Willacy County Resilient Housing & Recovery Guide

2023

Produced by: Halff

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ACKNOWLEDGEMENTS

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CHAPTER ONE | HOUSING ASSESSMENT

Introduction

Willacy County, in Texas's Lower Rio Grande Valley region near the U.S.-Mexico border, is relatively flat land that slopes slightly east until it meets the Lower Laguna Madre. The Laguna Madre is a hypersaline bay system that serves as a major transport hub for freight. Willacy County's flat landscape, once grasslands, now largely serves as farmland for cultivation of rice, grain, sorghum, cotton, and soybeans. Dark brown to red loam over deep clayey subsoils comprise the inland terrain while, while the shoreline consists of sandy soils with salt-tolerant cordgrasses, seashore Saltgrass, and marsh millet. Apart from its shoreline, Willacy County's only natural water features are small salt lakes scattered across its west side. The coast is home to a large, overwintering redhead duck population and a highly productive fishery and contains wide tidal mud flats. It is protected by sand dunes running along a narrow barrier island (Padre Island) across the Laguna Madre to its east. As part of the Padre National Seashore Park system, Padre Island is protected from development, allowing it to provide important protection from coastal flooding and storm surge.

Port Mansfield, a census-designated place (CDP) on Willacy County's coast, is home to a commercial port and marina that opens economic opportunities for the region. The Port Mansfield Channel, initially completed in September 1957, provided the County access to important Gulf of Mexico trade routes. Following its completion, the wave and wind action of the Gulf, including two November storms, caused the channel to be filled in again only a few years after its initial construction. The U.S. Army Corps of Engineers intervened a few years after, establishing jetties with massive boulders to stabilize the structure that stands today.

Willacy County is led by an elected County Judge and four County Commissioners presiding over precincts as shown Map X, from the county seat, Raymondville. Raymondville is part of the micropolitan statistical area Brownsville-Harlingen-Raymondville combined statistical area. Together with Hidalgo, Starr, and Cameron counties, this region is known as the Lower Rio Grande Valley of Texas, named for the Rio Grande River, which creates the border between Texas and Mexico.

MAP 1.1

With a total reported population of 21,515, Willacy County remains primarily rural, with a large portion of residents concentrated in the City of Raymondville. The cities of San Perlita and Lyford are its only other municipalities. All other communities in Willacy County are census-designated places (CDPs), including Lasara, Los Angeles, Port Mansfield, Ranchette Estates, Santa Monica, Sebastian, and Zapata Ranch. While CDPs across Willacy County are statistically equivalent in population and geographic area to San Perlita and Lyford, these communities lack defined boundaries (i.e. municipal boundaries) and independent governments. Census-designated areas (CDPs) are statistically equivalent in population and size to incorporated communities, but do not have defined boundaries or a branch of government.1

According to the U.S. Geological Service (USGS), Willacy County is over 780 square miles with 591 miles designated as land and 191 square miles designated as water. The coastal location combined with its flat terrain

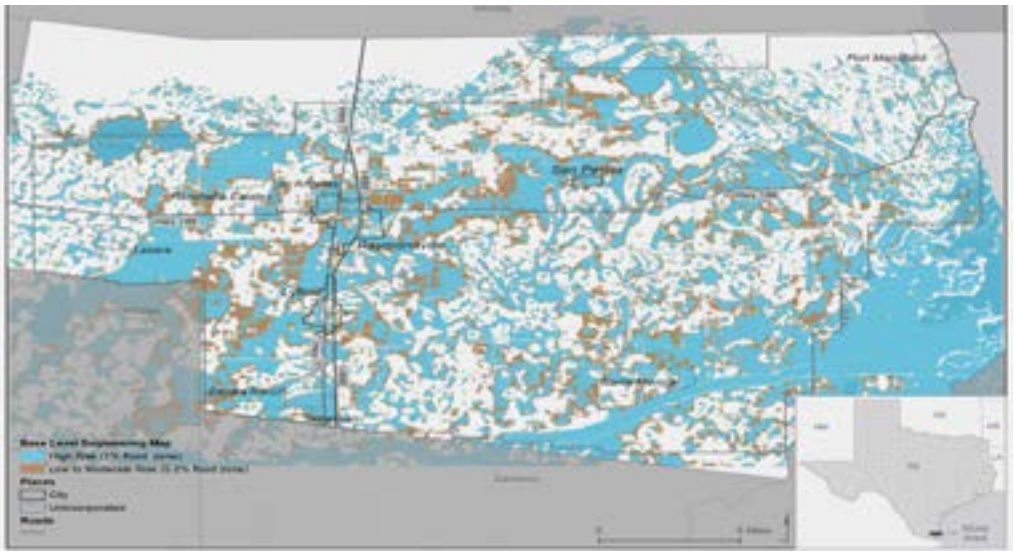
MAP 1.2

Source: Rough Sketch of County Precincts completed by Texas Target Communities Program under Texas A&M University. 2019.

introduce a number of drainage- and flooding-related issues. The humid subtropical weather, low average rainfall, and natural brush scrub landscape also pose the risk of wildfires for all counties in the Rio Grande Valley. On average there is low rainfall, but when impacted by a storm/rain event (which may bring as much as 10 inches of rain in a 24-hour period), the RGV may experience flash flooding. This is because large amounts of stormwater cannot easily infiltrate soils quickly enough, leading to sheet flow eastward toward the Laguna Madre. The base level elevation (BLE) floodplain for Willacy County is extensive, affecting all communities as shown in Map X. The blue is the 1% annual chance of flooding, and the green designates a 0.2% chance of flooding in any given year.

Areas in midwestern Willacy County near San Perlita, Lasara, and Raymondville, have a higher percentage of families living in poverty than Sebastian, Lyford, and San Monica in which the poverty rate is comparatively lower. The poverty rate is determined at the census tract level based on the County's social vulnerability index data relating to poverty levels and housing density. Overall, Willacy's poverty rate 35% overall, is far higher than that of the State, around 16%, though a slight improvement from 2015 when poverty in Willacy County reached an all-time high of 39%. These figures, if mapped out before a natural hazard event, can lend insight into how the County can address and recover after major storm events.

MAP 1.3



Projected population growth for Willacy County is calculated based on the Texas Water Development Board's estimation for current and past water demand for counties and Water User Groups, such as cities, and Texas State Demographer's Office's "No migration" scenario. Willacy

TABLE 1.1

Table 8: Published Population Projections

Year	Texas Water Development Board					Texas State Demographer's Office (Willacy County)		
	Sebastian CDP	San Perlita City	Lyford City	Raymondville	Willacy	No Migration	0.5 Migration I	1.0 Migration
2010	1,917	573	2,611	11,284	22,134	22,134		
2020	2,094	655	2,981	12,880	25,264	22,134		
2030	2,360	738	3,360	14,519	28,479	21,641		
2040	2,615	817	3,723	16,089	31,559	20,578		
2050	2,887	902	4,110	17,762	34,840	19,226		
2060	3,150	985	4,485	19,379	38,012			
2070	3,408	1,065	4,851	20,964	41,121			

Source: Texas Water Development Board and Texas State Demographer

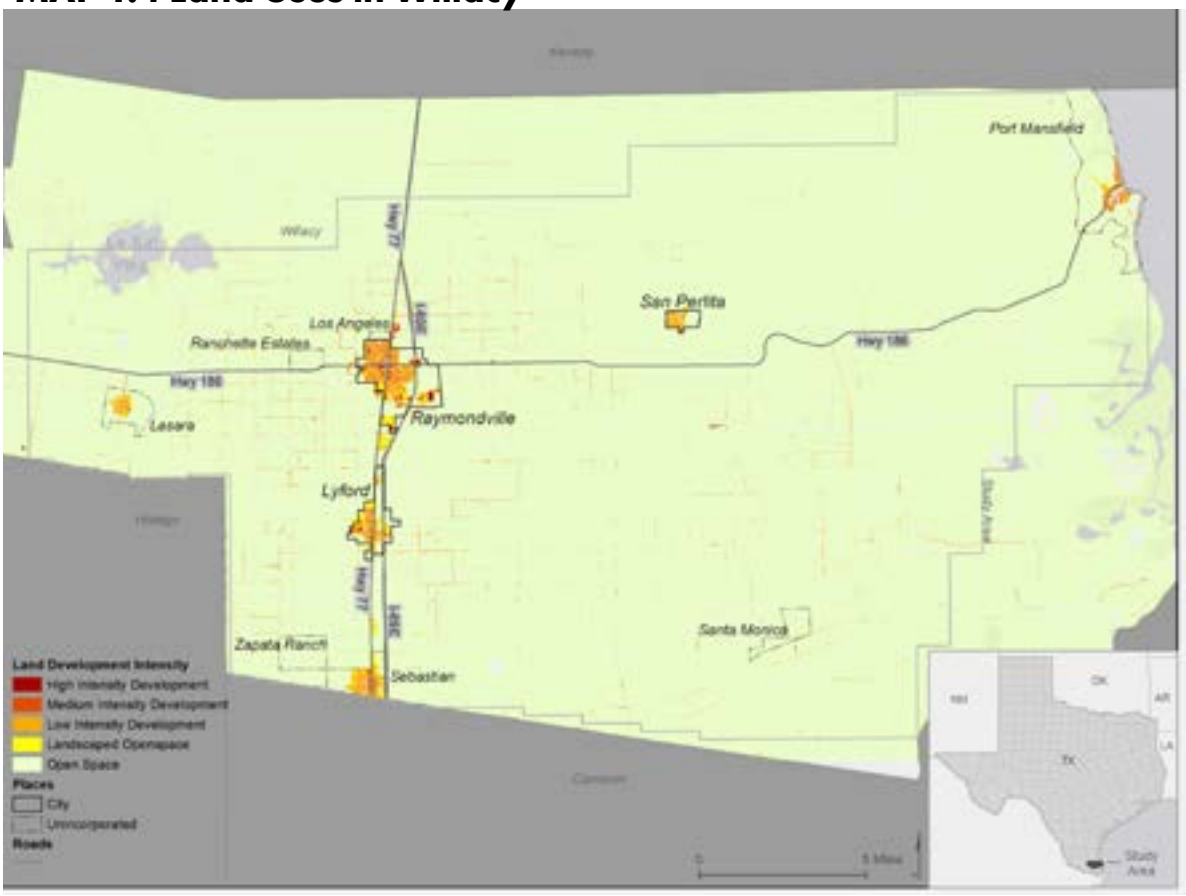
County is projected to steadily grow over the next several decades to reach a population of 40 thousand by 2070. The influx of industry development and projected growth of Hidalgo and Cameron Counties indicates that Willacy County is likely to see a slight population increase over the next few decades. In Lyford, for example, projected housing needs, according to their 2016 Comprehensive Plan update, will be around 200 by 2040 to accommodate an increase in population of 3,374 by 2040.

This U.S. Bureau of Labor and Statistics collects information about the North American Industry Classification System (NAICS)to establish an standards of classifying business establishments. This information gives county officials the capacity to recognize strengths and weaknesses in the economy; which industries the county relies heavily on; and where there can be specific economic growth. Industries where Willacy County has a higher share of workers than Texas (greater than 2.5%) include: Agriculture, Forestry, Fishing and Hunting, Administration Support, Waste Management, and Remediation, and Educational Services.2

The Lower Rio Grande Valley's regional economy consists primarily of oil and gas, ranching, farming, and energy production industries. Served by Missouri Pacific Railroad, Highway 77, and an important regional port, Willacy County is an ideal entry point/transportation hub for goods and energy and can therefore play a key role in boosting regional economic growth. The LRGV's evolution into an important international gateway and commerce center has brought additional changes to development patterns and transportation needs; therefore, causing adverse changes in runoff quantity and quality. Map 1.4 illustrates land uses across Willacy County, with high intensity development concentrated within a few urban areas, and open space making up the bulk of land uses. Map 1.5 zooms into the land uses of the urbanized areas on the western side of the county. If there is an influx of residents to Willacy County, housing will need to be built to accommodate a growing population, with location depending on land use and site conditions. The current presence of high-density developments in urban areas may draw economic growth to these certain areas, such as Raymondville, Lyford and Lasara. Location near jobs will also be a major factor. The city of Port Mansfield is preparing some sites for subdivision development for new industry that is setting sites on the coastal community.

From 1996 to 2010, there was significant loss of natural land cover designated as Forest and Grassland, while Developed, High-Intensity, barren land, and Scrub/shrub land cover increased. Agriculture Land Cover also decreased by 0.56% in 2010. This land conversion contributes to an increase in impervious land cover in the Willacy County which leads to more instances of localized flooding and drainage issues.

MAP 1.4 Land Uses in Willacy



MAP 1.5 Land Uses of Raymondville, Lasara and Lyford

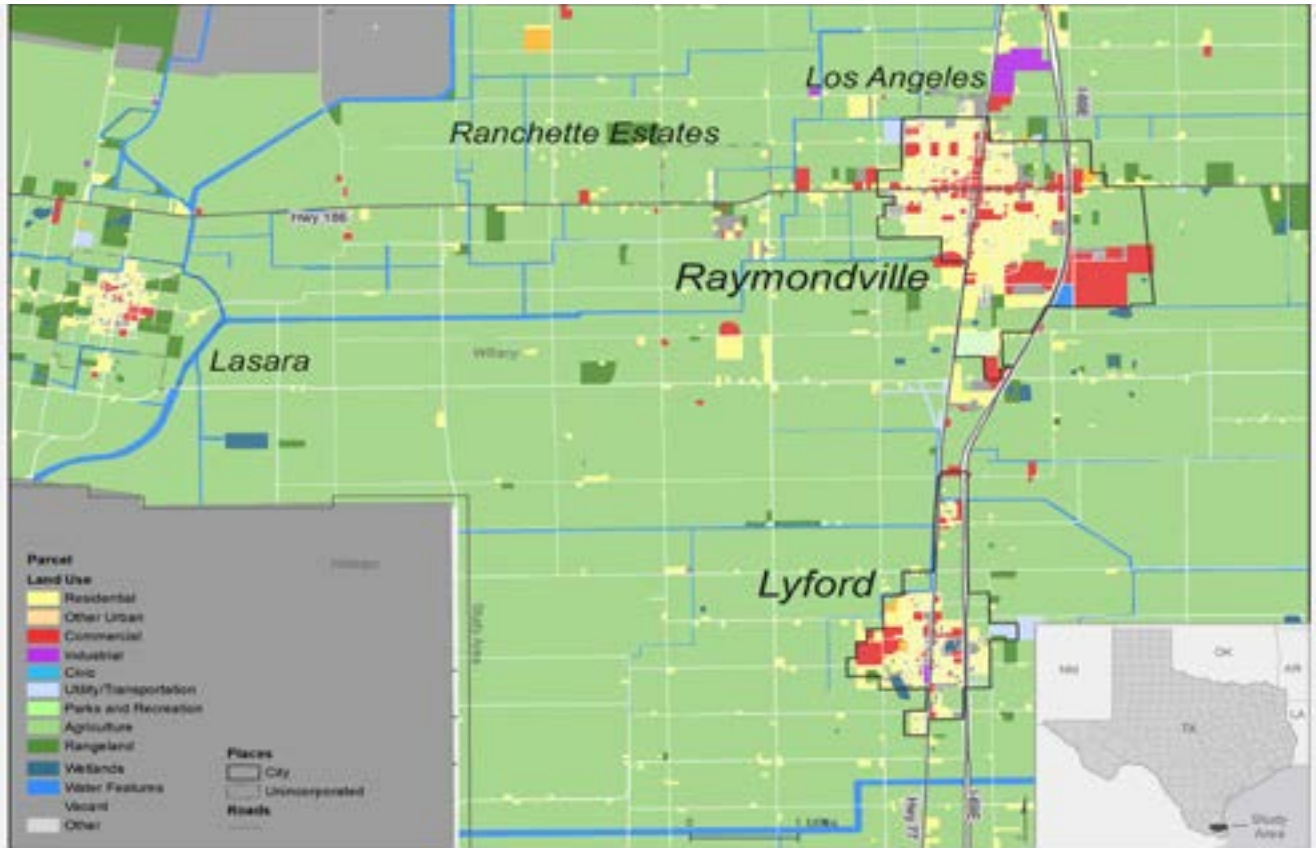
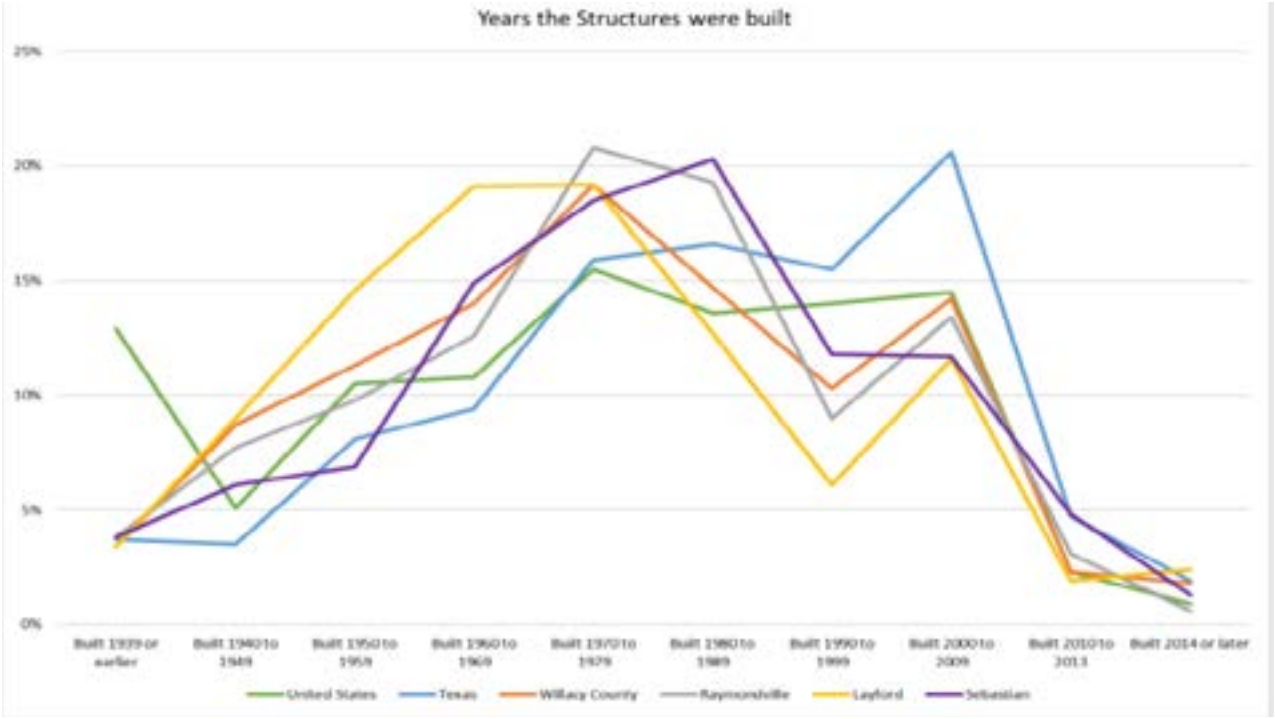


Figure 1.1 Year structures ere built in Willacy Cities



Source: Willacy County State of the Community Report. 2019

Housing

Based on the 2020 U.S. Census, Willacy County has an overall housing stock of 7,224, an increase of 3% between 2010 and 2017 with a density of 11.6 homes per square mile, making it a largely rural county. Around 70% of homes are single-family; fewer than 10% are multi-family; and 13% are mobile or manufactured homes. Mobile/ Manufactured homes tend to be most vulnerable types with regard to damage during flooding and/or high wind events due to typical construction materials or incorrect tethering.

