88	88	89	90	92	94	96	99	101	105	108	112	116	121	126	131		
93	87	88	89	89	90	92	93	95	98	101	104	107	111	116	120	125	130	136		
94	87	89	90	90	91	93	95	97	100	103	106	110	114	119	124	129	135	141		
95	88	89	91	91	93	94	96	99	102	105	109	113	118	123	128	134	140			
96	89	90	92	93	94	96	98	101	104	108	112	116	121	126	132	138	145			
97	90	91	93	94	95	97	100	103	106	110	114	119	125	130	136	143	150			
98	91	92	94	95	97	99	102	105	109	113	117	123	128	134	141	148				
99	92	93	95	96	98	101	104	107	111	115	120	126	132	138	145	153				
100	93	94	96	97	100	102	106	109	114	118	124	129	136	143	150	158				
101	93	95	97	99	101	104	108	112	116	121	127	133	140	147	155					
102	94	96	98	100	103	106	110	114	119	124	130	137	144	152	160					
103	95	97	99	101	104	108	112	116	122	127	134	141	148	157	165					
104	96	98	100	103	106	110	114	119	124	131	137	145	153	161						
105	97	99	102	104	108	112	116	121	127	134	141	149	157	166						
106	98	100	103	106	109	114	119	124	130	137	145	153	162	172						
107	99	101	104	107	111	116	121	127	134	141	149	157	167							
108	100	102	105	109	113	118	123	130	137	144	153	162	172							
109	100	103	107	110	115	120	126	133	140	148	157	167	177							
110	101	104	108	112	117	122	129	136	143	152	161	171								
111	102	106	109	114	119	125	131	139	147	156	166	176								
112	104	107	111	115	121	127	134	142	150	160	170	181								
113	104	108	112	117	123	129	137	145	154	164	175									
114	105	109	113	119	125	132	140	148	158	168	179									
115	106	110	115	121	127	134	143	152	162	173	184									
116	107	111	116	122	129	137	146	155	166	177										
117	108	112	118	124	132	140	149	159	170	181										
118	108	113	119	126	134	142	152	162	174	186										
119	109	114	121	128	136	145	155	166	178											
120	110	116	122	130	138	148	158	170	182											
121	111	117	124	132	141	151	162	174	187											
122	111	118	125	134	143	154	165	178												
123	112	119	127	136	146	157	169	182												
124	113	120	129	138	148	160	172													
125	114	121	130	140	151	163	176													

Heat Index

Extreme Danger	Heat stroke likely.
Danger	Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity.
Extreme Caution	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Caution	Fatigue possible with prolonged exposure and/or physical activity.

Source: NOAA

Below is a list of recent heat occurrences recorded from 2015-2017. The events listed below are meant to give an illustration of heat conditions within the planning area. It is not a complete list of all heat events occurred or recorded.

Type	Date	Description	Location
Extreme Heat	7/25/15	107°F recorded	All participants
Extreme Heat	7/03/16	105°F recorded	All participants
Extreme Heat	7/04/16	105°F recorded	All participants
Extreme Heat	7/13/16	105°F recorded	All participants
Extreme Heat	6/15/17	105°F recorded	All participants
Extreme Heat	6/16/17	106°F recorded	All participants
Extreme Heat	6/20/17	105°F recorded	All participants
Extreme Heat	6/21/17	110°F recorded	All participants
Extreme Heat	6/22/17	106°F recorded	All participants
Extreme Heat	6/23/17	105°F recorded	All participants
Extreme Heat	7/22/17	105°F recorded	All participants
Extreme Heat	7/28/17	105°F recorded	All participants
Extreme Heat	7/29/17	106°F recorded	All participants
Extreme Heat	8/04/17	105°F recorded	All participants
Extreme Heat	8/05/17	108°F recorded	All participants
Extreme Heat	8/06/17	106°F recorded	All participants
Extreme Heat	8/07/17	105°F recorded	All participants

Starr County

Location and Probability of Occurrence

Due to the nature of the hazard, the entire planning area is at risk to impacts from extreme heat.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The planning team reviewed various periods of high temperatures within the planning area to determine impacts from extreme heat. The narrative below is an example of the types of extreme heat events that occur in the area.

May 22nd, 2008- Across much of central and southern Starr County, interpolated data between southern Zapata County and central and southern Hidalgo indicated that several hours of apparent temperature at or above 111 occurred each afternoon on May 22nd and 23rd. At Falcon Lake National Wildlife Refuge along the Starr/Zapata County line, 3 to 4 hours of heat index values of 111 or greater occurred each day, with a peak of 114 between 2 and 3 pm on the 22nd, and a peak of 115 at the same time on the 23rd.

Impacts from this hazard include agricultural loss, property damage, and heat related illnesses.

Below is a list of vulnerabilities that are specific to the area.

Problem Statements

Only one community center is available in the county as a cooling station for the community and its location is not accessible to a majority of the population.

The County Courthouse and Annex do not have backup generators forcing to close offices in case of any power outages during high temperatures.

Public Safety Offices do not have backup generators causing major disruption to daily activities in case of any blackouts during periods of high temperatures.

Roads compact due to extreme heat, causing damages on US 83 and FM 755.

Escobares

Location and Probability of Occurrence

Due to the nature of the hazard, the entire planning area is at risk to impacts from extreme heat.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The planning team reviewed various periods of high temperatures within the planning area to determine impacts from extreme heat. The narrative below is an example of the types of extreme heat events that occur in the area.

May 22nd, 2008- Across much of central and southern Starr County, interpolated data between southern Zapata County and central and southern Hidalgo indicated that several hours of apparent temperature at or above 111 occurred each afternoon on May 22nd and 23rd. At Falcon Lake National Wildlife Refuge along the Starr/Zapata County line, 3 to 4 hours of heat index values of 111 or greater occurred each day, with a peak of 114 between 2 and 3 pm on the 22nd, and a peak of 115 at the same time on the 23rd.

Impacts from this hazard include agricultural loss, property damage, and heat related illnesses.

Below is a list of vulnerabilities that are specific to the area.

Problem Statements

An approximate 64% of the population in Escobares lacks appropriate insulation and cooling systems as they were built prior to building codes.

The combination of dry weather and extreme heat increases the consumption of water for irrigation. Lack of alternate water sources place a strain in the water supply.

Homes/buildings that were back filled during construction, as were the community center and the fire department, are at a higher risk to cracks in foundation under extreme temperatures.

Lack of alternate power sources leave the critical facilities in the city are left without function during the “brown-outs” established by AEP, the electric utility company.

Increased energy consumption during extreme temperatures places an economic strain to individuals and public places through their electric bills. During high temperatures, individuals see a 25% increase in their bills and public places often see an increase of 15%.

Rio Grande City

Location and Probability of Occurrence

Due to the nature of the hazard, the entire planning area is at risk to impacts from extreme heat.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The planning team reviewed various periods of high temperatures within the planning area to determine impacts from extreme heat. The narrative below is an example of the types of extreme heat events that occur in the area.

May 22nd, 2008- Across much of central and southern Starr County, interpolated data between southern Zapata County and central and southern Hidalgo indicated that several hours of apparent temperature at or above 111 occurred each afternoon on May 22nd and 23rd. At Falcon Lake National Wildlife Refuge along the Starr/Zapata County line, 3 to 4 hours of heat index values of 111 or greater occurred each day, with a peak of 114 between 2 and 3 pm on the 22nd, and a peak of 115 at the same time on the 23rd.

Impacts from this hazard include agricultural loss, property damage, and heat related illnesses.

Below is a list of vulnerabilities that are specific to the area.

Problem Statements

Department of Public Works and Public Utilities Department do not have modified summer hours, elevating the risk to heat related illnesses during high temperatures.

Rio Grande City Public Works building, Police Station, Fire Department, and Public Library are not properly insulated creating a risk during high temperatures.

Rio Grande City's lack of city owned shelters places 39% of homes who do not meet current building codes of insulation at risk during high temperatures.

Public areas do not have sufficient plants and trees to provide cooling areas for the community.

High temperatures and dry conditions make homes and public buildings susceptible to foundation damage.

City Hall and Fire Department for Rio Grande City do not have alternate sources of energy and create a risk during electrical blackouts due to high temperatures.

Roma

Location and Probability of Occurrence

Due to the nature of the hazard, the entire planning area is at risk to impacts from extreme heat.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The planning team reviewed various periods of high temperatures within the planning area to determine impacts from extreme heat. The narrative below is an example of the types of extreme heat events that occur in the area.

May 22nd, 2008- Across much of central and southern Starr County, interpolated data between southern Zapata County and central and southern Hidalgo indicated that several hours of apparent temperature at or above 111 occurred each afternoon on May 22nd and 23rd. At Falcon Lake National Wildlife Refuge along the Starr/Zapata County line, 3 to 4 hours of heat index values of 111 or greater occurred each day, with a peak of 114 between 2 and 3 pm on the 22nd, and a peak of 115 at the same time on the 23rd.

Impacts from this hazard include agricultural loss, property damage, and heat related illnesses.

Below is a list of vulnerabilities that are specific to the area.



Roma Public Utilities Dept. repairing water line.

Problem Statements

Extreme heat within the area makes the community susceptible to heat strokes, heat cramps, dehydration, and other heat related illnesses. Local EMS receives minimum 5 calls a year for heat strokes.

18% of the population consists of elderly people who have inadequate homes that do not have proper cooling system or insulation resulting in potential heat related health issues.

Lack of surge protectors have caused damage to control panels resulting in \$35K repairs from power surges during extremely high temperatures.

Extreme heat often causes thermal expansion making streets within the city susceptible to damage averaging cost of \$8 per square foot.

Rolling outages typically cause disruption in public offices due to lack of alternate sources of energy.

Sagging power lines due to extreme heat lead to power outages and often fire hazards.

City Hall, Fire Department, and the water plant lack alternate sources of power making them susceptible to disruption due to power outages.

Roma ISD

Location and Probability of Occurrence

Due to the nature of the hazard, the entire planning area is at risk to impacts from extreme heat.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The planning team reviewed various periods of high temperatures within the planning area to determine impacts from extreme heat. The narrative below is an example of the types of extreme heat events that occur in the area.

May 22nd, 2008- Across much of central and southern Starr County, interpolated data between southern Zapata County and central and southern Hidalgo indicated that several hours of apparent temperature at or above 111 occurred each afternoon on May 22nd and 23rd. At Falcon Lake National Wildlife Refuge along the Starr/Zapata County line, 3 to 4 hours of heat index values of 111 or greater occurred each day, with a peak of 114 between 2 and 3 pm on the 22nd, and a peak of 115 at the same time on the 23rd.

Impacts from this hazard include agricultural loss, property damage, and heat related illnesses.

Below is a list of vulnerabilities that are specific to the area.

Problem Statements

The majority of gyms throughout the district are not air-conditioned causing risk to students during physical education classes during high temperatures.

Students, faculty, and staff are at risk to heat related illness during outside physical activity since only one campus has a pavilion for outside activities.

In 2018, approximately 300 students were sent home due to a power and water outage and lack of alternate sources of energy.

High costs for irrigation do not allow campuses to have enough trees/plants throughout to provide shade during high temperature months.

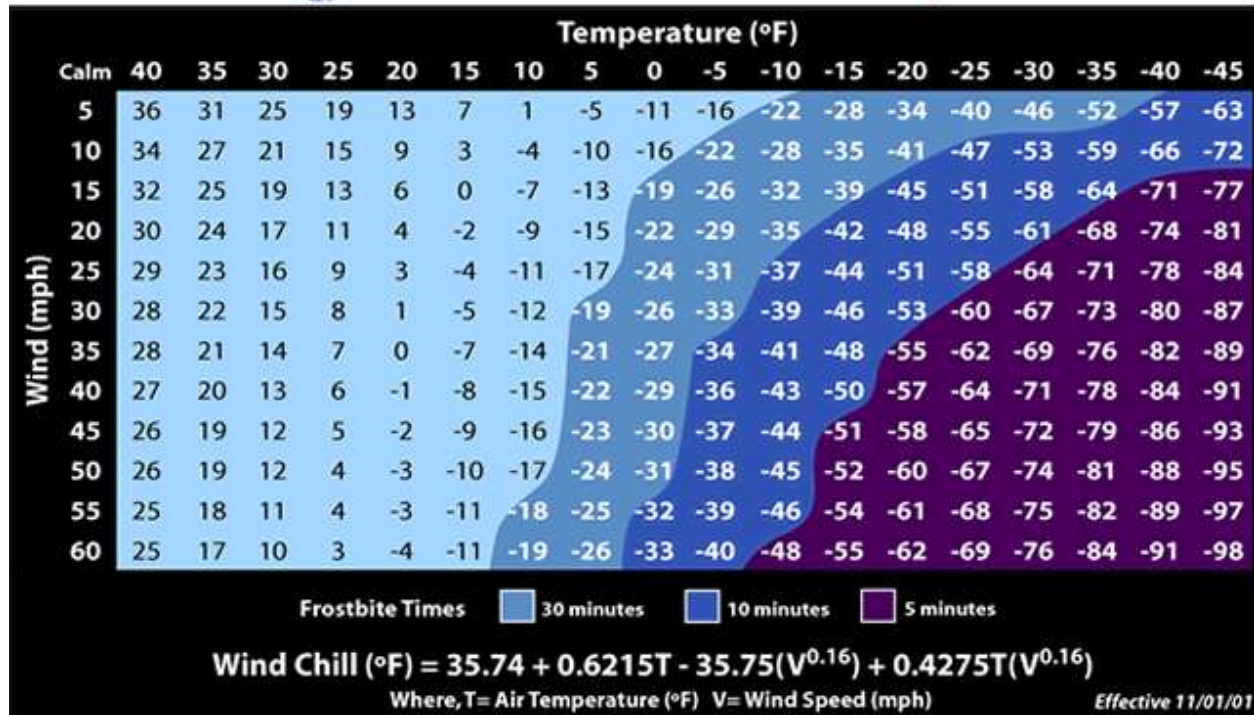
Extreme Cold

Heavy snowfall and extreme cold can immobilize an entire region. Many winter storms bring dangerously low temperatures and sometimes, strong winds, icing, sleet, and freezing rain. During extreme cold, temperatures drop below normal. Near freezing temperatures are considered extreme cold in areas that are unaccustomed to winter weather.

The Wind Chill Temperature (WCT) index provided by the National Weather Service (NWS) uses advances in science, technology, and computer modeling to provide an accurate, understandable, and useful formula for calculating the dangers from winter winds and freezing temperatures.



Wind Chill Chart



Source: NWS/NOAA

Below is a list of recorded extreme cold events within the planning area. The events listed below have impacted one or all participating jurisdictions and do not demonstrate a complete list of events occurred.

Type	Date	Description	Location
Extreme Cold (Frost/Freeze)	01/28/2016	Temperatures fell to or below freezing across Starr County during the early morning hours of January 28th. The RAWS site at Falcon Dam reported a low of 27 degrees and the COOP site in Rio Grande City reported a low of 29 degrees.	All participants
Extreme Cold (Frost/Freeze)	01/29/2016	Temperatures fell to or below freezing across Starr County during the early morning hours of January 29th. The COOP site in Rio Grande City reported a low temperature of 29 degrees.	All participants
Extreme Cold (Frost/Freeze)	02/05/2016	Temperatures fell to or below freezing for 4.5 hours on the morning of February 5th across Starr County. The RAWS site at Falcon Dam reported a low of 29 degrees and the COOP site in Rio Grande City reported a low of 32 degrees.	All participants
Extreme Cold (Frost/Freeze)	02/07/2016	The RAWS site at Falcon Dam reported freezing temperatures for over five hours during the early morning of February 7th. A low of 27 degrees was reported. The COOP site in Rio Grande City also reported a low of 30 degrees.	All participants
Extreme Cold (Frost/Freeze)	01/07/2017	Falcon Lake Remote Automated Weather System (FART2) site reported freezing temperatures for 5 hours, with a low of 29 degrees. Rio Grande City COOP site reported a low of 30 degrees.	All participants
Extreme Cold (Frost/Freeze)	01/07/2017	Falcon Lake Remote Automated Weather System (FART2) site reported freezing temperatures for over 12 hours, with a low of 26 degrees. Rio Grande City COOP site reported a low of 27 degrees.	All participants