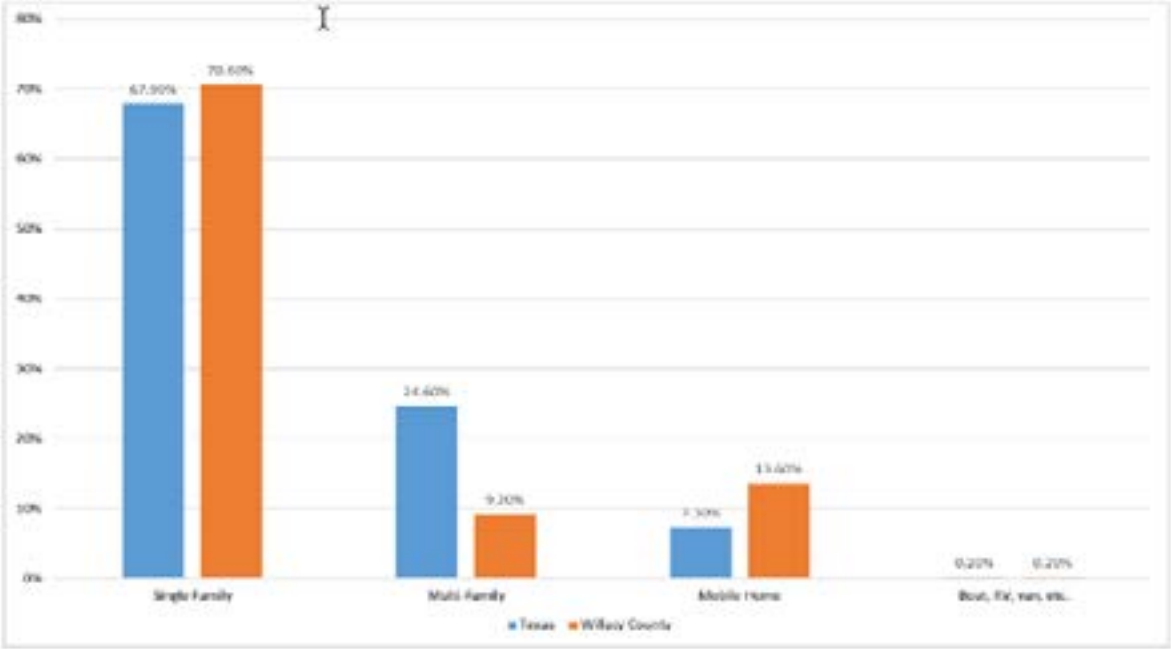
According to the U.S. Census Bureau 2017 ACS, half of homes in Willacy County are occupied by married couples, about 25% are occupied by a single individuals with family members, and 16% are occupied by single individuals living alone; multigenerational households are also a common occurrence in this region. While the United States and Texas State show a steep increase in home values, Willacy County's rate of increased has remained relatively slow and steady; especially from 2010 to 2017, when the housing prices increased by only $3,000.

Housing Stock & Density

Housing in Willacy County has followed a similar trend to population growth, with much of its growth occurring after in the latter half of the 20th century, after soldiers returned from WWII and overall growth in America was on the rise. County-wide growth peaked in the early 2000's, significantly slowed after 2010, and has remained idle since. In Figure 1.1, created for the State of the Community report by Texas Target Communities in 2019, colored lines indicate the percentage of homes built by year between 1939 and 2014 in all of Willacy County (orange) as well as in Raymondville (grey), Lyford (yellow), Sebastian (purple), the state of Texas (blue) and the United States (green). Notably, Willacy County peaks between 1970-1979 followed by a steep decrease and small pop between 2000-2009. Along with this data is the caveat that many homes may have been built as part of colonias and were undocumented when complete. Lyford, Raymondville, and Sebastian have similar trends with the exception of Lyford housing builds taking off earlier at the end of the 1950s, and Sebastian having a later peak between 1980-1989.

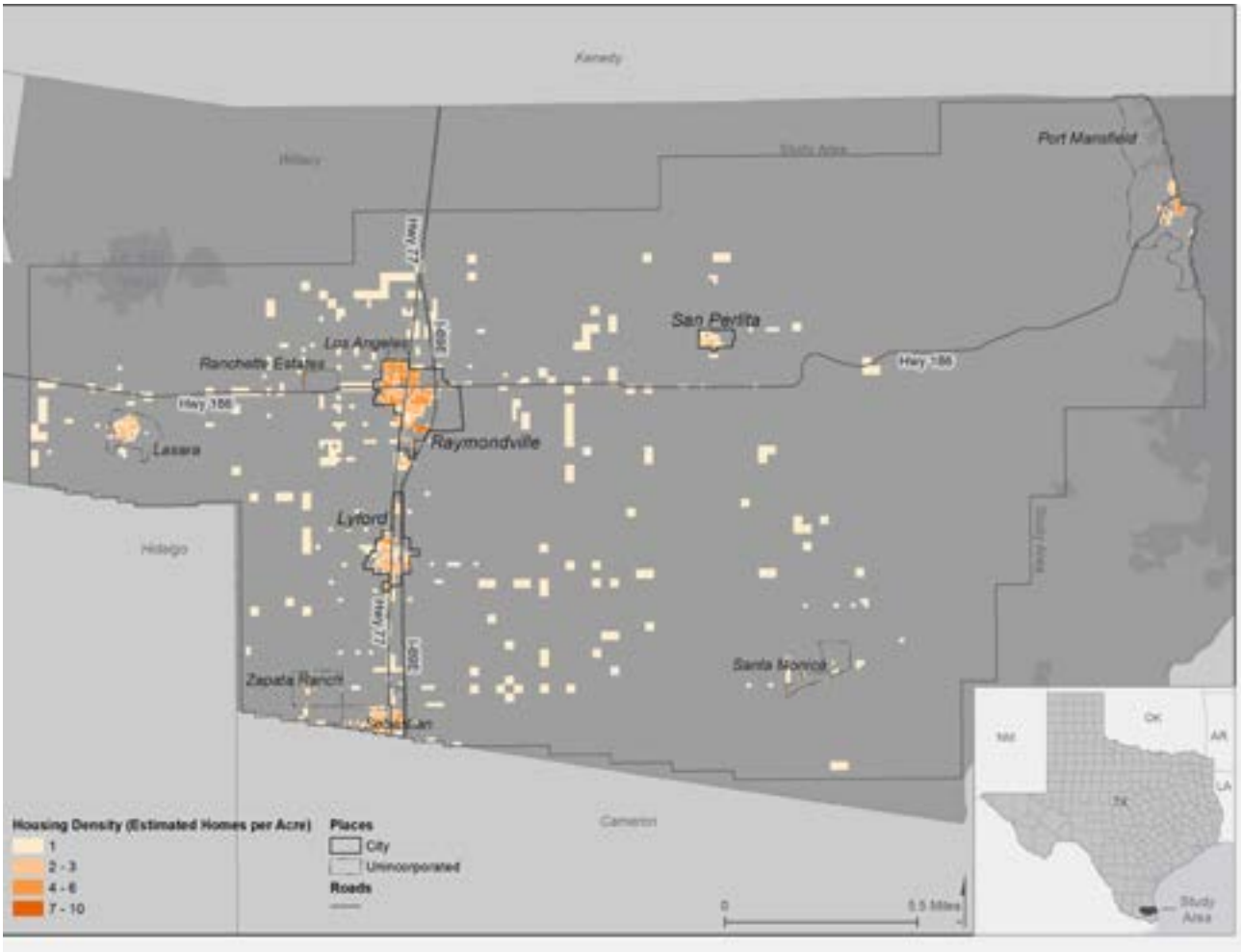
In coastal Texas communities, it is common to have a significant housing stock for seasonal, recreational, or occasional usage, but otherwise left vacant. In Willacy County, around 36% of housing units are second homes or designated for temporary use, a high percentage compared to other coastal communities in Texas.

figure 1.2 Housing Type in Willacy



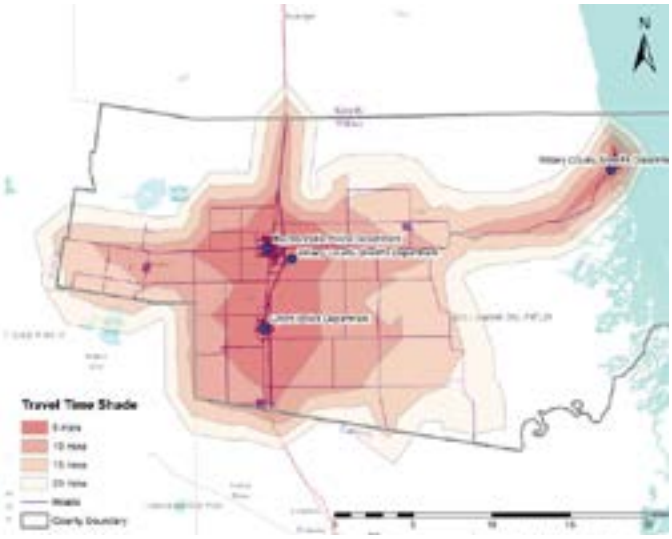
Source: Willacy County State of the Community Report. 2019

MAP 1.6 Housing Density

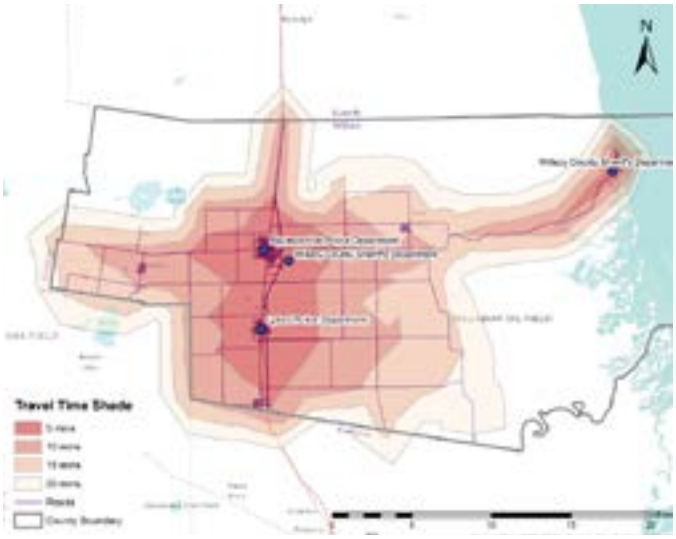


Source: Created by Texas Community Watershed Partners CHARM Team for August 31, 2023 CHARM workshop with Willacy County.

MAP 1.7 Police Response Times



MAP 1.8 VFD Response Times

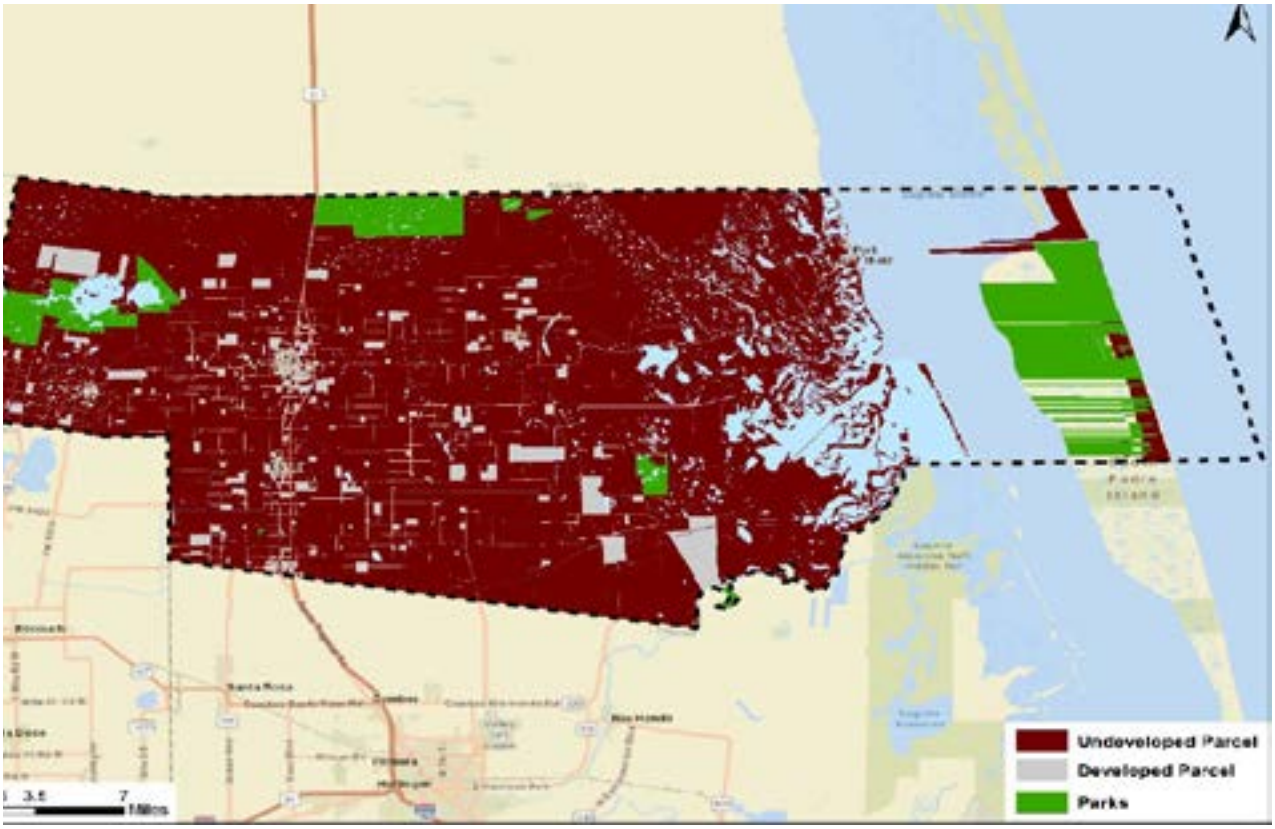


According to the U.S. Census Bureau, approximately 22% of all housing units are occupied by renters, far fewer than in the United States (36%) or in the State of Texas (38%), indicating a relatively high rate of homeownership. A number of these properties are seasonal or secondary homes and may sit empty for much of the year. Properties in Port Mansfield most likely fall under this designation, with population for the city fluctuating between a few hundred and tens of thousands.

As stated previously regarding the rural nature of the county, Map 1.9 illustrates the density of housing in the county with much of the color concentrated around Raymondville, Lyford, Lasara, Port Mansfield, Sebastian, and San Perlita. Utility services and emergency services are spread out across the County.

Approximately 94.68% of Willacy County's total area is undeveloped, with parks and wildlife refuge accounting for 10.02% and wetlands for an additional 10.84%; only 5.32% is developed.

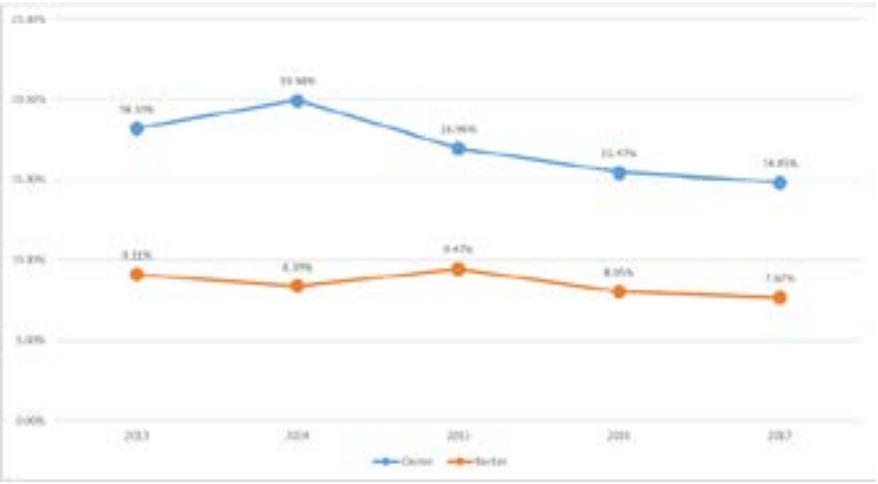
MAP 1.9 Developed Land in Willacy County



Maps 1.7 and 1.8 were created for the comprehensive plan to show response times for the Fire Departments and Police Departments located in Willacy County. The main transportation corridor and the urbanized areas are covered but the rural areas out along the border of the county in the west and north are outside of a quick response time. The closest emergency room is located south in Harlingen.In 2015, the City of Lyford contracted out to create a comprehensive plan to cover growth and development from 2016-2036. As part of that plan, the consultant did a windshield assessment of housing inventory to the status of housing conditions, vacancy, and lot improvements across the city. The foundation, roof, exterior walls, windows, and doors were assessed at a scale of 'Standard', 'Deteriorating,' and 'Dilapidated.' According to the assessment, 121, or 51% of the houses assessed were Deteriorating, 188 or 31% are Standard and, 100 or 16% are Dilapidated.

The number of vacant lots close to central Lyford presents opportunities for in-fill housing. The City's 2016-2036 comprehensive plan recommends amending land development codes to allow for construction on smaller lot sizes or a small-lot amnesty tool for neighborhoods with particularly high vacancy rates.

FIGURE 1.3



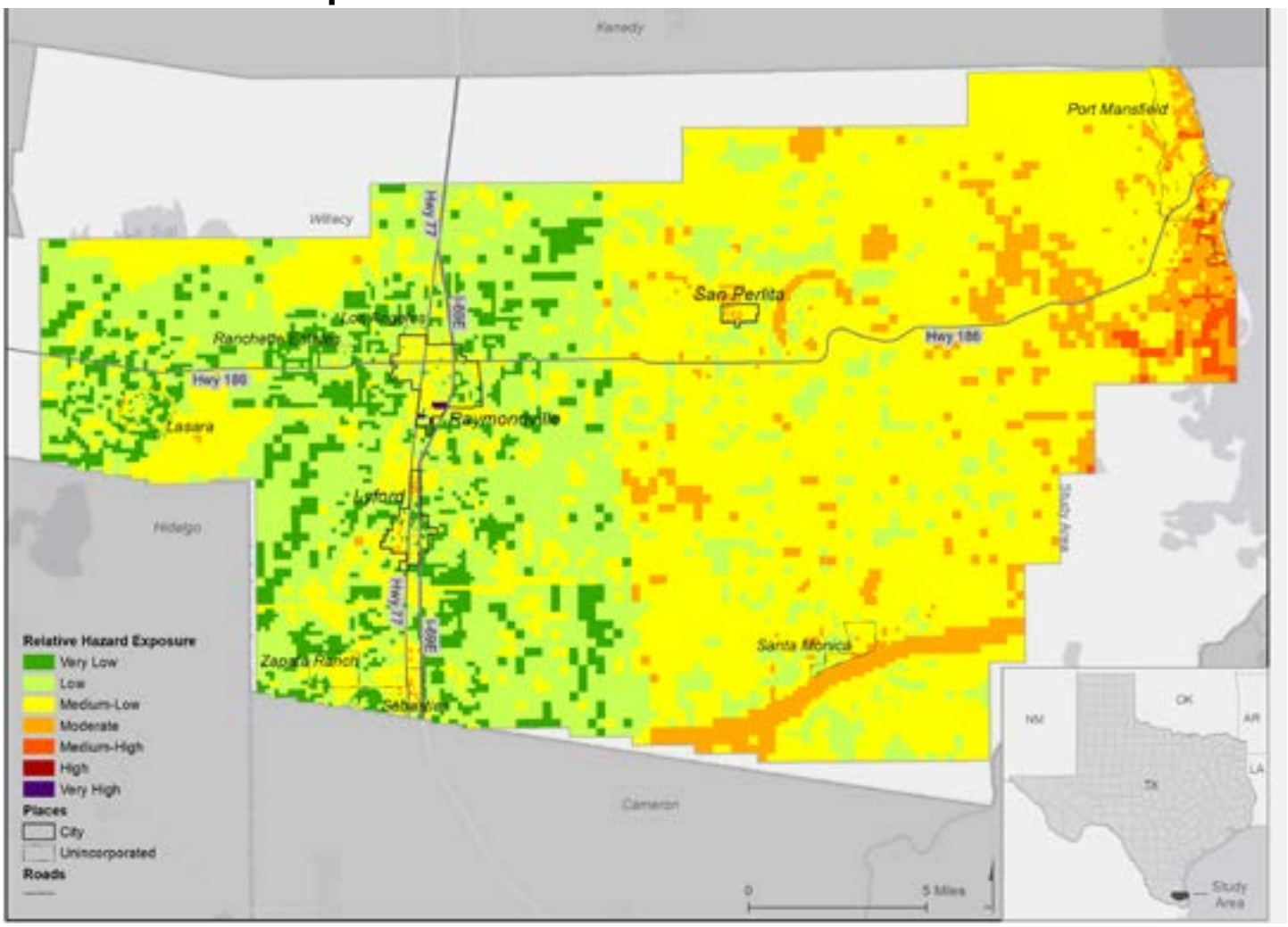
Source: Willacy County State of the Community Report. 2019

Housing Cost

Willacy County has maintained a steadier increase in housing prices than either the United States as a whole or the State of Texas. Buying and owning property in Willacy County is slightly more affordable compared to other regions in Texas, particularly considering its coast-adjacent location. Housing affordability is based on household income compared with monthly housing costs, indicating the proportion of household income dedicated to housing costs. A contribution of 30% or more of household income toward housing cost, indicates that a household is cost-burdened. Figure 1.3 demonstrates the percentage of owners and renters that spend more than 30% of household income on housing costs in Willacy County stood at 14.8% and 7.7%, respectively, in 2017. Cost-burdened households are typically more vulnerable during disaster events because they are least likely to have the funds saved up to thrive during a disruption. A disaster may shut down businesses or put people of their homes, in which case funds are needed to pay for temporary shelter, food and transportation. As such, although housing is relatively affordable in Willacy County based on the household income to monthly housing cost ratio, nearly a quarter of all households would nonetheless experience acute impacts during disasters due to housing cost burden.

The 2022 American Community Survey also notes that 77% of households in Willacy County do not have a mortgage. Mortgages encourage homeowners to acquire homeowners' insurance and flood insurance through the National Flood Insurance Program (NFIP), if a structure is located in a FEMA regulatory flood zone indicated in a Flood Insurance Rate Map (FIRM). Willacy County, despite relatively high homeownership rates, has a low rate of NFIP policy uptake and maintenance. People are discouraged from purchasing homes for which NFIP policies are required due to the perceived cost of enrolling in the NFIP and maintaining coverage, in addition to the cost of homeowners insurance. Additionally, some prospective homebuyers may not be aware that flood and homeowners' insurance are separate policies with separate costs; this realization may also be a deterrent.

MAP 1.10 Hazard Exposure



Source: Texas A&M AgriLife Extension Community Watershed Partners. Created for Aug 31, 2023, CHARM workshop.

External Factors

Hazards

Because Willacy County is located on the Gulf of Mexico, residents face numerous risks including tropical storms, extreme heat, drought, tornadoes, and wildfires. The County is currently updating its Hazard Mitigation Plan, which will overview each of these hazards and address strategies for preparedness, response, and recovery. A more thorough review of how these hazards affect housing in Willacy County and recommendations for building resilience to meet residents' needs is outlined in Chapter 3 and 4 of this guide.

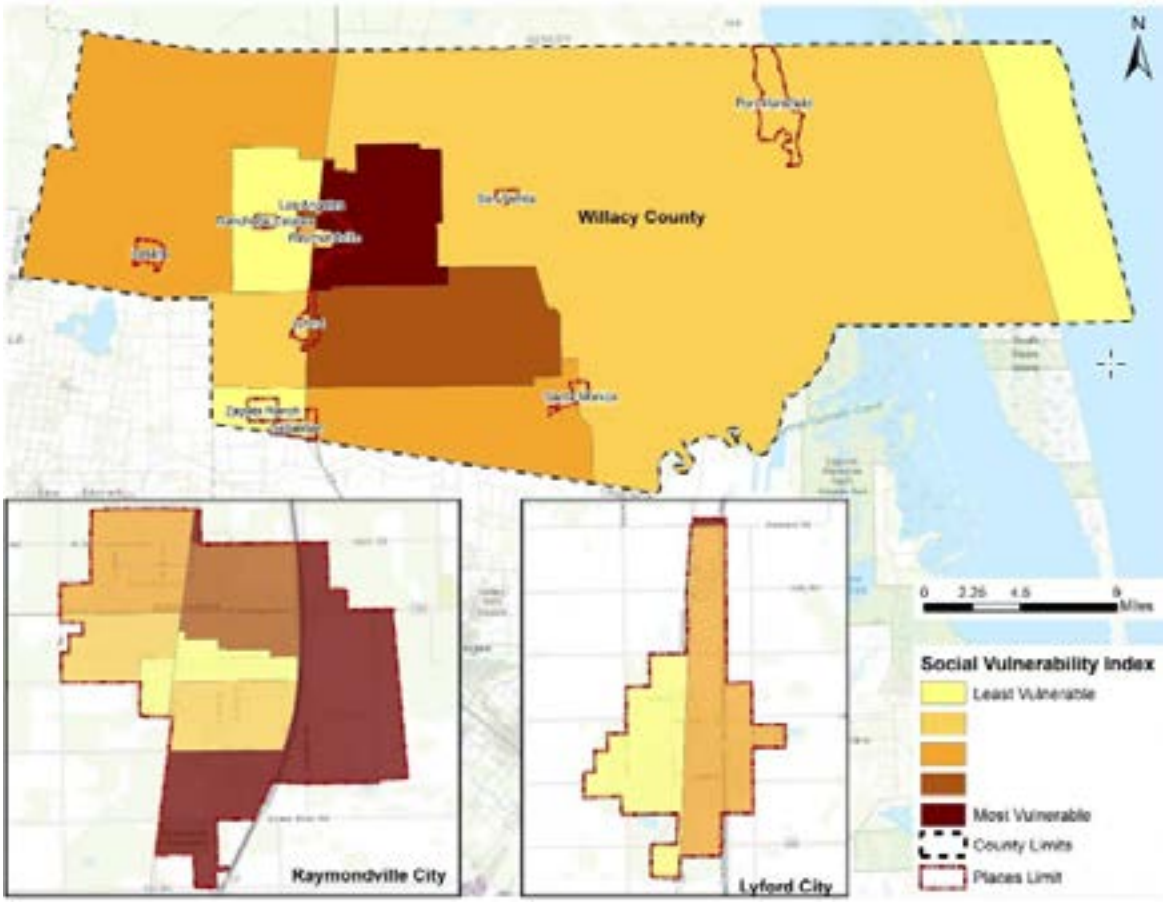
During a Community Health and Research Management (CHARM) workshop on August 31, 2023, Texas Community Watershed Partners included hazard exposure maps with relative housing risk layers to assess the location and extent of vulnerability among Willacy County's existing and potential future housing stock. One major thing with the model is it's assumption that all homes are built to the standard set by building codes and ordinances in the year they were adopted. Not enforcement. The term "risk" is used in this context to mean "relative risk" depending on the location.

Insurance

Insurance may alleviate some cost burden if housing is damaged, destroyed or becomes unlivable following a disaster. In Texas, homeowners with a mortgage are required to have homeowner insurance, but this does not cover all types of damage a house may incur; among the most frequent examples of uninsurable damage is flooding.

Homeowners residing in regulatory FEMA flood zones determined by Flood Insurance Rate Maps (FIRMs) with mortgages are required to have and maintain flood insurance through the National Flood Insurance Program (NFIP). Willacy County FIRMs) were last updated in 2017 and thus do not accurately represent current flood risk. Homeowners without a mortgage may reside in a flood zone unknowingly and will not get flood insurance, even though they are at risk. Willacy County has low NFIP participation among homeowners because that program may be cost-prohibitive for residents; a lack of clarity over the difference between flood insurance and homeowners insurance exacerbates the issue of low NFIP uptake. That is, many residents do not understand that homeowner's insurance does not cover flood-related damage and are unaware of this fact until house has been damaged and they attempt to make a claim. Homeowner and renter education is one strategy for helping to build community resilience. If enough of a community participates in the NFIP and the county adopts or performs flood mitigation strategies, the community may become eligible to enroll in the Community Rating System (CRS) through FEMA and through implementing programs and awareness campaigns, this insurance premiums can decrease for Willacy County residents. A more in-depth look at this program and its benefits is explored in Chapters 3 and 4.

MAP 1.11 Social Vulnerability by Census Tracts



Source: Social Vulnerability index 2016 for Willacy County. Created by Texas Target Communities under Texas A&M University

Social Vulnerability Index (SVI)/Colonias

The term Social Vulnerability evaluates how a community reacts and is able to recover when confronted by external stresses on human health, safety, and socioeconomic conditions. The SVI ranks Census tract data on 14 social indicators including poverty, lack of vehicle access, multiple generations in the household, young children and elderly adults, socioeconomic status, household characteristics, and status as a minority. Ensuring that communities are aware of their vulnerabilities, and where SVI households are located, may support better disaster preparedness if local and regional hazard mitigation and other plans account for social vulnerability.

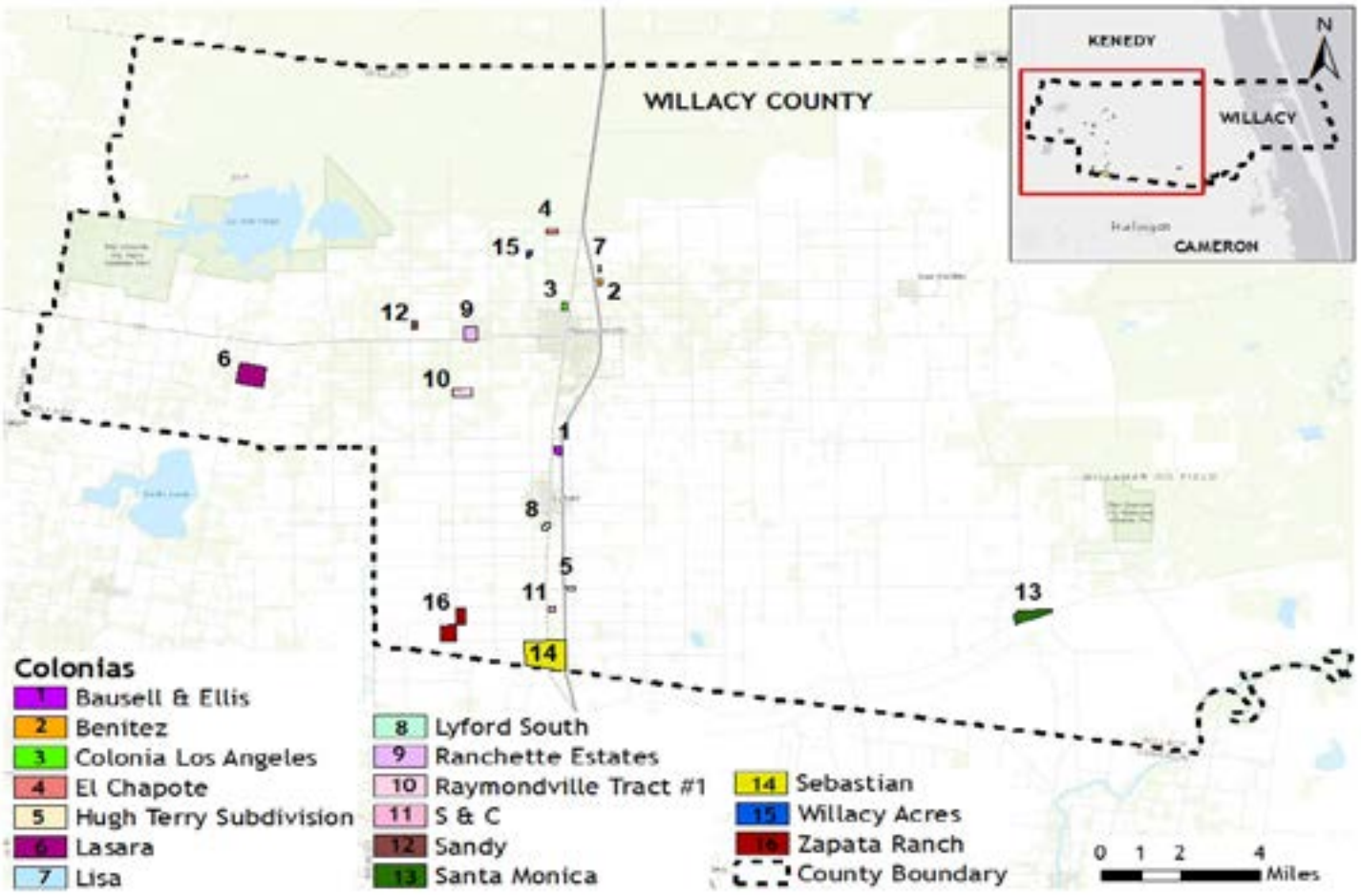
Map 1.11 outlines the SVI status of each census tract in Willacy County. When comparing just within the county, urban areas have the most socially vulnerable populations. Willacy County's Hazard Mitigation Plan update should

consider including this information, as well as resources for support to help build overall community resilience.