Extreme Cold (Frost/Freeze)	12/08/2017	Temperatures are assumed to have fallen to 32 degrees shortly before daybreak on December 8th as moderate snow developed over ranch country, and continued to fall steadily in bands until around 9 AM before tapering off, allowing temperatures to rise back above freezing. The Rio Grande City cooperative site carried a low temperature of 30 degrees at some point during the morning of the 8th.	All participants
Extreme Cold (Frost/Freeze)	01/02/2018	After only rising a few degrees into the low to mid 30s during the afternoon of New Year's Day, temperatures would bottom out around or just below 32 degrees across much of Starr County. Falcon Lake Mesowest would bottom out at 32 degrees shortly after 2 AM and continue at or near the freezing point through 730-8 AM. The cooperative observer in Rio Grande City recorded a minimum temperature of 30 degrees. There did not appear to be any notable freezing precipitation in Starr on the 2nd, where drier air was present near the surface.	All participants
Extreme Cold (Frost/Freeze)	01/03/2018	The cooperative observation station at Rio Grande City fell to 30 degrees around or shortly after sunrise on January 3rd; the Mesowest/RAWS site at Falcon Lake touched 32 degrees. Proxy stations at Zapata County Airport and Hebbronville/Jim Hogg County suggest ranch communities in central and northern Starr County fell to around or just below freezing for several hours before and just after sunrise. mesowest/RAWS station at San Manuel dipped to 30 degrees around daybreak on January 3rd; Weslaco AWOS fell to 32 between midnight and 1230 AM, but other county sites (such as Edinburg AWOS) remained above freezing at that time. With the exception of the Rio Grande, county locations reached 32 degrees or slightly lower for a couple hours early on the 3rd, mainly between 6 and 8 AM.	All participants
Extreme Cold (Frost/Freeze)	01/04/2018	Minimum temperatures at Rio Grande City and Falcon Lake RAWS fell to 27 and 26 degrees respectively, the coldest since the same readings were recorded nearly a year earlier (January 8, 2017). By proxy, much of Starr County likely fell to the upper 20s based on observations from Zapata to Jim Hogg and western Hidalgo County. Clear, calm conditions aided the steady drop in temperatures after sunset on the 3rd.	All participants
Extreme Cold (Frost/Freeze)	01/16/2018	Temperatures fell to the upper 20s to around 30 across most of Starr County during the early to midafternoon of January 16th, and continued in similar ranges overnight before rising to the freezing point during the mid to late morning and easing above 32 before noon. Durations of freezing temperatures varied from more than 20 hours across the northern third of the county in the ranches, to less than 10 hours along the Rio Grande. The coldest temperature was 29 at Rio Grande City, though some ranches may have dipped slightly lower near the Jim Hogg County line. This particular event, coming on the heels of four consecutive freezing-point mornings to begin the New Year, likely was the final straw in full freeze-curing of grazing/range land and any cropland. Livestock impacts were unknown as of this writing.	All participants
Extreme Cold (Frost/Freeze)	11/14/2018	Low temperatures fell to or below 32 degrees around 1 AM (later in unprotected areas and small cities) and continued through 8 AM. Minimum measured and estimated temperatures ranged from the mid and upper 20s (28 at Rio Grande City); Falcon Lake Mesowest (a protected area) briefly fell below 25 degrees.	All participants

Starr County

Location and Probability of Occurrence

The nature of this hazard, the entire planning area is at risk to impacts from extreme cold.

Probability of Occurrence: **UNLIKELY**

Risk Analysis

The planning team reviewed various periods of low temperatures within the planning area to determine impacts from extreme cold. The narrative below is an example of the most recent event of extreme cold to happen within the planning area.

November 14, 2018- Low temperatures fell to or below 32 degrees around 1 AM (later in unprotected areas and small cities) and continued through 8 AM. Minimum measured and estimated temperatures ranged from the mid and upper 20s (28 at Rio Grande City); Falcon Lake Mesowest (a protected area) briefly fell below 25 degrees.

Impacts from this hazard include power shortages, disruption to cable and phone lines, road closures, and immediate sheltering for residents with inadequate dwellings.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

Homes in the areas of San Isidro and Las Lomas are either wood frame or block with no insulation and place residents at risk to residents who do not have access to a shelter during cold temperatures.

Lack of resources to treat roads (FM755, FM3167, FM490, FM1017, FM2294, FM2686) add risk to drivers during cold/icy temperatures.

Escobares

Location and Probability of Occurrence

The nature of this hazard, the entire planning area is at risk to impacts from extreme cold.

Probability of Occurrence: **UNLIKELY**

Risk Analysis

The planning team reviewed various periods of low temperatures within the planning area to determine impacts from extreme cold. The narrative below is an example of the most recent event of extreme cold to happen within the planning area.

November 14, 2018- Low temperatures fell to or below 32 degrees around 1 AM (later in unprotected areas and small cities) and continued through 8 AM. Minimum measured and estimated temperatures ranged from the mid and upper 20s (28 at Rio Grande City); Falcon Lake Mesowest (a protected area) briefly fell below 25 degrees.

Impacts from this hazard include power shortages, disruption to cable and phone lines, road closures, and immediate sheltering for residents with inadequate dwellings.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

15 homes within the City of Escobares do not have appropriate heating and insulation and use unusual heating methods that lead to fire hazards.

The Escobares Community Center is not equipped to be used as a shelter leaving local residents to seek alternate methods of shelter for freezing temperatures.

City Hall, Police Department, and Fire Department in Escobares do not have an alternate source of energy making them unable to function through power shortages in freezing temperatures.

Freezing temperatures have caused previous loss to ranchers and farmers in the area. Particularly to hay bales where there are none to sell for feed.

Rio Grande City

Location and Probability of Occurrence

The nature of this hazard, the entire planning area is at risk to impacts from extreme cold.

Probability of Occurrence: **OCCASSIONAL**

Risk Analysis

The planning team reviewed various periods of low temperatures within the planning area to determine impacts from extreme cold. The narrative below is an example of the most recent event of extreme cold to happen within the planning area.

November 14, 2018- Low temperatures fell to or below 32 degrees around 1 AM (later in unprotected areas and small cities) and continued through 8 AM. Minimum measured and estimated temperatures ranged from the mid and upper 20s (28 at Rio Grande City); Falcon Lake Mesowest (a protected area) briefly fell below 25 degrees.

Impacts from this hazard include power shortages, disruption to cable and phone lines, road closures, and immediate sheltering for residents with inadequate dwellings.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

Climate change during the winter months cause 25-30% of water leaks and water line damage.

Limited capacity (30) at local shelter leaves many residents who do not have proper insulation or heating sources without adequate sheltering.

Improper heating sources leave to additional hazards to residents who look for alternated heating, including fires.

Outages due to excessive consumption can last up to 8 hours causing disruption to public offices and critical facilities that do not have alternate sources of energy.

Roma

Location and Probability of Occurrence

The nature of this hazard, the entire planning area is at risk to impacts from extreme cold.

Probability of Occurrence: **UNLIKELY**

Risk Analysis

The planning team reviewed various periods of low temperatures within the planning area to determine impacts from extreme cold. The narrative below is an example of the most recent event of extreme cold to happen within the planning area.

November 14, 2018- Low temperatures fell to or below 32 degrees around 1 AM (later in unprotected areas and small cities) and continued through 8 AM. Minimum measured and estimated temperatures ranged from the mid and upper 20s (28 at Rio Grande City); Falcon Lake Mesowest (a protected area) briefly fell below 25 degrees.

Impacts from this hazard include power shortages, disruption to cable and phone lines, road closures, and immediate sheltering for residents with inadequate dwellings.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

Homes built prior to the year 2000 do not meet current insulation requirements, leaving residents in 25% of homes at risk to low temperatures.

An 18% estimated elderly population within the city do not have appropriate heating systems or insulated homes making them highly at risk for health issues from low temperatures.

Water line breaks from freezing temperatures result in repair costs of \$20K for a service line and \$60K for a main distribution line.

Freezing temperatures cause disruption to phone and cable lines that are not adequately equipped with all-weather protection.

Freezing temperatures cause disruption to Arroyo Roma Bridge which sits on US Hwy 83, major evacuation route for deep south Texas, including closure due to icy roads.

Lack of all-weather protection in power lines cause up to 6 hours of power outage to residents of the City of Roma.

Roma ISD

Location and Probability of Occurrence

The nature of this hazard, the entire planning area is at risk to impacts from extreme cold.

Probability of Occurrence: **UNLIKELY**

Risk Analysis

The planning team reviewed various periods of low temperatures within the planning area to determine impacts from extreme cold. The narrative below is an example of the most recent event of extreme cold to happen within the planning area.

November 14, 2018- Low temperatures fell to or below 32 degrees around 1 AM (later in unprotected areas and small cities) and continued through 8 AM. Minimum measured and estimated temperatures ranged from the mid and upper 20s (28 at Rio Grande City); Falcon Lake Mesowest (a protected area) briefly fell below 25 degrees.

Impacts from this hazard include power shortages, disruption to cable and phone lines, road closures, and immediate sheltering for residents with inadequate dwellings or low attendance at schools.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

Cold/icy temperatures that cause low impact to school attendance burdens the district in the reimbursement of food and overhead costs.

Thunderstorms

A thunderstorm is a rain-bearing cloud that also produces lightning. Severe thunderstorms are often accompanied by severe winds, hail, and lightning. Depending on the severity, thunderstorms can also bring other risks, including flash flooding and tornadoes.

Many of the impacts that will be described have been already presented. Many of the impacts from the associated risks of thunderstorms cause similar effects that have already been presented and may be presented again under this section for clarification.

The planning team will be using the Lightning Activity Level (LAL) Grids to describe the extent of thunderstorms. The LAL is a measure of the amount of lightning activity using values 1 to 6.

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.	1-8

	The clouds produce mainly virga, but light rain will occasionally reach the ground. Lightning is very infrequent.	
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
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.	

Source: NOAA

Below is a list of thunderstorm events that have happened within the planning area. The events listed below may have affected one or more of the participating jurisdictions. The list below includes associated risks related to thunderstorms.

Type	Date	Description	Location
Hailstorm	03/29/2012	Hail Up size of baseballs for more than half hour. Storms spread west into Starr County.	Western Starr County
Hailstorm	05/17/2016	Hen Egg sized about 29 miles near Lopeño, Texas. Hail size was 2" near Rio Grande City.	Lopeño and Rio Grande City
Thunderstorm	05/09/2014	Public reported multiple large tree limbs down FM 755.	Rio Grande City
Thunderstorm	05/28/2014	Trained spotter reported wind gusts of 50 to 60 mph in Rio Grande City.	Rio Grande City
Thunderstorm	05/11/2015	Starr County Sheriff's Office reported shingles blown off of a roof and damage to the walls of a structure in Alto Bonito.	Garciasville
Thunderstorm	05/21/2017	Media reported portion of roof blown off of house in Fronton. Several trees were blown down as well. Time estimated via radar imagery.	Fronton and Roma
Thunderstorm	05/21/2017	Starr County Sheriff's Office reported utility pole blown down by thunderstorm winds on Lucianos Road in Escobares. Time estimated by radar.	Escobares and Roma
Thunderstorm	04/25/2018	A newspaper report from Starr County indicated a large restaurant sign blew onto a vehicle and caused an unknown amount of damage to the vehicle during the passage of a thunderstorm in Rio Grande City a little after 8 PM on April 25th.	Rio Grande City

<u>Flash Flood</u>	June 21 st , 2018	Complex thunderstorms would spin in from the northeast overnight and reach Starr County, eventually dropping more than 7 inches from the ranches north of Rio Grande City to Rio Grande City itself, where local arroyos reached and overtopped their banks and at least one swift water rescue was required during the pre-dawn hours of the 21st	All participants
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Starr County

Location and Probability of Occurrence

Due to the elements that compose thunderstorms, the entire planning area is at risk for thunderstorms.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The planning team reviewed various thunderstorm events in the area to determine impacts from this hazard. The narrative below describes one of the most recent events of thunderstorms that occurred within the area.

Despite April 2018 being largely normal with rainfall, mainly from occasional cold fronts, one distinct local strong to severe storm event developed in the Upper Rio Grande Valley, with gusty winds producing wind damage near Rio Grande City during the evening of April 25th. The line would reach southwestern Hidalgo County before weakening.

Impacts from thunderstorms include property damage, road closures, and evacuations.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

Lack of power surge protectors place risk to communications systems. Events have resulted in damage to phone lines and communications tower leading to no radio communications for 4 days.

Public buildings have no shatterproof glass making them susceptible to hail damage in case of an event.

Escobares

Location and Probability of Occurrence

Due to the elements that compose thunderstorms, the entire planning area is at risk for thunderstorms.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The planning team reviewed various thunderstorm events in the area to determine impacts from this hazard. The narrative below describes one of the most recent events of thunderstorms occurring within the area.

Despite April 2018 being largely normal with rainfall, mainly from occasional cold fronts, one distinct local strong to severe storm event developed in the Upper Rio Grande Valley, with gusty winds producing wind damage near Rio Grande City during the evening of April 25th. The line would reach southwestern Hidalgo County before weakening.

Impacts from thunderstorms include property damage, road closures, and evacuations.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

Lack of generators in city hall, police department, and fire department are at risk for disruption in an event of a lightning strike.

Police Department does not have back up batteries for their computers and risk disruption of activities in case of an event of a lightning strike.

Public buildings do not have shatterproof windows and are susceptible to hail damage in case of an event.

Public safety vehicles do not have storage facility and are susceptible to hail damage in case of an event.

Rio Grande City

Location and Probability of Occurrence

Due to the elements that compose thunderstorms, the entire planning area is at risk for thunderstorms.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The planning team reviewed various thunderstorm events in the area to determine impacts from thunderstorms. The narrative below describes one of the most recent events of thunderstorms occurring within the area.

Despite April 2018 being largely normal with rainfall, mainly from occasional cold fronts, one distinct local strong to severe storm event developed in the Upper Rio Grande Valley, with gusty winds producing wind damage near Rio Grande City during the evening of April 25th. The line would reach southwestern Hidalgo County before weakening.

Impacts from thunderstorms include property damage, road closures, and evacuations.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

Lack of storage for public safety vehicles makes them susceptible to hail damage in case of an event.

Lightning strikes at City Hall have caused damage to computers, generator, cabling, communications in police department and IT network cabling due to lack of protective measures during a power surge.

Lift stations are at risk to lightning damage with estimated cost of \$2K in repairs due to the unavailability of lightning rods.

Roma

Location and Probability of Occurrence

Due to the elements that compose thunderstorms, the entire planning area is at risk for thunderstorms.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The planning team reviewed various thunderstorm events in the area to determine impacts from this hazard. The narrative below is a recent event that describes one of the most recent events of thunderstorms occurring within the area.

Despite April 2018 being largely normal with rainfall, mainly from occasional cold fronts, one distinct local strong to severe storm event developed in the Upper Rio Grande Valley, with gusty winds producing wind damage near Rio Grande City during the evening of April 25th. The line would reach southwestern Hidalgo County before weakening.

Impacts from thunderstorms include property damage, road closures, and evacuations.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

Water pumps are at risk to lightning damage with estimated cost of \$7K in repairs due to the unavailability of lightning rods.

Lift stations do not have lightning rods preventing lightning strikes resulting in damages of up to \$50K.

Communication towers have a high risk of potential lightning strikes due to lack of appropriate lightning rods. Previous damages have resulted in costs of \$20K for the local communications tower and \$25K to main communications tower.