The proliferation of colonias, a phenomenon that was originally unique to the U.S.-Mexico border region, has spread to other Southwest states and is indicative of social vulnerability patterns common in counties of the Lower Rio Grande Valley, including Willacy County. Section 916 of the National Affordable Housing Act (NAHA) defines colonias as any "identifiable community", determined by objective criteria including a lack of potable water, inadequate sewage systems, and a lack of decent, safe, and sanitary housing. For designated colonias, historically homes were frequently self-built because land was purchased via contract-for-deed. High interest rates and various other financial factors essentially required landowners/purchasers to build their own homes. As a result, a lot of homes in colonias are substandard and therefore are ineligible for various federal assistance programs (recovery grants, for example). These designated colonias existed before the passage of the Department of Housing and Urban Development's (HUD) Cranston–Gonzalez National Affordable Housing Act (1990). By HUD's definition, 'colonia' refers to "a community within the rural Mexico–U.S. border region with marginal conditions related to housing and infrastructure." The term is very broad due, in part, to development and growth patterns and State "colonias-prevention" policies adopted in Texas. It is estimated that around 500,000 individuals live in colonias in the state of Texas. Texas has colonias-prevention laws that have prevented designation of newer but similar communities.

Willacy County, alone, has sixteen colonias in Willacy County as illustrated in Map 1.2 with the conditions of each of these varying from colonia to colonia. The County may develop a participatory approach to promote community resilience in colonias, leveraging local knowledge and strong community ties to minimize reliance on State and federal government resources that can be hard to obtain. Recommendations for structural retrofits that may benefit homes in colonias by mitigating risk are outlined in Chapter 3. Organizations with strong ties to colonias may provide critical support the County's outreach and education efforts among colonias.

MAP 1.12 Map of Colonias



Source: Texas A&M University, Texas Target Communities. Willacy Comprehensive Plan, 2021.

TABLE 1.2 COLONIAS

Table: Colonia in Willacy County

Name	Acres	Pop from 2000	People With water	People Without water	Waste water community service	Without wastewater collection	No of Lots	Occupied lots
Bausell and Ellis	52.91	100	100	0	Lyford	100	49	37
Benitez	12.53	30						
Colonia Los Angeles	23.16	69	0	69	Raymondville	69	10	10
El Chapote	24.83	12						
Hugh Terry Subdivision	16.33	50	50	0	On-site	50	27	21
Lasara	267.52	824	824	0	North Alamo WSC	0	298	225
Lisa	9.99	12			Septic lots		4	4
Lyford South	22.77	158	158	0	Lyford	158	122	92
Ranchette Estates	88.14	120	120	0	Cluster System	120	46	22
Raymondville Tract #1	81.92	9						
S&C	14.3	17						
Sandy	20	2						
Santa Monica	146.94	65						
Sebastian	558.26	1904	1904	0	Sebastian MUD	0	680	513
Willacy Acres	14.84	18						
Zapata Ranch	204.28	75	75	0	On-site	75	50	38

Source: https://colonias.tdoh.texas.gov/

Table 1.2 shows Willacy County's colonias, the number of people without basic facilities, and occupied lots in those colonias. Colonia Los Angeles' residents lack both potable water facilities and wastewater collection services. Other colonias without wastewater collection include Bausell and Ellis, Hugh Terry Subdivision, Lyford South, Ranchette Estates, and Zapata Ranch. Some of this data may be slightly outdated.

Utilities

Utility providers supply residents with the electricity, gas, water and/or sewer system connections needed to power homes and protect against the harsh weather conditions. In the summer, during hurricane season, storm-impacted communities often experience long disruptions to utilities services, which may result in heat related illness and fatalities as temperatures rise to 100 degrees Fahrenheit or more. By contrast, Winter Storm Uri in 2021 caused rolling blackouts with intermittent service in some regions of Texas, while others experienced service disruptions for a week or more. Rather than heat-related deaths, fatalities resulted from freezing conditions inside homes without access to electricity.

Water and wastewater utilities are especially vulnerable to various hazards and may, if impacted, lead to a crisis in which potable drinking water may be inaccessible. Raymondville, Lyford, Port Mansfield, and Sebastian all have water and wastewater treatment facilities and are able to provide critical services during disasters. The County aims to provide these services in other areas, and to harden and protect existing utility systems using simple, cost-effective strategies such as elevating electrical panels at lift stations, reinforcing towers and systems against wind events, upsizing culverts to allow for water flow beneath roadways, maintaining stock of generators, and implementing a leak detection and repair program. New developments should utilize existing utilities systems to the greatest extent possible; doing so may reduce the cost of developing new housing by eliminating the need for extensive new utilities systems.

Goal for Recovery Housing

Willacy County needs more intentional planning to enhance quality of life for residents of all ages, anticipate climate change impacts, and equips communities with knowledge and resources to speed the post-disaster recovery process. In 2020, the County took a step toward actualizing this need, adopting a new countywide comprehensive plan that outlines a 20-year vision to guide growth and development, focusing specifically on housing-related challenges. These issues were brought to the forefront/into focus as a result of recent disasters which highlighted policy and structural vulnerabilities in existing housing stock resulting from tropical storm, storm surge, flooding, high-wind, and wildfire hazards.

Willacy County seeks to foster a safe and vibrant community and encourage sustainable growth and development, while also protecting its natural resources. This guide aims to address risks to housing across the County, and to explore new technologies and approaches in building design to withstand shocks; provide an array of housing options that are cost effective; and highlight and draw upon best practices.

The following goals have been identified as priorities for Willacy County residents. The subsequent chapters outline how the County plans to achieve these goals and provide strategies for outreach and community education outlined in Chapter 5. Chapter 6 provides funding recommendations to support implementation of proposed goals. Courses of Action (COAs) will be highlighted as:

Planning for Hazards

- Coordinate response and recovery activities across the Willacy County.
- Review floodplain ordinance and consider enhancements.
- Monitor and maintain a catalog damage to residential homes.
- Create a damage assessment database to monitor damage according to NFIP requirements.
- Assess utility system risks and create a plan to mitigate. .

Housing/Subdivision Development

- Adopt Smart Home America FORTIFIED standards across the county.
- Develop new housing to a higher standards.
- Update Subdivsion Regulations
- Conserve existing housing through restoration and rehabilitation.
- Identify land acquisition and buy-out properties that may alleviate flooding for surrounding areas.
- Update Subdivision Regulations.
- Pass ordinance to preserve valuable land.

Recovery

- Outline preemptive approach to post-disaster recovery strategy.
- Establish agreements with organizations that provide community support throughout recovery.

Community Outreach

- Host programs to help residents improven and update their homes to withstand hazards.
- Incorporate risk awareness into other social events (e.g.. farmers markets, festivals, school events).
- Make hazard information available to the public.
- Pursue partnerships with local and state entities to work on an education campaign for the public.

CHAPTER TWO | LAND USE IDEALIZATION

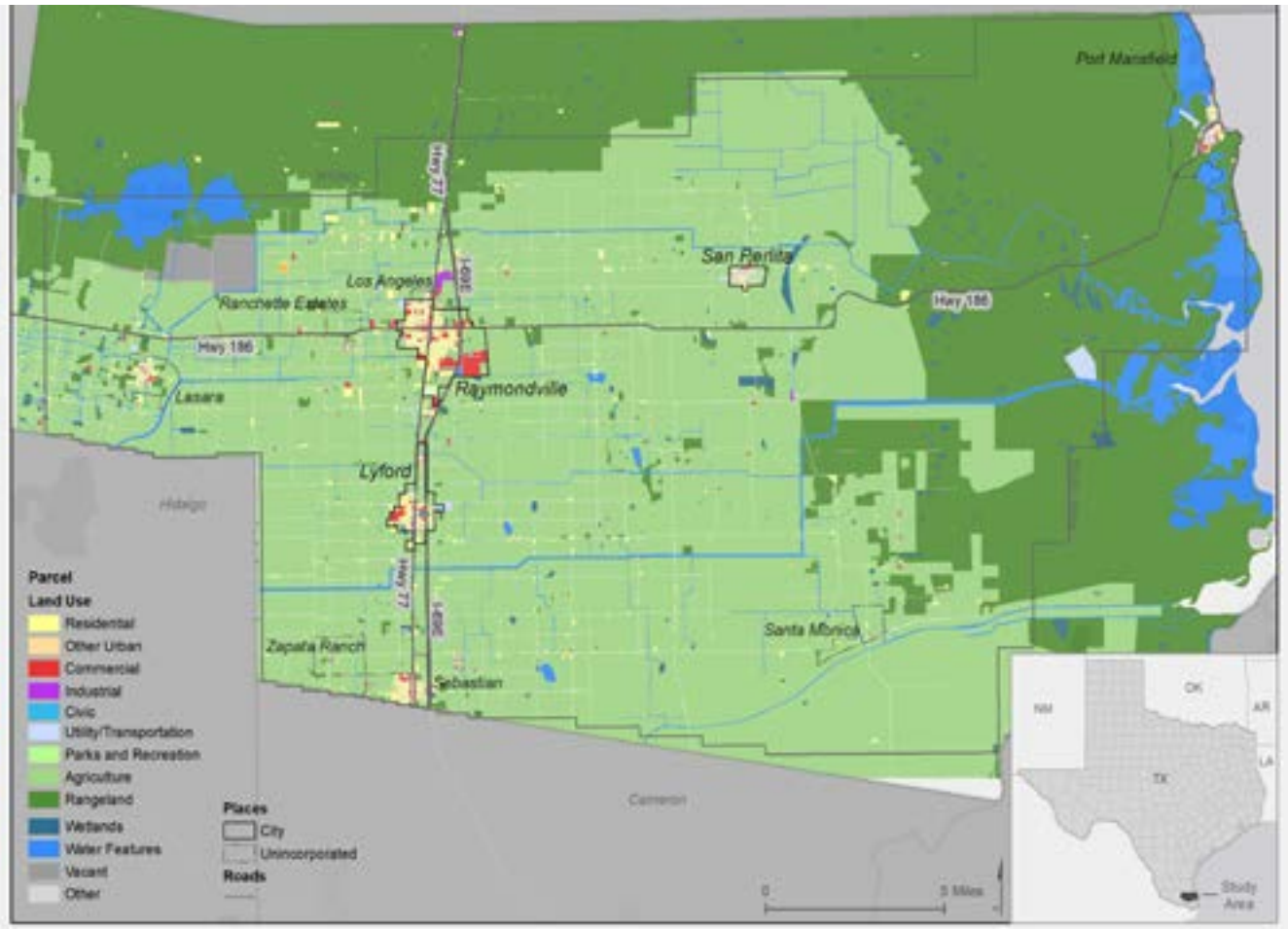
Current Land Uses in Willacy County

As stated in previous chapter, Willacy County's urban area only makes up about 7% of the total land, with rural residential and open space comprising the rest of the county. A suitability analysis was completed for the comprehensive plan, showing the land regions that were conducive for natural preservation. The Northern and easter region of the county were identified.

The land in and around the urbanized regions of Raymondville, Lasara, and Lyford are conducive for continued residential and commercial development. Land idealization maps for each region of the county are included below while a subsequent explanation explores why these areas are most suitable for future development.

Residential land uses are highlighted in yellow and is concentrated in the western region of the county near Raymondville, Lasara and Lyford. This region also falls along the major Business 77 and I-69 routes that lead to Harlingen and Mexico.

MAP 1.12 Land Uses in Willacy



Community Health and Resource Management (CHARM)

Texas A&M AgriLife Extension Staff from the Texas Community Watershed Partners (TCWP) were consulted to put on a CHARM workshop to understand land uses, and work with decision makers to identify urban transition areas and ideal locations for new development. This workshop took place on August 31, 2023, Willacy County Community Development Specialist reserved the room at the Rebar Library near the Old Courthouse. The meeting drew sixteen stakeholders from Willacy County and it's communities, with the addition of agencies such as Texas Water Development Board, Texas Department of Transportation and U.S. Army Corps of Engineers sending representatives to join the conversation.

Texas A&M AgriLife Extension Service created a CHARM model of Willacy County which included all participating communities and covered standard CHARM exercises, which allow users to analyze factors in flood mitigation, preparedness and response such as:

- Housing density in flood zones
- Approximate depth of flooding for homes in flood zones
- Locations and level of risk among socially vulnerable populations
    - The Willacy County Smart Home model's social vulnerability exercise is based on a quartile ranking of block groups compared to other block groups in Willacy County, as opposed to the entire State of Texas. This adjustment should account for the relatively high level of social risk in the Willacy County as a whole and allow more variation between neighborhoods.
    - Social vulnerability is a standard CHARM exercise, but additional variables, including "rent burden" and "homes without mortgage" were added to account for the burden of housing costs for lower income households (rent burden); and possible lack of flood or homeowners' insurance, and inaccess to financial assistance or grants (no mortgage combined with lower per capita income).
- Critical facility locations and risk
- Storm surge impact
- Mitigation practices and opportunity areas (i.e. freeboard, open space, buyouts)
- Flood Discovery (known, unmapped flood hazard input)
- Future planning scenario impact

TCWP built a CHARM model around the unique project needs, centering on housing needs and risk. The exercises that were created helped with analysis of where urban transition areas are best positioned. Access to transportation routes, access to utilities (water, electricity, gas), reference to flood zones, and approximity to other housing developments. The exercises and their explanation are as follows:

Hazard Exposure Score

Texas A&M AgriLife Extension Service developed a new CHARM exercise designed to determine the vulnerability of homes to 1% or 0.2% percent annual chance flood events, hurricane storm surge (by category), and wind hazards as defined by the American Society of Civil Engineers 7-05 minimum design loads. In this exercise, users identify factors affecting structural risk from flooding, storm surge, and wind, including adoption year of building codes and floodplain ordinances (for each city in the study area and the County), and current freeboard requirements. Scenarios will generate a comparative "Hazard Exposure Score" indicating the estimated level of risk such that:

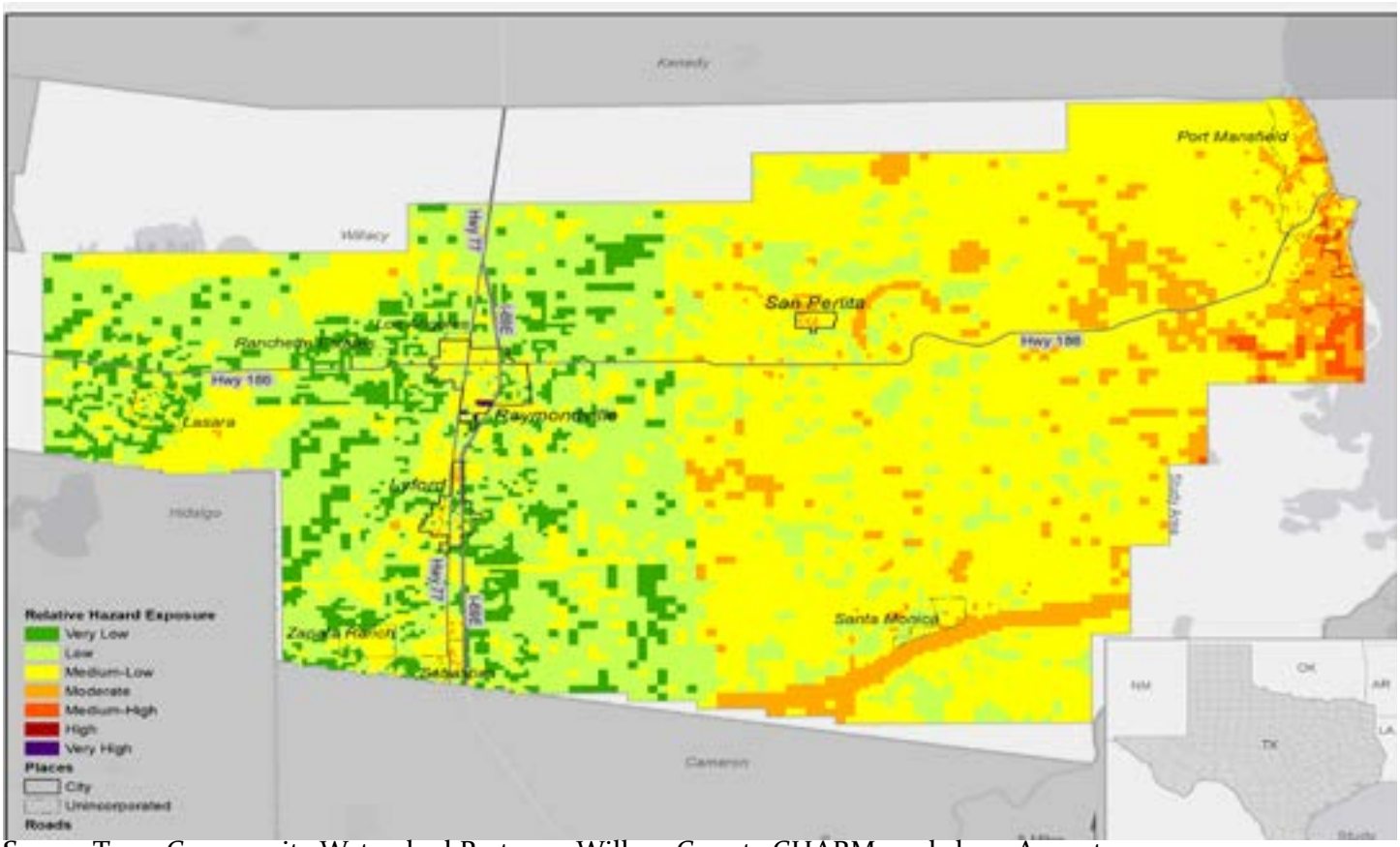
- Homes built before building code adoption are assumed to have twice the wind risk as homes built after code adoption;
- Parcels containing multiple manufactured homes (i.e., mobile home parks) are assumed to have 20x the wind risk as single-family homes. The exercise does not account for manufactured homes on individually owned lots;
- Homes built before adoption of most recent flood damage prevention ordinances are assumed to be slab on grade (higher risk), while homes built after most recent ordinance updates are assumed to meet freeboard requirements (lower risk);

• Different jurisdictions can apply the most relevant freeboard/housing elevation assumption for their area (0 – 8 feet) to gauge their level of flood or storm surge risk more appropriately;

• Homes which are in a 1% annual chance flood zone and constructed after building code and flood ordinance adoption may be calculated as having elevated risk depending on the difference between FEMA 1% annual chance base flood elevation data and the assumed freeboard requirements. The “Screen by Housing” option allows the user to focus on and assess estimated hazard exposures of only existing residential parcels (when on) or to assess hazard exposure in areas that may experience development but are not currently residential parcels (when off).

All residential buildings, coastal and inland, were assessed and due to data constraints, the exercise also assumes construction pre- or post-code and -ordinance adoption, and no in-between option, which may limit our ability to evaluate structural vulnerabilities based on adherence to ordinances above the minimum standard but not meeting current standards.

Map 2.1 Relative Hazard Exposure Across Willacy County



Source:Texas Community Watershed Partners. Willacy County CHARM workshop. August 31, 2023.

The Hazard Risk Exposure exercise was built on a few assumptions about building codes and risk due to a lack of complete data about housing and foundation type. Housing was assessed based on the year it was built, which alowed TCWP to analyze:

• Structural risk to existing housing stock;

• Relationships between ordinance and code adoption, flood zone depth, storm surge, wind strength, structure type, and level of risk;

• Areas of possible risk to future housing stock;

• And, in combination with the “Elevate” mitigation exercise, potential freeboard and/or other requirements to reduce structural vulnerability.

The countywide hazard exposure map demonstratrs the highest risk regions in Port Mansfield, San Perlita, Raymondville and Lyford. The eastern- regions of the county, near the coast is lower elevation, almost at sea level, and is not a suitable area for housing. Drainage from Hidalgo, Cameron and Willacy County run through here, and would serve a better purpose as protected sonservation land. A zoomed in hazard exposre map for each region of the county is included in the appendices.

Map 2.1 demonstrates, first, that a high proportion of older homes, including existing and potential future homes, have a relatively low risk score at a Category 3 storm assuming buildings were constructed to code and met 2017 County ordinance requirements. However, the nearer homes are to the coast, the higher their vulnerability as a consequence of direct exposure to storm surge.

Social Vulnerability

Social vulnerability plays a key role in the level of risk homes and people in Willacy County face. The Smart Home America Willacy County CHARM model shows that households with low per capita income, lack of mortgage, mobile homes, and non-fluency in English are acutely vulnerable to hazards. In coastal areas, a lack of vehicular access may also pose high risk particularly during an evacuation; similarly, large elderly populations experience a higher level of risk during evacuations, power outages, or other scenarios impacting elder-care, senior living, or medical facilities.

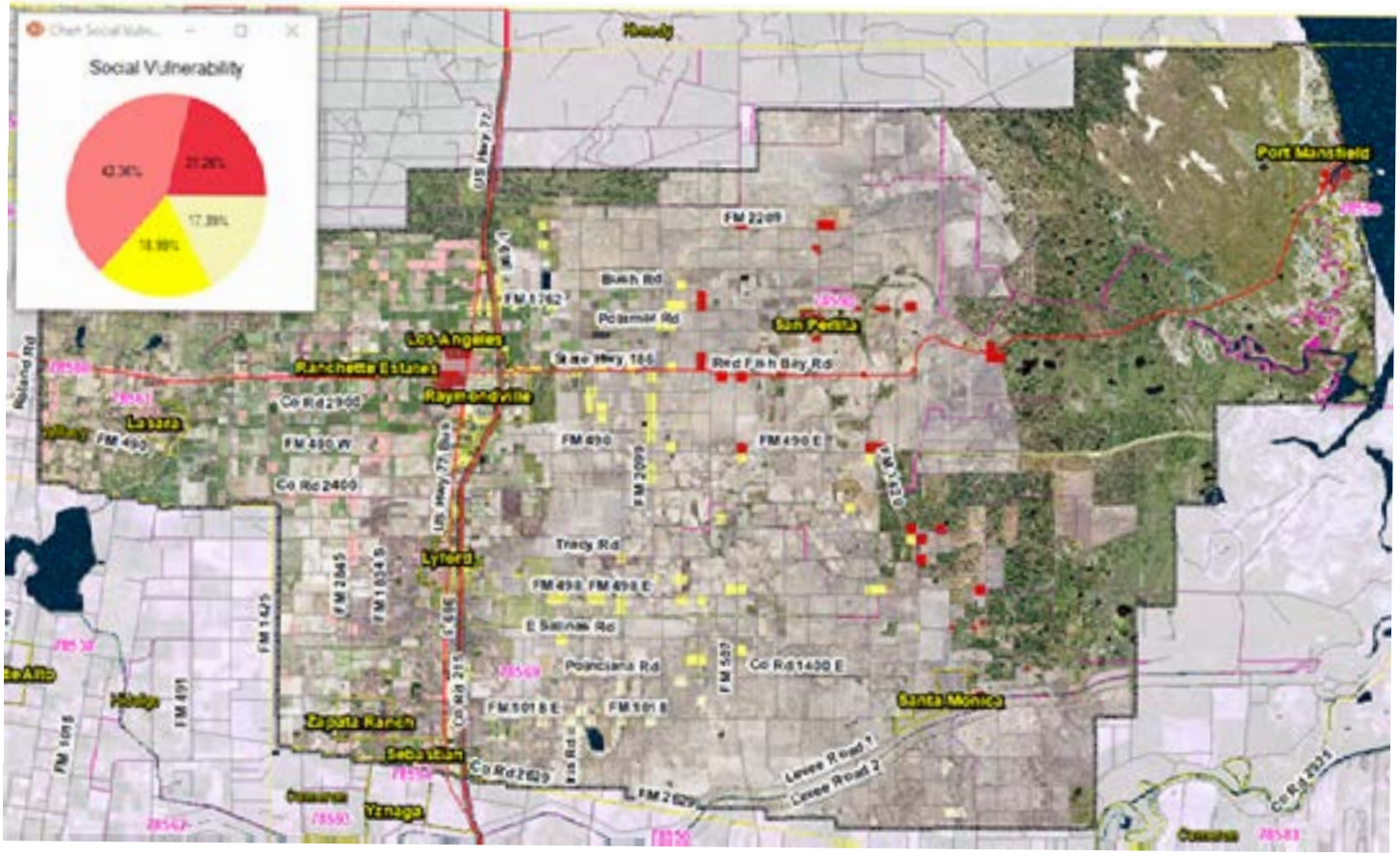
Renters are also at high risk during and after disasters. Loss of housing is a significant issue as this affects rental stock and rent pricing. Loss of rentals and multi-family homes is a detrimental yet common occurence when a region faces a disaster. In particular, individuals that do not own their homes do not qualify for much of the disaster relief funds that are usuallty available for recovery efforts. Following floods in 2018 and 2019, homes in Sebastian (census designated place) experienced severe flooding but were denied USDA 504 grants on this basis. Similarly, in San Perlita, low homeownership has resulted in USDA grant application rejections; in some cases, applications were also rejected for households with multiple individuals listed on the property deed, who were not also listed on the grant application. In some cases, for households where FEMA assistance (specifically programs that require current NFIP policies) may have previously been granted, homeowners who have failed to maintain flood insurance have been unable to access future assistance.

In areas where per capita income is a particular risk, participants indicated that low homeownership, high rents, and the cost of insurance (both NFIP and homeowners' policies), may deter individuals from purchasing homes/properties. After a 2.5-year effort, Los Angeles Subdivision, a designated colonia to the north of Raymondville, received a grant for housing; only three applicants qualified.

Additionally, fund allocation in the past has relied on overall county population rather than damage impact. After previous disasters, the counties of Hidalgo and Cameron have received a larger share of relief funds even though Willacy received a bulk of the damage. There is concern in the county that there is significant underreporting of population during the 2020 Census. Underreporting can be attributed to various factors, including residents' concerns regarding documentation status; and, more prominently, residents' reliance on assistance from local organizations in Spanish-to-English translation to complete census forms.Due to this, fund allocated to the county and municipalities from the state and federal government may be less than needed.

Map 2.2 is a aggregate of risk among residents with lower per capita income and have no mortgage. Over 60% of householders fall within the medium-high to high vulnerability based on these indicators.This category of the population will not be able to access post-disaster funding pots and thus slowed in their recovery. Temporary housing programs for these individuals to get back on their feet are great catalyst for recovery and could make the difference between staying and needing to leave.

Map 2.2 Social Vulnerability Factors Spatitally Measured Across Willacy County



Issue Identification

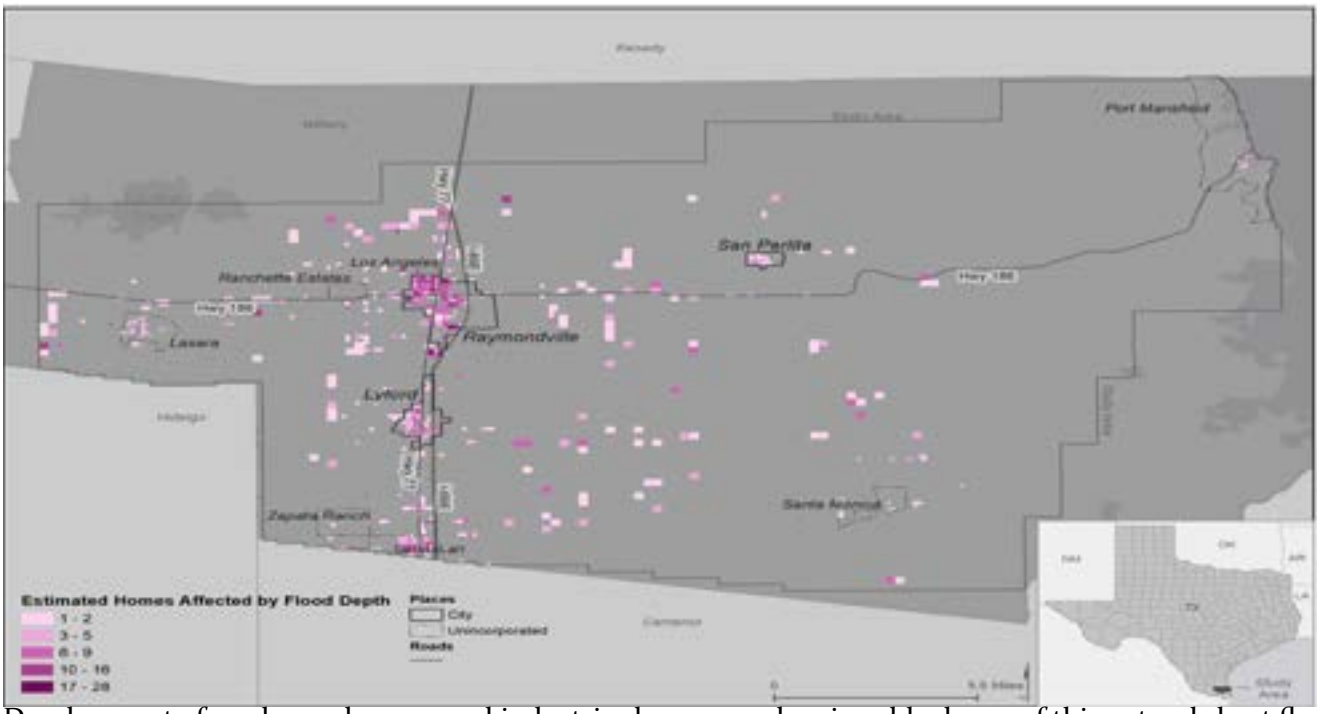
Housing Challenges

Based on discussions held over the CHARM workshop attended by Willacy County and local officials on August 31, 2023, the following issues were identified as the county's most pressing challenges:

Infrastructure:

The workshop looked at infrastructure capacity and vulnerbailities to flooding and wind. It is common to map out critical infrastructure (bridges, lift stations, water and waste water treatment, etc.) and overlay a flood map. Prior to an update in 2017, the FIRMs for Willacy was very outdated and did not accurately illustrate flood risk in unincorporated county. Without accurate data access, Willacy County is at a deficiency trying to figure out which developments to approve, and where they should be located. Below is a screenshot of a Geographical Information System (GIS) model showing estimated numbers and locations of housing structures affected by flooding. If future developments take place in areas with older maps, the county will need newer maps to protect the resiliency of the housing stock. FEMA Base Level Engineer (BLE) data is available on https://webapps.usgs.gov/infrm/estbfe/ showing coverage for most of Willacy County with the exception of the uppermost regions. Flood depth information for the 0.2% (500-year), 1% (100-year) and the more frequently occurring 10% (10-year) flood extents are available for reference and potential adoption to meet future housing development demands.