Roma ISD

Location and Probability of Occurrence

Due to the elements that compose thunderstorms, the entire planning area is at risk for thunderstorms.

Probability of Occurrence: **HIGHLY LIKELY**

Risk Analysis

The planning team reviewed various thunderstorm events in the area to determine impacts from thunderstorms. The narrative below describes one of the most recent events of thunderstorms occurring within the area.

Despite April 2018 being largely normal with rainfall, mainly from occasional cold fronts, one distinct local strong to severe storm event developed in the Upper Rio Grande Valley, with gusty winds producing wind damage near Rio Grande City during the evening of April 25th. The line would reach southwestern Hidalgo County before weakening.

Impacts from thunderstorms include property damage, road closures, and evacuations.

Below is a list of vulnerabilities specific to the planning area.

Problem Statements

Outside facilities for athletics are lacking grounding and lightning rods and cause risk for faculty, staff, and students in case of an event.

Transportation and maintenance department vehicles (including buses) do not have proper storage in case of a hail event.

The majority of windows in YBE and the high school are glass and are susceptible to damage during a hail event.

Mitigation Strategies

After reviewing the risk and vulnerabilities of the planning area, the planning team developed goals that would help establish a path for mitigation within the community. Each of the four goals listed below provides a strategy to create a more resilient community.

GOAL 1. Establish, review and update plans, policies, and regulations to include mitigation efforts in the community.

GOAL 2. Protect the community, including its residents from impacts related to hazards.

GOAL 3. Protect all natural environments from potential impacts related to hazards.

GOAL 4. Promote education and awareness throughout the community.

Mitigation Actions

The planning team developed a plan composed of actions that support the goal established. Each action contains strategy for implementation that includes responsible agency, resources, estimated timeframe for implementation, estimated cost, hazard addressed and the jurisdictions implementing the action.

Each of the participating jurisdictions completed a STAPLEE (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) criteria assessment to determine the priority for each of the proposed actions. Based on a point system derived from the STAPLEE assessment, each of the actions was assigned a Low, Medium, and High priority rate.

Action Plan

Action #1: Keep and maintain a schedule for drainage cleanup (includes brush, trash, etc.).

Priority: HIGH	
Resp. Agency/Department	Public Works and Maintenance Department (ISD).
Resources	Staff Time.
Est. Timeframe	5 years (yearly).
Est. Cost	Staff Time.
Hazard Addressed	Flood, Hurricanes, and Thunderstorm.
Benefiting Jurisdiction	All Jurisdictions

Action #2: Flood proofing water pumps, lift stations, and water plant by buying submersible pumps and weather proofing lift stations

Priority: HIGH	
Resp. Agency/Department	Public works (Roma) and Public Utilities Dept. (RGC)
Resources	Grants/ Bonds/ General Fund.
Est. Timeframe	3 years.
Est. Cost	\$10m (Roma) and \$10m (RGC)

Hazard Addressed	Flood, Hurricanes, and Thunderstorms (lighting).
Benefiting Jurisdiction	Roma and Rio Grande City.

Action #3: Promote flood awareness campaign. (E.g. Turn around, don't drown.)

Priority: HIGH	
Resp. Agency/Department	Roma (planning), Escobares (fire), Rio Grande City (Fire), Roma ISD, and Starr (Fire).
Resources	Staff Time.
Est. Timeframe	5 year (annual).
Est. Cost	\$0
Hazard Addressed	Floods, Hurricanes, and Thunderstorms.
Benefiting Jurisdiction	All Jurisdictions.

Action #4: Implement a FireWise Community program.

Priority: HIGH	
Resp. Agency/Department	Fire Department and Risk Management Department (ISD).
Resources	Staff Time.
Est. Timeframe	6 Months.
Est. Cost	\$0
Hazard Addressed	Fire.
Benefiting Jurisdiction	All Jurisdictions.

Action #5: Assign a department within the jurisdictions to assess community against fire hazards.

Priority: HIGH	
Resp. Agency/Department	Fire and Risk Management Department (ISD).
Resources	Staff Time.
Est. Timeframe	6 Months.
Est. Cost	\$0
Hazard Addressed	Fire.
Benefiting Jurisdiction	All Jurisdictions.

Action #6: Build a shelter within the community for all hazards.

Priority: MEDIUM	
Resp. Agency/Department	City Manager.
Resources	Grant/ Bond.
Est. Timeframe	4 years.
Est. Cost	\$4M.
Hazard Addressed	All except drought.
Benefiting Jurisdiction	Rio Grande City.

Action #7: Promote the use of concrete siding instead of wood for new construction.

Priority: HIGH

Resp. Agency/Department	Planning and Code Enforcement (Escobares).
Resources	Staff Time.
Est. Timeframe	5 years (annual).
Est. Cost	\$0
Hazard Addressed	Fire
Benefiting Jurisdiction	All Jurisdictions.

Action #8: Increase tree planting along school buildings and public buildings.

Priority: HIGH	
Resp. Agency/Department	Risk Management Department (ISD), Public Works (Escobares) and Planning Dept. (Roma, Rio Grande City and Starr county).
Resources	General Fund.
Est. Timeframe	5 years.
Est. Cost	\$10k per Jurisdictions.
Hazard Addressed	Thunderstorm, Hurricane, and Extreme Heat.
Benefiting Jurisdiction	All Jurisdictions.

Action #9: Weatherproof all historic buildings according to historical foundations.

Priority: MEDIUM	
Resp. Agency/Department	Planning Dept. and Texas Historical Commission
Resources	Staff Time.
Est. Timeframe	5 years.
Est. Cost	\$500k per structure.

Hazard Addressed	Thunderstorm, Hurricane, and Extreme Heat.
Benefiting Jurisdiction	Roma, Rio Grande City, and Starr County.

Action #10: Retrofit Community Center as a shelter for all hazards.

Priority: HIGH	
Resp. Agency/Department	City Administration.
Resources	Grants (CDBG, USDA) and Bonds.
Est. Timeframe	2 years.
Est. Cost	\$1M
Hazard Addressed	All, except drought.
Benefiting Jurisdiction	Roma.

Action #11: Replace Roma Middle School football field, Roma Municipal Park Little League, Softball and Soccer fields with artificial grass.

Priority: MEDIUM	
Resp. Agency/Department	Public Works (Roma) and Maintenance Dept. (Roma ISD)
Resources	Private-Public partnerships/General Fund
Est. Timeframe	5 years/2 years
Est. Cost	\$1m/ \$300k
Hazard Addressed	Drought
Benefiting Jurisdiction	Roma and Roma ISD.

Action #12: Establish water conservation programs throughout the community. (E.g., water saving systems).

Priority: HIGH	
Resp. Agency/Department	Rio Grande City and Roma Public Utilities Dept.
Resources	Enterprise Fund.
Est. Timeframe	12 months.
Est. Cost	\$5,000 each.
Hazard Addressed	Drought.
Benefiting Jurisdiction	Rio Grande City and Roma.

Action #13: Implement weather warning drill throughout the district.

Priority: MEDIUM	
Resp. Agency/Department	Safety Management Coordinator and District Emergency Management and Safety Committee
Resources	General Fund
Est. Timeframe	1 year
Est. Cost	\$1000.00
Hazard Addressed	Tornado, Hurricane, and Thunderstorm.
Benefiting Jurisdiction	Roma ISD

Action #14: Upgrade water meters to smart meters.

Priority: MEDIUM	
Resp. Agency/Department	Public Utilities Department

Resources	Texas Water Development Board, USDA, and Local.
Est. Timeframe	3 years
Est. Cost	\$2M
Hazard Addressed	Tornado, Thunderstorms and Hurricane.
Benefiting Jurisdiction	Roma

Action #15: Upgrade outdated waterlines to PVC lines

Priority: MEDIUM	
Resp. Agency/Department	Public Utilities Department
Resources	TDA/USDA/TWDB/ Local/ EDA
Est. Timeframe	5 years
Est. Cost	Roma \$5m and Rio Grande City \$10m.
Hazard Addressed	Drought, Extreme Heat, and Extreme Cold.
Benefiting Jurisdiction	Roma and Rio Grande City

Action #16: Incorporate mitigation awareness at community events held throughout the community.

Priority: HIGH	
Resp. Agency/Department	County/ City Administration Safety Management Coordinator and District Emergency Management and Safety Committee (Roma ISD)
Resources	Staff Time. /General Fund (Roma ISD)
Est. Timeframe	5 years Annually.
Est. Cost	\$0/ \$3,500

Hazard Addressed	All Hazards.
Benefiting Jurisdiction	All Jurisdictions.

Action #17: Install shatter resistant film on glass windows/ doors at all public and critical facilities.

Priority: HIGH	
Resp. Agency/Department	Starr, Rio Grande City, and Roma Planning Department Escobares City Administration Roma ISD Maintenance Dept.
Resources	Local/General Fund (Roma ISD)
Est. Timeframe	4 years/ 2 years (Roma ISD)
Est. Cost	\$50k each/ \$250K (Roma ISD)
Hazard Addressed	Tornadoes, Thunderstorms, and Hurricanes.
Benefiting Jurisdiction	All Jurisdictions.

Action #18: Widen Arroyo Los Morenos (Creek) to improve water flow and prevent flooding.

Priority: HIGH	
Resp. Agency/Department	City/ County Admin.
Resources	CDBG/ TWDB, USDA, Drainage District/ Local.
Est. Timeframe	5 years.
Est. Cost	\$12 million.
Hazard Addressed	Flooding, Thunderstorms, and Hurricanes.
Benefiting Jurisdiction	Roma, Escobares, and Starr County.

Action #19: Create and maintain a cleanup schedule to clear creeks within the jurisdiction.

Priority: HIGH	
Resp. Agency/Department	Starr, Roma, Escobares and Rio Grande City Public Works. Roma ISD Maintenance Dept
Resources	Staff Time/ Local/General Fund
Est. Timeframe	5 years (annually)
Est. Cost	Roma, Starr, and Escobares \$10k yearly and Rio Grande City \$300k.1 Roma ISD, \$25K
Hazard Addressed	Flooding, Thunderstorms, and Hurricanes.
Benefiting Jurisdiction	All Jurisdictions.

Action #20: Improve roadways, by widening and raising, and create drainage culvers or bridges. (Morenos Creek and Garceno Creek) (Kelsey Creek, Rio Grande City)

Priority: HIGH	
Resp. Agency/Department	Rio Grande City Public Works, Escobares City, and Starr Public Works.
Resources	TDA/Local
Est. Timeframe	2 years.
Est. Cost	Rio Grande City \$200k, Escobares \$1.5m, and Starr \$1.5m.
Hazard Addressed	Flooding, Hurricanes, and Thunderstorms.
Benefiting Jurisdiction	Escobares, Starr and Rio Grande City.

Action #21: Evaluate Current drainage issues in order to implement Master Drainage Plan improvements in Arroyo Roma and Arroyo Los Morenos

Priority: HIGH	
Resp. Agency/Department	Roma Public Works, Escobares City, and Starr Public Works. Roma ISD Maintenance Dept. and Emergency Management and Safety Committee
Resources	TDA/Local Roma ISD General Fund
Est. Timeframe	2 years
Est. Cost	Roma \$200k, Escobares \$1.5m, and Starr \$1.5m.
Hazard Addressed	Flooding, Hurricanes, and Thunderstorms.
Benefiting Jurisdiction	Escobares, Starr and Roma.

Action #22: Install surge protectors for all telecommunications systems in all critical facilities.

Priority: HIGH	
Resp. Agency/Department	Starr County, Rio Grande City, Roma, and Roma ISD I.T. Departments Escobares City Administration
Resources	Local
Est. Timeframe	2 years.
Est. Cost	County \$100k, Rio Grande City \$25k, Escobares \$10k, Roma \$100K and Roma ISD \$25K.
Hazard Addressed	Thunderstorms (lightning).
Benefiting Jurisdiction	All Jurisdictions.

Action #23: Install lightning rods at all critical facilities and critical infrastructure.

Priority: HIGH	
Resp. Agency/Department	Roma and Escobares City, and Rio Grande City and Starr County Planning Department Roma ISD IT and Maintenance Dept.

Resources	Local/General Fund
Est. Timeframe	3 years.
Est. Cost	Roma \$100k, Escobares \$10k, Starr \$200k, Rio Grande City \$50k and Roma ISD \$100k.
Hazard Addressed	Thunderstorms (lightning).
Benefiting Jurisdiction	All Jurisdictions.

Cost/Benefit Analysis

The planning reviewed all actions and took into consideration the cost/benefit analysis of each. The benefit of implementing these actions was not only limited to a monetary savings, but it included benefits in economic development, reducing or eliminating the loss of property and life, and the protection of natural and historic environments.

Plan Maintenance

Each of the participants created a plan maintenance schedule for their jurisdiction. In creating this maintenance plan, each of the participants identified procedures that would include monitoring, evaluation and update.

Under monitoring, the designated position, department, or agency will track the implementation of the plan over time.

For evaluation, the designated position, department, or agency will assess the effectiveness of the of the plan at achieving its stated purpose and goals.

As for update, the designated position, department, or agency will review and revise the plan every five years.

Below is a plan developed for and by each of the participating jurisdictions.

Starr County

Monitor	
Position/Agency/Department	Director of Federal and State Programs
Time	Yearly
Method	Implement a monitoring system for the mitigation actions.
Evaluate	
Position/Agency/Department	Planning Department
Time	Yearly
Method	Based on monitoring reports, the department will assess the effectiveness of the plan.

Update	
Position/Agency/Department	Emergency Management Coordinator
Time	Review and revise yearly and submit plan to FEMA on fourth anniversary.
Method	Convene with sub-mitigation planning group.

Escobares

Monitor	
Position/Agency/Department	Mayor/EMC
Time	Every two years
Method	Review plan and track the implementation of the actions proposed.
Evaluate	
Position/Agency/Department	Mayor/EMC
Time	Every five years
Method	Track the effectiveness of each mitigation action implemented.
Update	
Position/Agency/Department	Mayor/EMC
Time	Every five years
Method	Review and make any changes if necessary.

Rio Grande City

Monitor	
Position/Agency/Department	Development Services Director
Time	Quarterly review of the plan/Annual review at the time of the Budget Process
Method	Meeting Reports/Benchmarks funding
Evaluate	
Position/Agency/Department	Hazard Mitigation Committee
Time	Every 6 months
Method	Metrics Survey
Update	
Position/Agency/Department	Hazard Mitigation Committee
Time	Annual Meetings
Method	Review from Quarterly Monitoring Report and Semi-Annual Evaluation Meetings.

Roma

Monitor	
Position/Agency/Department	Assistant City Managers/Planning Director
Time	3 years
Method	Monitoring projects and completion of projects
Evaluate	
Position/Agency/Department	Assistant City Managers/Planning Director
Time	3 years
Method	Conduct survey on how to improve the plan
Update	
Position/Agency/Department	EMC
Time	3 years
Method	Update on items that have been completed and improve on the plan.

Roma ISD

Monitor	
Position/Agency/Department	Hazard Mitigation Team <ul style="list-style-type: none"> • Risk Management Director • Executive Director
Time	Biannually- 1 st Wednesday in August and May
Method	The necessary personnel will meet twice a year to report, identify, review, and update mitigation actions. Risk Management Director will document and track the implementation of all actions.
Evaluate	
Position/Agency/Department	Hazard Mitigation Team <ul style="list-style-type: none"> • Risk Management Director • Executive Director • Maintenance Supervisor
Time	Yearly- 1 st Wednesday in May
Method	The team will meet yearly to evaluate the effectiveness of each goal in the mitigation plan. At this time, updates and modifications will be considered to complete each goal, if necessary.
Update	
Position/Agency/Department	Hazard Mitigation Team <ul style="list-style-type: none"> • Risk Management Director • Executive Director

	<ul style="list-style-type: none"> • Maintenance Supervisor
Time	Every five years
Method	Every five years the Roma ISD Hazard Mitigation Team shall evaluate the full Mitigation Plan to review and update if needed

Public Participation

Going forward, the planning team will continue to seek public participation after the plan has been approved and during the plan’s implementation, monitoring, and update. The planning team will present the plan’s progress to their respective governing bodies prior to the submission for update.