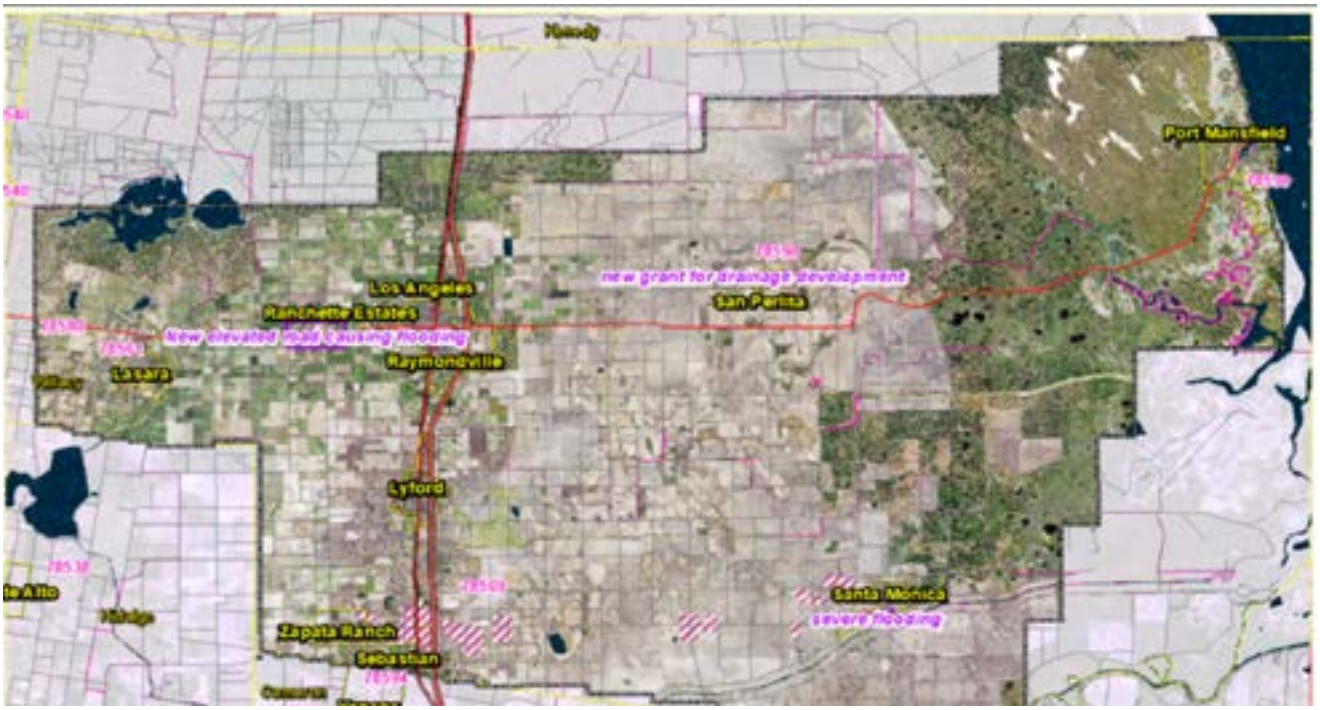
Map 2.2 Estimate Flood Depths of Homes in Willacy County

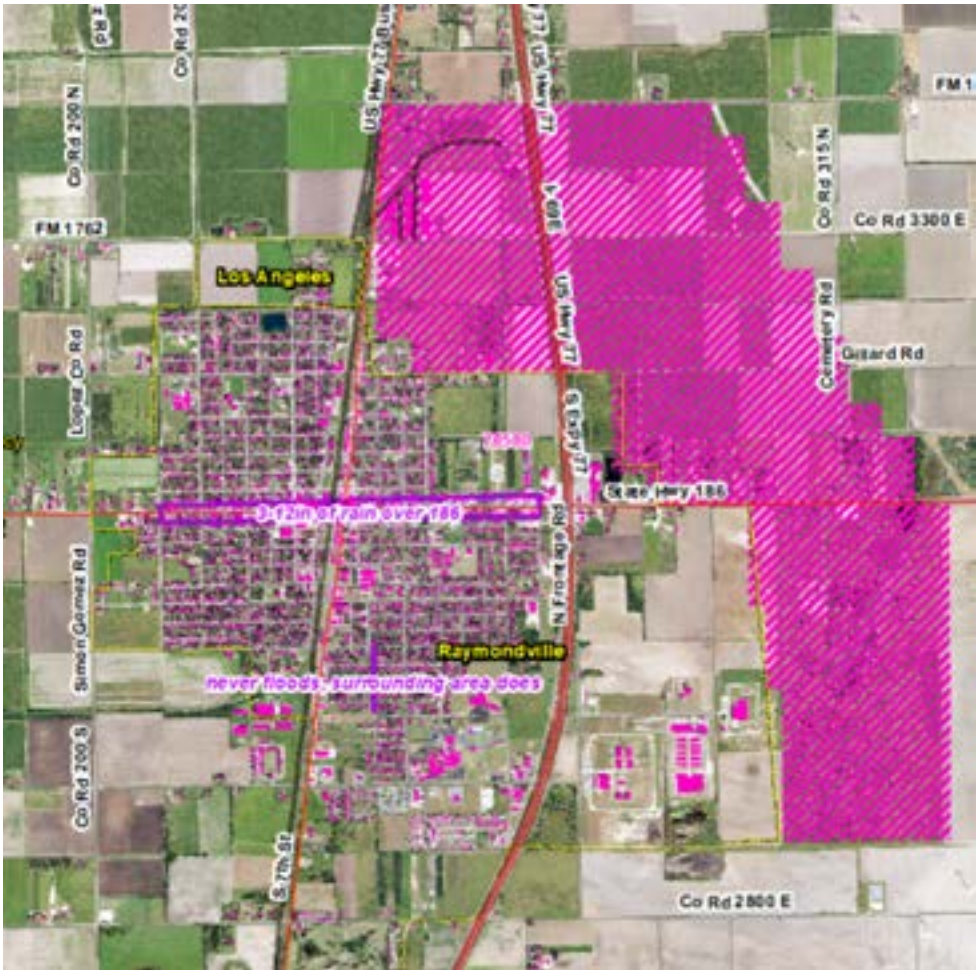


Development of roadways, houses, and industries have caused various blockages of this natural sheet flow patterns and increase flood risk to the housing stock. Recognizing this challenge, the General Land Office (GLO) and the U.S. Army Corps of Engineers (USACE) are studying the drainage patterns, model problem areas and propose mitigation solutions. The outcome of these studies would provide a regional basis for more localized drainage analyses that can guide the construction of future housing stock in and outside of the county's urban areas.

During the workshop, participants pointed out roadways in process of being built in areas, and in a way that are creating dams and disrupting the natural bydrology of the land. Several locations along Highway 186 were highlighted as areas that are at risk of inundation during rainfall. Roadway drainage and its regional impact on housing is one issue, and the obstacle it creates for evacuation is another. The images below show locations of observed flooding in the county, identified points along Highway 186 that flood and portions of Hwy 77 that flood.

Map 2.3-2.9 Comments Identifying Observed Flooding Across Willacy County





Map 2.3, 2.4 & 2.5

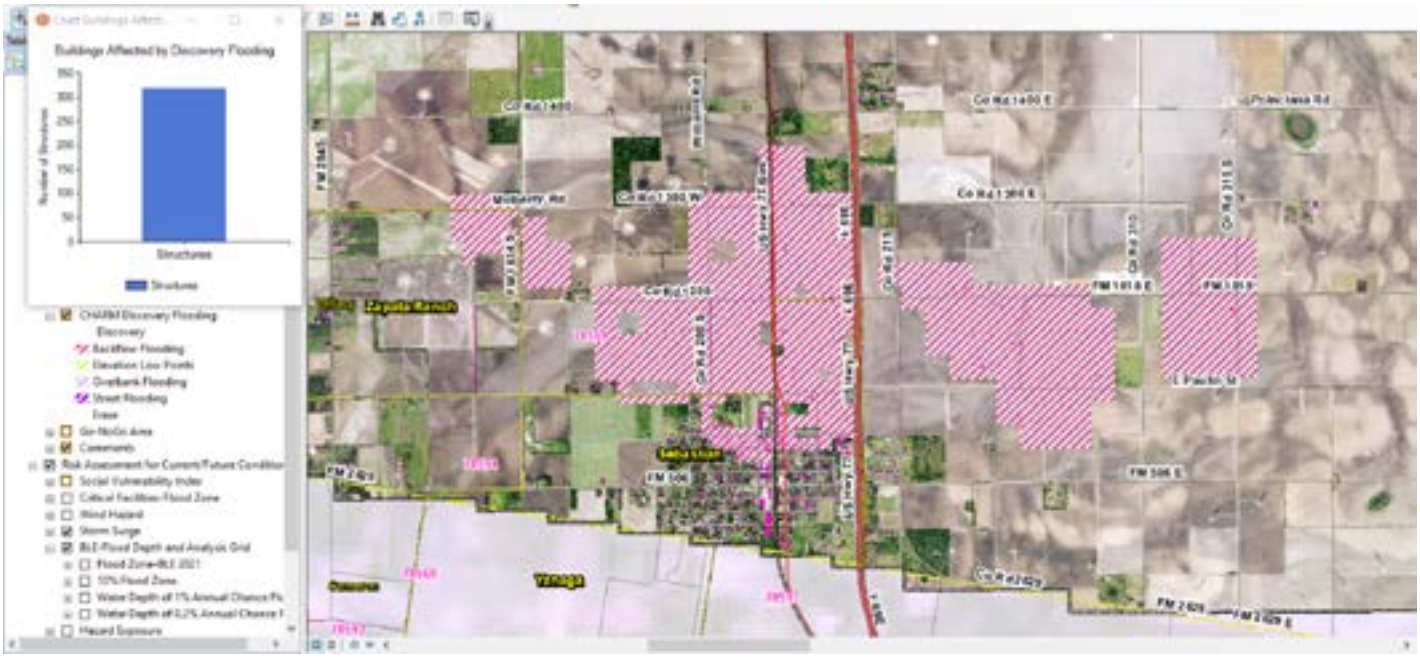
Observed Flooding in and around the cities of Raymondville and Lyford. These comments were collected by TCWP staff during the August 31, 2023 CHARM workshop. The hatched pink represents possible urban transition areas, as identified in the comprehensive plan.

Source: Texas Community Watershed Partners. Willacy County CHARM Workshop August 31, 2023.

Map 2.6

Comments collected during the August 31, 2023 workshop regarding the flooding that is experienced along the coast of Willacy County. This area is naturally lowlying and comprises of wetlands. The area should be conserved and development prohibited

Map 2.7 & 2.8 Observed flooding in the neighborhoods of Santa Monica and San Perlita.



Map 2.9 Comments collected during the August 31, 2023 workshop that identify observed flooding in Sebastian, a community that borders Hidalgo County. South of Sebastian is a major drainage canal used by Hidalgo to drain water to the Lower Laguna Madre.

Development Regulations and Policy

Development regulations from muncipality to muncipality do not align and may be working against one another. Port Mansfield, Raymondville and Lyford all have different flood ordinances, identifying different elevation levels for buildings in special flood hazard areas. The county coluld work with all municipalities to adopt a unified flood ordinance that requires at least 18 inches to 2 feet of freeboard for buildings in special flood hazard areas. Some communities indicated minimal experienced flood risk (i.e. City of Lasara), while others experience flooding related to existing infrastructure (see maps 2.3-2.9 above), as well as impacts from upstream communities in and beyond Willacy County (i.e. City of San Perlita). Although wind damage during to more recent storm events has been minimal (including in coastal communities), existing structures do experience flooding. San Perlita, in particular, experiences storm surge impacts before any wind damage due both to its location and stormwater that drains into the City from western Willacy county.

In Port Mansfield, an unincorporated census-designated place, development regulations were not put in place until new FEMA FIRMs were adopted in 2017. These maps changed regulations such that older homes were built above estimated base flood elevation (BFE) but existing development started being built at grade.

As with many cities in Texas, newer flood damage prevention ordinance may requires homes to be built at or above the BFE, resulting in older homes located at or below BFE. During a storm event, older homes may be more severely impacted, while newer homes, built slab-on-grade rather than on stilts (participants noted that permanent residents are reluctant to elevate their homes due to perceived costs), may also see impacts to their foundations. Ultimately, however, Port Mansfield and other unincorporated areas (i.e. Lasara, Santa Monica, Sebastian) face the challenge of a county's insufficient enforcement capabilities, and reliance on, where they exist, special purpose districts such as the Port Mansfield Navigation District. In cities in Willacy County, (i.e. Raymondville, Lyford, and San Perlita) although financial resources, city staff size and capacity, likely development, and other factors may complicate the adoption of higher regulatory standards, the use of risk assessments (such as CHARM), grant or technical assistance programs, and availability of more accurate and comprehensive flood data may present opportunities to enhance development, design, and other City codes that meet local needs and limitations.

As stated in Chapter 1, The Texas Water Development Board estimates an approximately 25% population increase for Willacy County, as a whole, from 2020 to 2040 (from 25,264 to 31,559) with decennial increases of 11% or more. An influx of industrial development and projected growth of Hidalgo and Cameron Counties also indicates that Willacy County is likely to see a bump in the coming decades. Hidalgo and Cameron Counties have substantial population and are

increasing development in urbanized areas across the county and there is no sign of slowing down in sight. Additionally, communities including Lyford and Port Mansfield experience fluctuations in their populations. Lyford sees increases in its daytime population due to workers commuting from Brownsville or other areas in the region. Port Mansfield, which has a permanent population of only 300 people, sees an annual 1000% population increase between May and October. This poses challenges for risk communication and evacuation, while planned infrastructure projects that are likely to double the community's population will necessitate long-term planning and scenario building for both short- and long-term population increases and housing to accommodate these residents. Additionally, communities should assume that, as they and others in the region grow in size and develop accordingly, their level of risk will increase, as will neighboring communities'. This, in combination with increasingly frequent and severe storm events will substantially impact the vulnerability of existing and future housing stock.

Future Development in Willacy County

Single-family homes constitute 78% of Willacy County's housing stock, while multi-family housing, in combination with manufactured homes, account for only 10%. More populous counties tend to have higher percentages of multi-family housing types. Hidalgo County, to the Southwest of Willacy County has a population of over 800,000, and over 20% of its housing stock is comprised of multi-family and manufactured homes, and Cameron County with a population of over 400,000 with 17% of the housing stock designated multi-family. In the United States, around 27 percent of all housing type is Multi-family housing

According to the U.S. Census Bureau, Willacy County's active working population (i.e., 20-39 years of age) is 16,965, or 77% of the total population and will likely be the driving future economic growth. To accommodate an influx of industry and workers, development of more multi-family residential buildings and alternative infill solutions, such as mother-in-law suites and attached dwelling units, may be cost effective strategies to promote housing access for a range of household compositions.

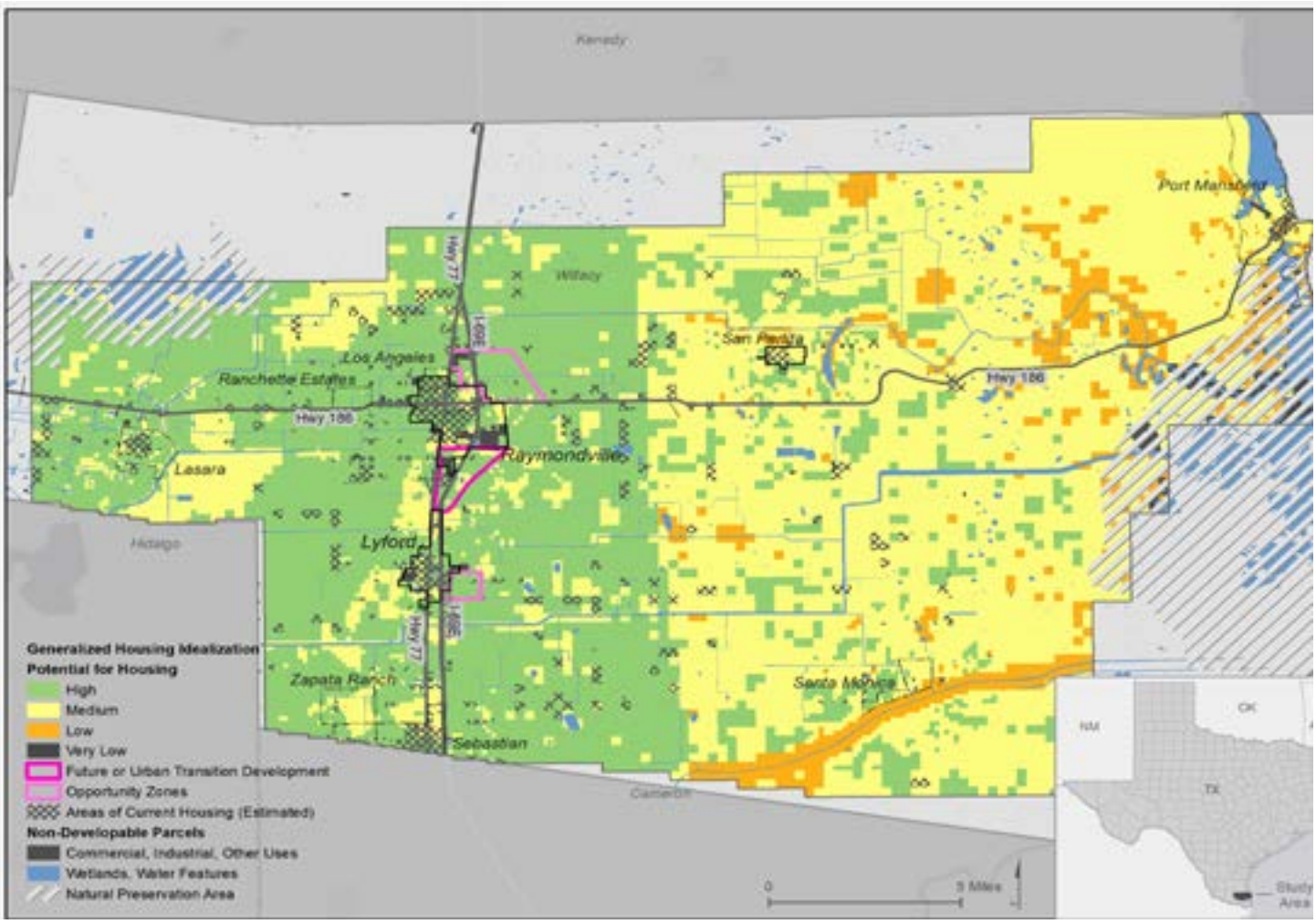
The Social Vulnerability Index and Housing Survey Data in 2017, found that 42% of households in Willacy County had at least one member under the age of 18; 43% of households had at least one member over the age of 60. Families stay and live together for long periods in Willacy with older generations living out the rest of their lives with their family, a This trend reflects a need for housing options that accommodate multigenerational households due to two major populations in the Valley, aging population that needs more walkable, and practical housing solutions, and young adults that need more affordable options in areas where they can access transportation. Providing more diversified housing stock, such as attached and detached dwelling units, promotes affordability by being smaller and using less energy to run, and creating density near commercial districts which encourages walking and healthier lifestyle. Corridors can be retrofitted with low impact development and green infrastructure to reduce Heat Island Effect and manage stormwater runoff which improves water quality.