The planning team will also present the plan’s progress to the community by posting on social media and public meetings. This will also give the opportunity for the community to provide feedback that will be used during the plan’s monitoring, evaluation, and update. The planning team will present to their respective communities as often as each participant deems necessary. However, an attempt to reach out to the community must be done once at least every five years.

NFIP Compliance

All participating jurisdictions, with the exception of Escobares who falls under Starr County and Roma ISD that falls under Roma, are participating communities in the National Flood Insurance Program (NFIP). This program gives the participating communities the ability to regulate development within the designated special flood hazard areas. Although participation in the program has not been active recently, moving forward the participants will continue compliance by following codes or ordinances already set forth. Participants will also continue to promote the program to residents through public-private partnerships. Each of the participants will assign necessary personnel to the floodplain management. The floodplain manager will continue to monitor flooding events, record the information and use information to create public awareness as well as consider updating building codes and new construction areas.

Repetitive and Severe Repetitive Loss Properties

The only jurisdiction to report repetitive loss properties is Roma. There are only two residential repetitive loss properties in Roma. There are no severe repetitive loss properties reported in any of the participating jurisdictions.

Annex A: Starr County Colonias

Colonias List in Alphabetical Order					
A.T. Martinez	El Bosque #3	Gutierrez	Los Barreras North	Northeidge	Sandoval
Airport Heights	El Bosque #4	H. Cuellar Estates	Los Barreras South	Northwest Industrial Park	Santa Anna
Ala Blanca	El Brazil	Hackberry	Los Ebanos	Old Escobares	Santa Catarina
Alto Bonito	El Castillo	Hillside Terrace	Los Ebanos #2	Old Santa Cruz	Santa Cruz #2
Alto Bonito Heights	El Cenizo	Hilltop	Los Morenos	Old Snta Elena	Santa Cruz Industrial Park
Alvarez	El Chaparral #1	Humberto Y. Saenz	Los Olmos	Olivarez	Santa Margarita
Amada Acres	El Chaparral #2	Indio #1	M. Munoz	Olivia Lopez de Gutierrez	Santa Rosa
Anacua	El Mesquite	Indio #2	Manuel Escobares	Olmito & Olmito #2	Santel
Antonio Flores	El Quiote	J.F. Villareal	Manuel Garcia	Pablo Pena	Share 52
Arredondo	El Rancho Vela	J.L. Garcia	Manuel Garcia #2	Palo Blanco	Solis
B & E	El Refugio	Jardin de San Julian	Manuel Munoz	Pedro Campos	South Refugio
Barrera	El Socio	Javier Ramirez	Margarita	Pena #1	Sunset
Bella Vista	Elias-Fela Solis	Joseph Griggs	Margarita Addition #1	Pena #2	Tamez
Benjamin Perez	Elodia's	La Carla	Martinez S/D	Quesada	Tierra Dorada
Buena Vista	Elsa	La Casita	Mesquite #1	Rafael Pena	Tierra Linda
Buena Vista Plaza	Escandon Trace S/D	La Chaparosa	Mesquite #2	Ramirez-Perez	Trevinos
Camargito	Escobares	La Escondida	Mesquite #3	Ramos	Trevinos #1
Campo Verde	Escobares #1	La Esperanza	Mesquite #4	Ramos Addition #1	Triple R
Campobello	Eugenio Saenz	La Gloria	Mi Ranchito Estate	Ranchitos Del Norte	Triple R #1
Campobello #2	Evergreen	La Hacienda	Midway Subd.	Rancho Viejo #1	Valle Hermosa
Canales	Falcon Heights	La Loma de Falcon	Miguel Barrera	Rancho Viejo #2	Valle Vista #1
Cantu	Falconaire	La Lomita	Miguel Garza	Rancho Viejo #3	Valle Vista #2
Casa Blanca Subd	Fernando Salinas	La Minita	Mike's	Rau-con Drive-In#2	Venecia
Casas	Flor Del Rio	La Paloma Ranchettes	Mirador	Regino Ramirez	Victoria

Chaparrito	Florentino Sosa	La Puerta	Mirasoles	Reyna	Victoria Ranch
Chapeno	Flores Brothers	La Puerta #2	Mireles	Rivera	Victoria Vera
Cortez	Fourth Site	La Reforma	Mitchell	Riverano	Villa de Frontera
De La Cruz	Francisca	La Rosita	Montalvo Hills	Robinson	Villa de Martinez
De La Garza	Francisco Rodriguez	Lago Vista	Moraida	Rodriguez #1	Villareal
De Los Santos	Fronton Ranchettes	Las Flores	Moreno	Rodriguez #2	West Alto Bonito
Delmita #1	Garceno	Las Palmas	Moreno, S S/D	Roma Creek #1, 2 & 3	Zarate
Delmita #2	Garcia's	Leal	Morida	Salinas	
Delmita #3	Garciasville	Live Oak Estates	Munoz	Salineno North	
Delmita North	Garza Addition	Loma Alta	Munoz-Garcia	Salineno South	
Delmita South	Garza-Gutierrez	Loma Linda East	Narciso Pena	Salmon	
Doyno West Side #2	Garza-Salinas	Loma Linda West	Netos	Sammy Martinez	
E. Lopez	Garza-Salinas #2	Loma Vista	Nina	San Fernando	
East Alto Bonito	Gloria	Loma Vista #1	North Escobares Ranchettes	San Isidro	
El Bosque #1	Guadalupe Guerra	Longoria	North Refugio	San Jose	
El Bosque #2	Guerra	Los Arrieros	North Santa Cruz	San Juan	

Annex B: Meetings List

Date	Task	Location	Jurisdiction Attending
8/3/2017	Task 1	Roma Volunteer Fire Dept.	All participants
9/21/2017	Task 2	Roma Volunteer Fire Dept.	All participants
10/14/2017	Task 2	Roma Volunteer Fire Dept.	All participants
1/23/2018	Task 2	Roma Community Center	Roma, Roma ISD, Starr County and Escobares
1/25/2018	Task 2	STC Auditorium	Starr County and Rio Grande city
10/24/2017	Task 2&3	Roma Volunteer Fire Dept.	Roma, Roma ISD, Starr County and Rio Grande
12/5/2017	Task 3	Rio Grande City Hall	Rio Grande City
12/5/2017	Task 3	Roma ISD Admin. Building	Roma ISD
12/6/2017	Task 3	Escobares Community Center	Roma, Roma ISD, Starr County and Escobares
12/6/2017	Task 3	Starr County Court Annex	Starr County
12/7/2017	Task 3	Escobares City Hall	Escobares
12/7/2017	Task 3	Roma Volunteer Fire Dept.	Roma
3/20/2018	Task 4	Roma Volunteer Fire Dept.	All participants
3/27/2018	Task 4	Roma Volunteer Fire Dept.	All participants
4/4/2018	Task 4	Roma Volunteer Fire Dept.	All participants
4/18/2018	Task 4	Roma Volunteer Fire Dept.	All participants
4/24/2018	Task 4	Starr County S.O.	Starr County
4/24/2018	Task 4	Roma Volunteer Fire Dept.	Roma
4/25/2018	Task 4	Rio Grande City Hall	Rio Grande City
4/25/2018	Task 4	Escobares City Hall	Escobares
4/26/2018	Task 4	Roma ISD Admin. Building	Roma ISD
5/1/2018	Task 4	Starr Co. Courthouse Annex	Starr County
5/3/2018	Task 4	Starr Co. Courthouse Annex	Starr County
5/1/2018	Task 4	Roma Volunteer Fire Dept.	Roma
5/2/2018	Task 4	Rio Grande City Hall	Rio Grande City
5/2/2018	Task 4	Escobares City Hall	Escobares
5/3/2018	Task 4	Roma ISD Admin. Building	Roma ISD
6/19/2018	Task 4	Roma Volunteer Fire Dept.	Roma
6/20/2018	Task 4	Escobares City Hall	Escobares
6/26/2018	Task 4	Roma Volunteer Fire Dept.	Roma
6/26/2018	Task 4	Rio Grande City Hall	Rio Grande City
6/27/2018	Task 4	Roma ISD Admin. Building	Roma ISD
6/27/2018	Task 4	Escobares City Hall	Escobares
6/28/2018	Task 4	La Casita Fire Department	Starr County- La Casita
7/10/2018	Task 4	Roma Volunteer Fire Dept.	Roma
7/10/2018	Task 4	Escobares City Hall	Escobares

7/11/2018	Task 4	Rio Grande City Hall	Rio Grande City
7/11/2018	Task 4	Starr County Sheriff's Office	Starr County
7/24/2018	Task 4	Rio Grande City Hall	Rio Grande City
7/24/2018	Task 4	Roma Volunteer Fire Dept.	Roma
7/24/2018	Task 4	Roma ISD Admin. Building	Roma ISD
7/25/2018	Task 4	Escobares City Hall	Escobares
7/25/2018	Task 4	Starr County	Starr County
7/26/2018	Task 4	Roma ISD	Roma ISD
8/21/2018	Task 5	Roma Volunteer Fire Dept.	All participants
8/21/2018	Task 5	Roma Volunteer Fire Dept.	All participants
9/12/2018	Task 5	Roma Volunteer Fire Dept.	All participants
9/26/2018	Task 5	Roma Volunteer Fire Dept.	All participants
10/2/2018	Task 5	Roma Volunteer Fire Dept.	Roma, Rio Grande, Starr County and Escobares
3/19/19	Task 8	Roma Volunteer Fire Dept.	All participants
4/4/2019	Task 8	Roma Volunteer Fire Dept.	All participants
4/30/2019	Task 8	Roma Volunteer Fire Dept.	All participants
5/14/2019	Task 8	Roma Volunteer Fire Dept	All participants

DRAFT

Annex C: Community Survey Results

1. How concerned are you about the following natural disasters	<u>Very Concerned</u>	<u>Some what Concerned</u>	<u>Neutral</u>	<u>Not very Concerned</u>	<u>Not Concerned</u>	
Floods	27	11	3	2	1	
Hurricanes	25	11	5	1	2	
Wildfire	18	13	4	6	1	
Tornado	6	10	11	8	5	
Drought	15	12	9	3	1	
Coastal erosion	0	5	11	14	9	
Dam/levee failure	12	11	13	1	4	
Earthquakes	1	6	11	8	13	
Expansive soils	1	3	16	8	10	
Extreme heat	20	11	8	0	2	
Hailstorm	10	15	10	4	1	
Land subsidence	0	8	17	6	7	
Severe winter storms	5	10	10	7	7	
Windstorms	5	14	9	9	2	
Lightning	11	10	14	3	2	
Other	0	0	0	0	0	
2. Directly experienced or have been affected by a natural occurrence						
yes	12					
no	32					
If Yes, which natural disaster have you or someone in your household experienced in the last five years?						
Flooding	9					
Hailstorm	3					
Wind storms	2					
Wildfire	1					
Drought	1					
Low flood Access	1					
Hurricane	1					
3. Have you received information on safety procedures for when a natural disaster happens?						
Yes	34					

No	10					
If yes, from whom did you last receive safety information about natural disasters?						
News media	30					
Government agency	12					
Insurance agent or Company	2					
Utility company	4					
School	6					
Neighbor/ friend/ family member	10					
Fire dept./ Police dept./ Sheriff's office	22					
Elected official	5					
American Red Cross	7					
Social media	16					
Other non-profit organization	1					
Other: Church	1					
Other: FEMA	1					
4. Which of the following categories are more susceptible to the impacts caused by natural hazards in your area?	1	2	3	4	5	6
Human	5	3	5	2	4	24
Economic	2	2	14	7	11	6
Infrastructure	1	4	8	17	9	3
Cultural/Historic	12	11	7	2	5	5
Environmental	8	7	12	7	5	3
Governance	9	8	5	7	6	6
5. What specific types of community assets are most important to you?	<u>Very important</u>	<u>Some what important</u>	<u>Neu tral</u>	<u>Not Very important</u>	<u>Not impor tant</u>	
Elderly Facilities	31	8	1	1	0	
Schools	34	7	1	0	0	
Hospitals	40	1	0	0	0	
Major bridges/ Roads	24	15	2	0	0	
Fire/ EMS/ Police stations	35	6	0	0	0	
Museums/ Historic building	6	17	13	4	1	
Major employers	10	19	8	3	0	
Small businesses	10	19	8	2	1	

College/ University	11	17	13	0	0	
City Hall/ Courthouse	17	13	8	2	0	
Parks	6	16	9	5	4	
Other: The lower class and homeless	1	0	0	0	0	
6. Select how important each statement is to you	<u>Very important</u>	<u>Some what important</u>	<u>Neu tral</u>	<u>Not Very impor tant</u>	<u>Not impor tant</u>	
Protecting private property	22	13	5	2	0	
Protecting critical facilities	32	4	4	1	0	
Preventing development in hazard areas	28	8	6	0	0	
Protecting historical and cultural landmarks	12	16	12	1	0	
Protecting and reducing damage to utilities	30	9	3	0	0	
Strengthening emergency services	37	2	2	0	0	
Disclosing natural hazard risks during real estate transactions	24	15	3	0	0	
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	26	11	3	0	1	
7. Check those activities that you have done in your household, plan to do in the future, have not done or are unable to do	<u>Have done</u>	<u>Plan to do</u>	<u>Not done</u>	<u>Unabl e to do</u>		
Attended meetings or received written information on natural disasters or emergency preparedness	33	3	6	0		
Talked with members in your household about what to do in case of a natural disaster or emergency	17	15	9	0		
Developed a "Household/ Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	11	19	12	0		
Prepared a "Disaster Supply Kit" (stored extra food, water, batteries, medication or other emergency supplies)?	18	20	6	0		
Have been trained in first aid or cardio-pulmonary resuscitation (CPR)	19	7	15	2		
Prepared your home by having smoke detector on each level of the house	27	6	9	0		
Discussed or created a utility shutoff procedure in the event of a natural disaster?	8	17	17	0		

8. What actions have you taken to reduce risk for your house/apartment/ property for potential disasters?						
‡Purchased homeowners/ renter’s insurance policy	24					
Purchased flood insurance	12					
Flood proofing (elevating furnace, water heaters, and electric panels)	11					
Install retrofits such as high impact windows or doors to withstand high winds; fire resistant siding, roofing or window screens; storm shelters, etc.	11					
Install fire breaks around home	7					
Remove dead/ dying trees or vegetation	27					
Purchased easy accessible fire extinguishers	13					
Alternate power supply	7					
Alternate water supply	13					
None	8					
Other	0					
<u>General Information</u>						
9. Age						
Younger than 18	0					
18-24	0					
25-34	10					
35-44	17					
45-54	11					
55-64	4					
65 or older	2					
Prefer not to answer	0					
10. Sex:						
Male	24					
Female	20					
11. Ethnicity						
Hispanic or Latino	41					
Not Hispanic or Latino	0					
12. Race						
White	35					

African American	0					
Hawaiian Native & Pacific Islander	0					
Asian American	0					
Native American/ Alaskan Native	1					
Other	1					
13. Level of education:						
High school graduate/ GED	9					
Some College/ Trade school	18					
College degree	10					
Postgraduate degree	2					
Other: Elementary school	1					
14. What jurisdiction(s) applies to you?						
City of Roma	12					
City of Escobares	7					
City of Rio Grande City	17					
Roma Independent School District	0					
Starr County	8					
Other	0					
15. Do you rent or own your home?						
Own	29					
Living with a friend/relative	3					
Rent	10					
16. Do you own/rent a:						
Single-family home	27					
Duplex	1					
Apartment	7					
Condominium/ Town house	0					
Manufactured home	4					
Other	0					