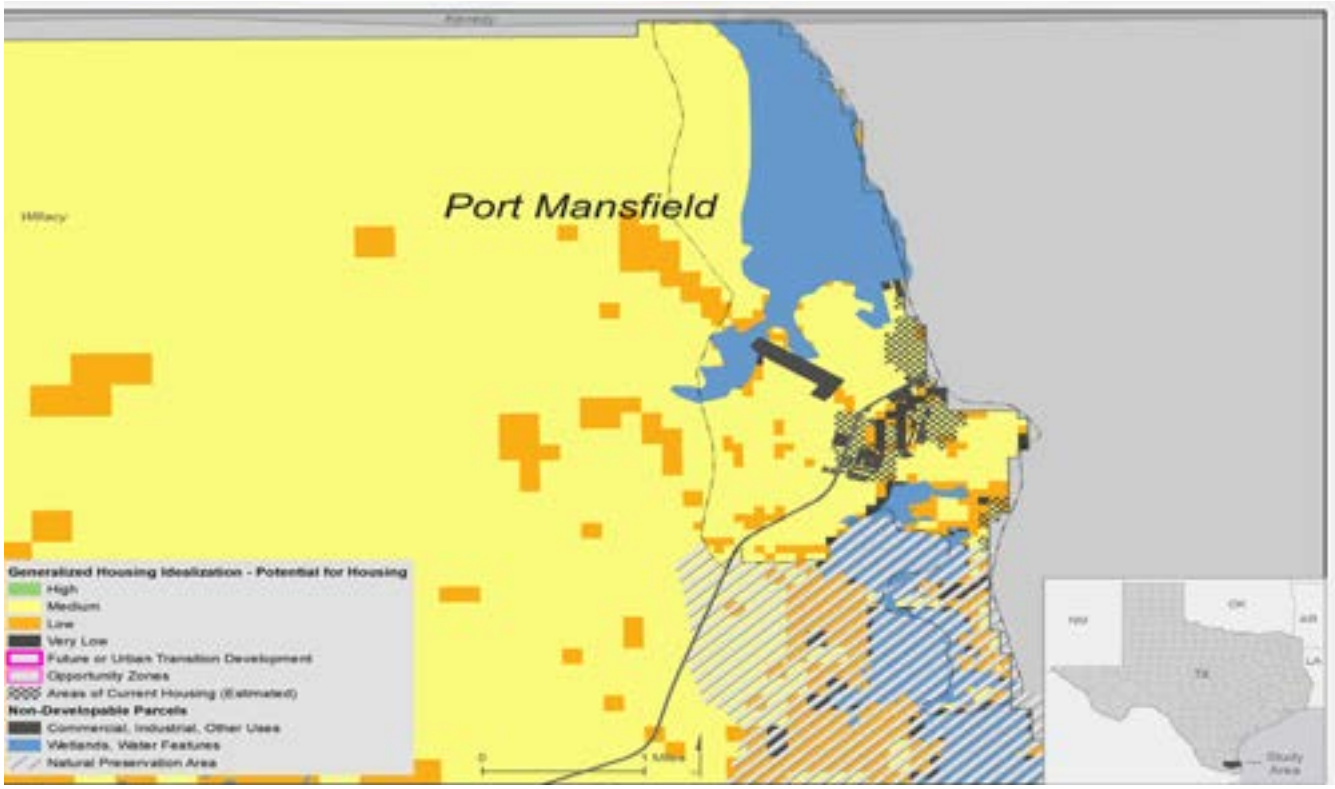
Common themes among discussion about housing and different needs are the desire to be located near amenities, to be within walking distance of stores and goods, to have access to broadband, and to have access to transit. Surveys indicate that aging Baby Boomers, Generation X and Millennials desire a single-family house but also access to networks in proximity to goods and services. As such, encouraging denser development, development near downtown areas, creation of Transportation Oriented Development (TOD), and investment in downtowns may meet community needs while also supporting economic growth. This in combination with investments in public and multimodal transportation options (such as buses, trams, and bikes) and roadway improvements (including the addition of bus and bike lanes) may support accessibility, including for those with limited mobility.

The following maps show the desired locations to accomodate new development in the county. They were developed with consideration of the exercises conducted during the CHARM workshop, in particular residential density and housing type. The aim is to decrease density in high risk areas and increase it in lower risk areas and build stronger structures that can withstand high winds and located out of the special flood hazard area.

Map 2.10 illustrates the countywide idealization map, green represents high potential for residential development, yellow is medium and orange is low housing potential. Areas surrounded by a pink border are urban transition zones identified in the comprehensive plan. Previous maps show the high risk associated with building alone the coast due to risk of tropical storms, coastal flooding and low-lying land. Map 2.11 is a zoomed in version of the coastal region, showing the concentration of Port Mansfield residential development along the coast. New development in this region is expected but provides an opportunities to build to FORTIFIED standards. More information about FORTIFIED is included

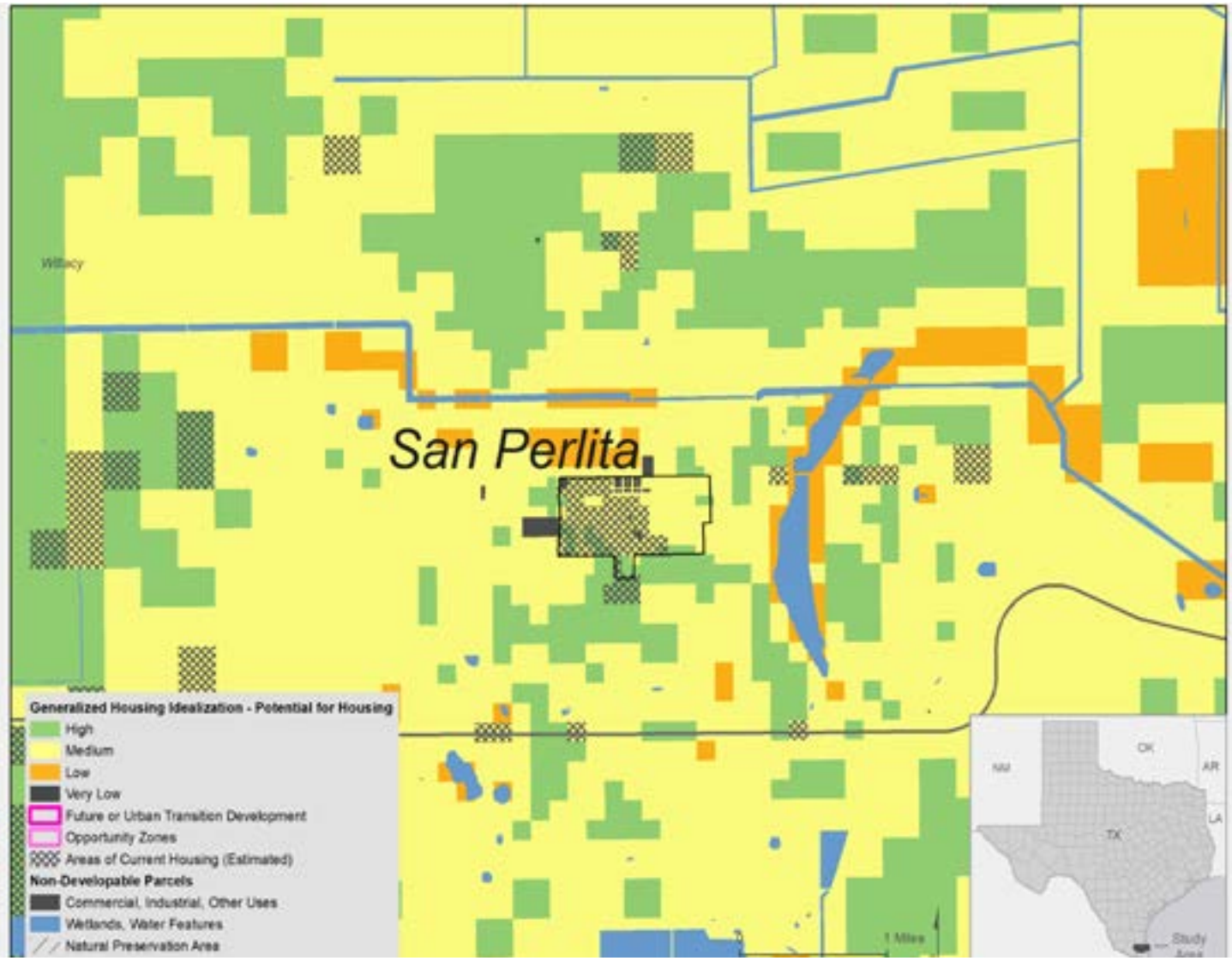
Map 2.10-2.11 Land Use Idealization Maps





in Chapter 3 which discusses ways to mitigate loss and damage. A few parks reside within the city limits that include trails and are a great opportunity to include nature based solutions to combat erosion along the shoreline and drainage. Moving inland, San Perlita is the next community located in a high risk zone that is very vulnerable to flooding, coastal storm surge, and high wind speeds. The small community has residential housing largely concentrated within the city limits, flat terraine and low drainage. Residential development in San Perlita should be elevated along with land set aside for detention. Overall, Willacy County and municipalities should focus development to, target regions in the county that are higher in elevation (if possible), close access to roads and utility lines (gas, water, electrical) and avoids building in a flood hazard zone. The lowest elevated land and the highest flood risk zones should be conserved and uses as flood mitigation infrastructure. Developments now will have lasting impacts on the population for generations.

Map 2.12-2.14 Land Use Idealization Maps for San Perlita, Santa Monica and Western Region



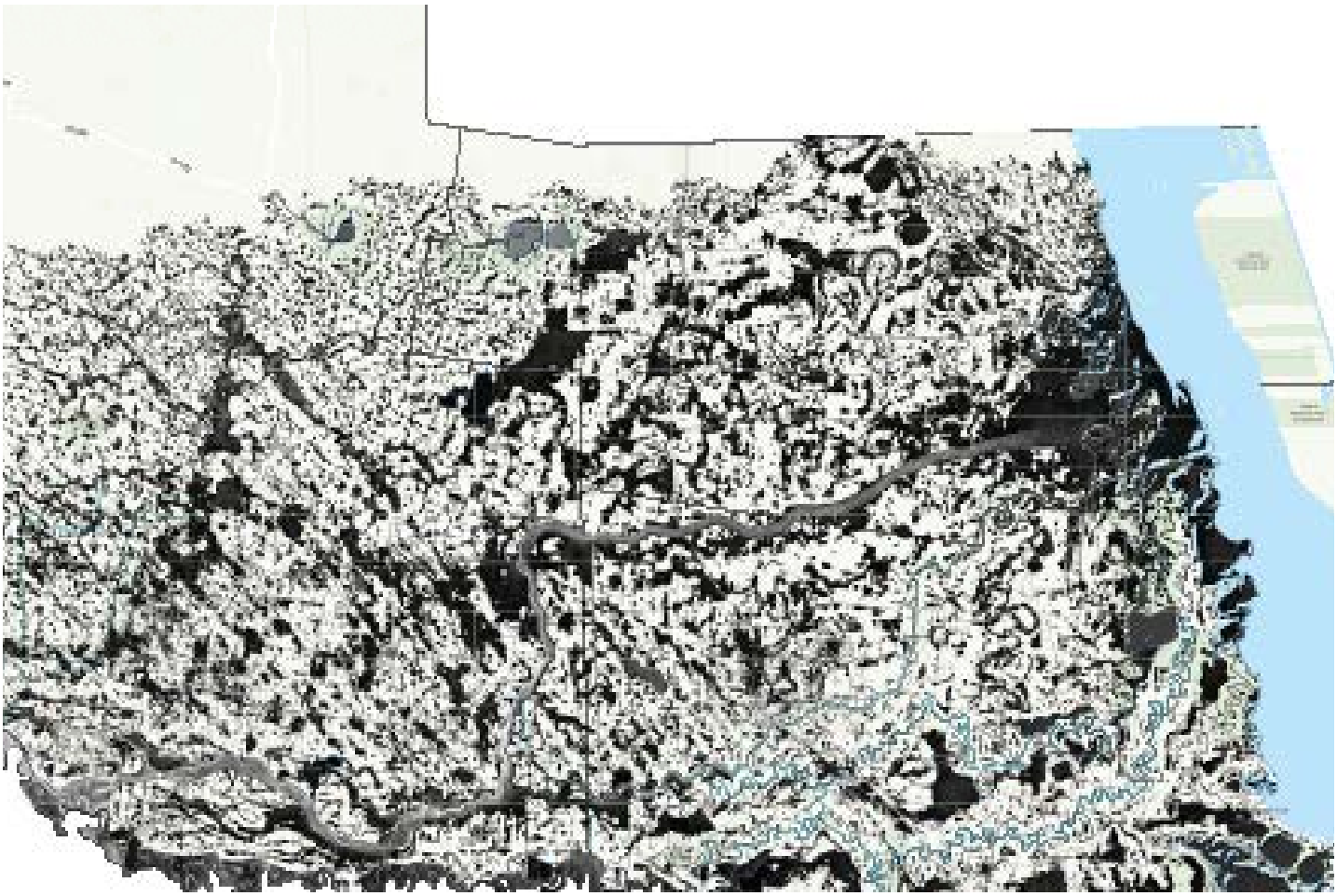
Santa Monica is located just north of a major drainage ditch that drains Hidalgo county out to the Lower Laguna Madre. Further development in this are should concentrate aaround Farm to market 1018 Spur and Violet Rd. highlighted in green on Map 2.11.

The area from Lasara, west to Raymondville and south to Lyford is forms an urbanized area that includes utilties, access to two major thoroughfares, Business 77 and I-69E, and has the largest concentration of amenities like grocery stores and restaurants. This location is ideal for future development but is still in need of flood mitigation measures. The railroad line forms a damn in Lyford and Raymondville when ever they are hit with a rain storm or drainage from Hidalgo county. Water is trapped and cannot cross the tracks so it backs-up into the surrounding communities. Mitigation measures could include elevating homes, floodproofing businesses, designating some areas as open space and installing detention capacity around residential areas. A scenerio is proposed later in this chapter to address the frequent flooding risk in downtown Raymondville.

The Digital Elevation Model created using LiDAR data is a tool to strip away buildings and vegetation to exclude existing structures to represent how water will flow and pool across the landscape. This is a way to see the natural hydrological patterns of the landscape and where it is most likely to go. DEM help to set the foundation before an analysis can be made with the built environment. The darker areas are the natural sinks and the lighter areas are more elevated. The darker areas on this map would serve better as protected open space and natural detention storage.

Prior to 2017, a majority of the county's FIRMs were dated in the dated in the late 70s and 80s which suggests that buildings built before 2017 have some level of flood risk

Map 2.12 Digital Elevation Model of Willacy and Surrounding Counties



Recommendations

Update Local Land Use Policies

These suggestive regulations were collected and co-created with the public during the comprehensive planning process 2019-2021. These recommendations are based on a desire for vibrant communities that preserve the historic character of the county and create safe spaces where residents can live at a quality standard.

Updating development criteria to consider redevelopment, large-scale expansions, and retrofits.

Limiting height of buildings to no more than 3 stories, except for industrial buildings that require more room.

Maximizing setbacks from the building face, covered portion of an entryway alcove, edge of permanent fences or covered seating area to the edge of city/public property, at no more than 10 feet for residential.

Create spaces and walking corridors that are pedestrian friendly:

- Add street trees or irrigated planter boxes and/or hanging baskets.
- Include vertical trellis walls with native vine plants.
- Provide ample seating options, could incorporate the natural environment.
- Make sure there are plenty of trash disposal options.
- Down-cast, pedestrian-scale lighting to foster a dark sky and natural starlight while also creating a safe environment during nighttime.

Consider installing small pocket parks on abandoned lots near the downtown or along a row of houses. Digital Elevation Model: This concept is one of many products that can be derived from light detection and ranging lidar (LiDAR) data and to represent the earth's topographic surface.

It does not include show detailed surface features like buildings structures or vegetations and just illustrates the vegetation, only bare earth. A DEM map can highlight the elevated portions areas of the city and indicate where water is likely to flow and pool. In the map below, the darker shaded areas indicate low lying land. When a flood map is overlayed, it becomes obvious that the darker areas are also where it is most likely to clearly correspond with flood risk. Avoiding residential development in these areas, particularly the placement of manufactured housing units, and/or elevating and floodproofing the buildings that are located in or near these regions will help to mitigate flood impacts.

Innovative Housing Development Approaches

There are a number of innovative housing development designs that design strategies can help communities become more resilient against environmental disasters.

Cluster Housing aka Conservation Subdivision: development pattern that clusters homes close together with swaths of open space to serve as buffer zones. This type of development focuses on accessibility and incorporating environmental design to improve quality of life. and mitigate flooding and other environmental impacts.
Dedicated Open Space and Parkland: An incentive for developers to dedicate a certain amount of open space (a ratio of housing units to natural space acreage) in new developments communities. Open space is a valuable asset it provides in communities with mitigation benefits, and recreational space

Smaller Lot Sizes: This strategy supports denser neighborhoods that with amenities (like sidewalks, lighting, garbage cans) both increasing walkability and reducing impervious surface. Neighborhoods with smaller lot sizes fosters walkability with a higher concentration of amenities and housing in a smaller area making them more accessible if ample travel route is provided for pesdestrians.

Smaller Setbacks: Add content.

Mixed-use: development that combines residential, commercial, and environmental and economic uses in a region by encouraging mixed-use development. Allows, allowing residents to live, work, and play within a certain neighborhood to reduce the need to drive and travel. All in one area, increasing walkability, reducing the need for personal vehicles, and enhancing access to desired amenities.

Energy Efficiency: building codes and ordinances can be utilized to encourage more energy efficiency during construction which is achieved through minimum standards for appliances, updating lighting throughout, using a control system for building operations (HVAC, lighting, electronics). The installation of a green roof can provide a significant energy savings, but this is most feasible for new constructions. Other recommendations include requiring any new government building be built to an ENERGY STAR rating.

The public can be educated through partnerships with contractors and private businesses. For example: a phased approach to improving residential energy efficiencies that starts with an energy audit program that helps residents identify inefficiencies in their system. That same program could include partnering with Lowe's/Home Depot to teach people how to weatherize their home using materials from the store.

Targeted Buyouts and Development Regulations

Downtown Raymondville is almost entirely paved over with the exception of some planters and patches for grass. Any water that falls in the city will find a pathway for drainage. Downtown Raymondville, along Hidalgo Street, serves as an evacuation route but is very vulnerable to flooding and is consistently closed off during rain events. Aside from raising the road and buildings, this is a persistent problem with very little as far as affordable solutions. There are other opportunities that could improve drainage through downtown Raymondville while also not aggravating flooding for surrounding residential. **Image 2.1** shows pervious cover downtown along Hidalgo St. and surround roads in white, potential Low Impact Development opportunities in green, the railroad as an orange line and the old courthouse is labelled for context. This stretch of road floods frequently and would benefit from investment. Downtown revitalization programs could be applied for and hiring consultants that can design low impact development and green infrastructure elements to capture rainwater and keep flood waters out of buildings. Commercial buildings could be floodproofed to increase their resilience.

If buying out is not an option, increasing ordinance and building standards for new development could alleviate flood risk. Ordinance that requires capture of rainwater, or landscaping that support maximum infiltration (bioswale, raingarden, under pipe drainage). Requiring new buildings to build to a better standard is a great step in the right directions while exploring ways to retrofit existing building stock.

Image 2.1 Pervious Surface in Raymondville

No Adverse Impacts

The different years of development and code adoption in the widespread issue of adverse impact. Just as in Port Mansfield, new development has different standards than older development which often results in older development taking on new issues of flooding that did not exist before. Every bit of fill that is brought into the region adds more to the base flood elevation because land that used to hold water is displaced and that water has to go somewhere. The county could adopt a "No Adverse Risk" policy when it comes to new development under their floodplain ordinance. This policy would prohibit new fill from being placed in flood hazard areas unless alternative solutions were pursued to make sure the BFE was not increased. This can be achieved by cleaning out and increasing size of drainage ditches, upsizing culverts, elevating on pier and beam rather than bring in fill, and implementing a detention pond. If not adopted countywide, municipalities could adopt this policy, or the drainage district as a taxing entity.

Scenerio Planning

Source: Singleton, NSW Australia. May 8, 2021. Image of Playground and skate park covered in water flooded in flash flood - Austockphoto

Scenario: Assess ownership of lots and identify possibility for buyouts using federal funds. Update ordinances to require maintain certain drainage, infiltration and runoff standards. Example of use for a lot is a floodable park (example Image X) that can serve multiple functions like skate park, playground, courts, while also protecting surround area from flooding. Materials used would be coated to resist breaking down.

Contribution: land conservation supports stormwater infiltration, reduces runoff, and improves water quality while also mitigating flood impacts.

Financial Support:

- FEMA FMA Buyout and Acquisition Program
- GLO Post-Disaster Buyout Programs

CHAPTER THREE | DAMAGE AND LOSS REDUCTION

Reduce Damage During a Storm

Strategies to reduce the amount of damage experienced by the county during a disaster event is the key focus of this guide. A reduction in damage is an important factor when rating how well a community can recover from an event. This chapter goes over a variety of loss reduction strategies through development practices and land use regulations. The first portion of the chapter outlines the types of hazards that residential buildings are vulnerable to followed by recommendations and an overview of programs to support.

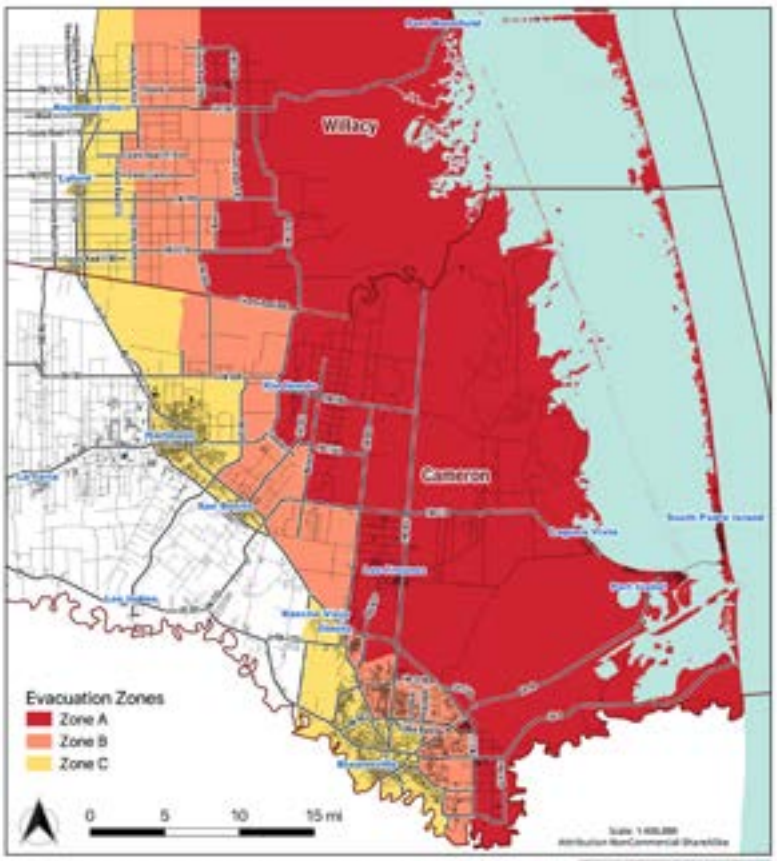
Creating a Damage and Loss Reduction Plan is the mindful process of knowing what buildings, infrastructure and populations are at risk from certain disasters, and taking steps to identify resources before an event to protect what's at risk. There are a myriad of resources to reduce risk and damage including; new regulatory provisions added to the county and cities codes to reduce risk to the built environment, updated requirements for new subdivisions, utilizing local partners to educate the public and create lists of vulnerable populations that need extra consideration during events. The important factor is choosing strategies that work for Willacy County residents. The next section provides a brief summary of the types of natural disasters Willacy is exposed to. A comprehensive breakdown of this can be found in the updated Hazard Mitigation Plan.

Risk to Housing

Housing units and residents in Willacy are at risk of seven different hazards, which will need unique strategies to address. These hazards should be at the forefront of consideration in any development and planning that the county undertakes.

- Tropical Storms/Hurricanes
- Drought
- Floods
- Tornadoes
- Wildfires
- Snow/hail
- Erosion

Map Evacuation Zones in Willacy and Cameron



Evacuation Zones in Cameron & Willacy Counties

IMPORTANT: Considering the vulnerable nature of manufactured (mobile) homes for all levels of hurricane winds, it is strongly recommended that all manufactured (mobile) home residents in Willacy and Cameron Counties evacuate and seek safer shelters regardless of their locations whenever voluntary or mandatory evacuations are declared for these counties.

The evacuation map for Cameron and Willacy Counties was developed by Emergency Management and Public Safety officials as part of the Valley Area Hurricane Evacuation Study with the assistance of the Texas A&M Transportation Institute and Texas A&M Hazard Reduction & Recovery Center. February, 2016. This map is available at http://hrrc.arch.tamu.edu/research/HES/index.html

Tropical Storm

Willacy County is vulnerable to several types of tropical storms, including hurricanes and tropical depressions. It is located along the Gulf Coast of Texas, which is a region prone to tropical weather systems. Here are the primary types of tropical storms that can affect Willacy County:

1. Hurricanes: Willacy County is susceptible to hurricanes, which are powerful tropical storms with strong winds at 74-160mph, heavy rainfall, and the potential for storm surges. The Gulf of Mexico is a common breeding ground for hurricanes, and when they make landfall in this region, they can have a significant impact on the county.

2. Tropical Storms: Apart from hurricanes, Willacy County can also be affected by tropical storms. These storms havewind speeds below 80mph but can still bring heavy rain, flooding, and strong winds, posing a threat to the area.

3. Tropical Depressions: Tropical depressions are weaker tropical systems with lower wind speeds and less organized convection than tropical storms and hurricanes. However, they can still bring heavy rainfall and the potential for flooding.

It's essential for residents of Willacy County to stay informed about weather forecasts and to have hurricane preparedness plans in place, especially during the hurricane season, which typically runs from June through November. Local authorities and emergency management agencies provide information and guidance on how to prepare for and respond to tropical storms and hurricanes in the area.

Recommendations:

Hurricane Tie-Downs: In areas prone to hurricanes, building codes often require the use of hurricane tie-downs or anchor systems to secure the roof and walls of a residential structure to the foundation.

Impact-Resistant Windows and Doors: Coastal areas may have requirements for impact-resistant windows and doors to protect against wind-driven debris during hurricanes and severe storms.

Building Envelope and Roofing: Building codes may specify standards for the construction of the building envelope (roof, walls, and foundation) to ensure that it can withstand wind pressures and prevent water infiltration. These should be updated to account for changing climate conditions.

Drought

Droughts are a recurring natural phenomenon in the region and can have significant impacts on water resources, agriculture, and the overall environment. Drought conditions in Willacy County and the broader Texas region can vary in intensity and duration, depending on various factors such as weather patterns, precipitation levels, and temperature. Prolonged periods of below-average rainfall can lead to drought conditions, which can result in:

1. Water Scarcity: Droughts can lead to reduced water availability, affecting both surface water sources like rivers and lakes and groundwater reservoirs. This can impact water supplies for residents, agriculture, and industries.

2. Agricultural Impacts: Agriculture is a vital part of the economy in Willacy County, and droughts can harm crop yields and livestock production. Reduced water availability can lead to crop failures and increased costs for irrigation.

3. Environmental Consequences: Droughts can stress natural ecosystems, harm wildlife habitats, and lead to a decline in water quality in rivers and lakes. Reduced water flow in rivers can also affect aquatic life.

4. Wildfire Risks: Prolonged dry conditions during droughts increase the risk of wildfires, posing a threat to both property and public safety

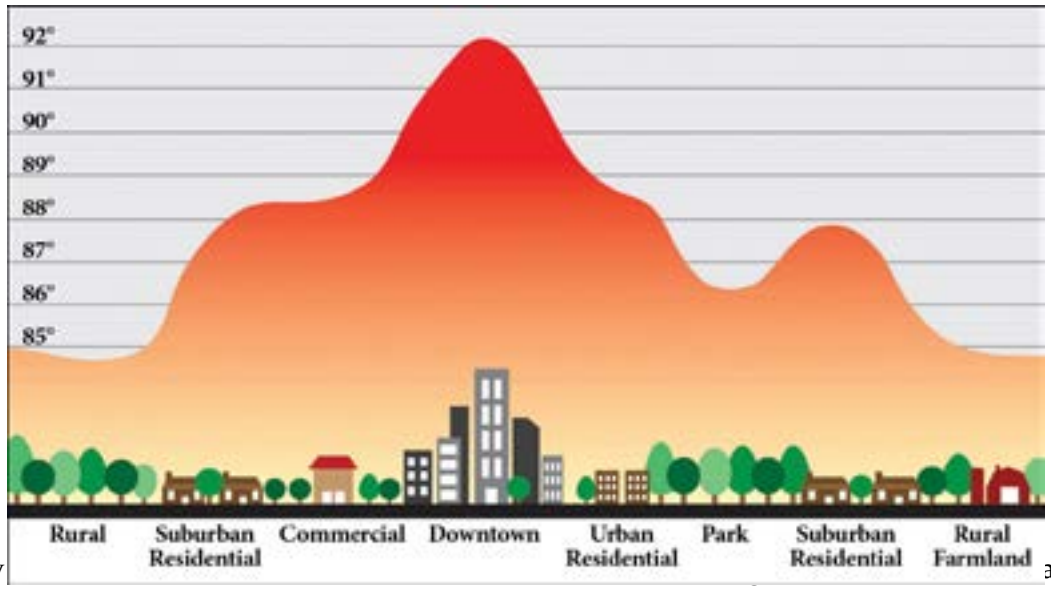
Efforts are made to monitor and manage drought conditions in the region. Local and state authorities, as well as organizations responsible for water management, may implement water use restrictions and conservation measures during drought periods to mitigate their effects.

Residents and businesses in Willacy County are encouraged to be aware of drought conditions and to practice water conservation measures to help mitigate the impact of droughts when they occur. Additionally, farmers and ranchers often adapt their practices to conserve water and manage their resources during droughts.

Extreme Heat

In South Texas, Extreme temperatures are a normal occurrence, but it is a very dangerous phenomenon that leads to health concerns. Extreme heat is when temperatures are much hotter, or it is much more humid than average. Extreme heat can cause urban heat island effect, the phenomenon in which paved over surfaces increases heat in urban areas by 5-10 degrees. Concerns for humans include heat exhaustion, heat stroke, fainting, and death. According to the CDC, just over 1,000 people are killed by extreme heat every year.

Figure 3.1 Depiction of Urban heat Island Effect.



Source: Bay at Islands – Bay Area Monitor

Flood

Of the total residential structures in the county, around 2,763 are located in a FEMA Special Flood Hazard Area (SHFA). This is an area that has special flood, mudflow or flood-related erosion hazards and falls within any of zone's A and zones V on the FEMA FIRM. Residences within this area are required to have some kind of flood insurance and, depending on the local ordinances, may need to elevate to be out of the base level flood. This number represents almost 50% of the county located in an area designated as a SFHA. Of that number, only 793 households are participating in the NFIP. The cost of insurance, awareness of need and the overwhelming and confusing nature of the process are sighted as obstacles to obtaining insurance.

Willacy County has mostly flat terrain that slopes from around 40 feet in the western part of the county, to sea level on the most eastern, coastal adjacent land in the county. Its location makes it susceptible to changing tropical moisture patterns resulting in dry and wet cycles. Due to this and the flat terrain, Willacy can become inundated with water very easily. The county itself is the only county in Texas that has no natural drainage features within its borders. This means that there are rivers or streams that transverse it's surface. However, the county is down slope from Hidalgo County that does have riverine systems as well as a significant development that has increased the amount of impervious surfaces and by extension, increased the flood risk for Willacy. The county is currently participating in a regional flood study to understand how the terrain and built environment are contributing to the flood risk and if there are strategies that could be implemented to improve drainage. Since 2015, the county has experience four years of significant flooding but has also experienced flooding without any rain falling within the county limits. It is known by county and city staff that if Hidalgo experiences a major rain event, then Willacy will

be receiving those flood waters one to two days later.

A network of drainage canals and ditches are in place to drain stormwater into the Lower Laguna Madre and these are controlled by two entities; The Willacy County Drainage District 1 & 2, and the Delta Lake Irrigation District. The location and management of these drainage features has lead to back up of flood waters and over topping of banks into surrounding communities.

Recommendations:

Early warning system and status updates for water level in canals.

Create a Parkland Dedication Ordinance for Developers.

Integrate Low Impact Development into Building Codes and Ordinances to increase infiltration and reduce runoff.

Work with leaders to designate land for retention/detention ponds in areas that frequently flood.

Consider developing parks and recreation areas to include floodwater retention properties.

Tornado

While tornadoes are more common in the central and northern parts of Texas, they can occur in the southern coastal regions as well, including Willacy County. Tornadoes in this region are often associated with severe thunderstorms, especially during the spring and early summer months when weather conditions are conducive to their formation.

Tornadoes can vary in size and intensity, from relatively weak and short-lived tornadoes to large and destructive ones. The impact of a tornado can include damage to buildings and structures, uprooted trees, and the potential for injuries or fatalities. It's essential for residents of Willacy County to be prepared and have a plan in place for severe weather events, including tornadoes.

While tornadoes can occur in Willacy County, they are relatively infrequent compared to other parts of Texas, such as the "Tornado Alley" region in the northern and central parts of the state. Nonetheless, preparedness and awareness are crucial for minimizing the risks associated with tornadoes and severe storms in the area.

Wind standards are implemented to ensure the safety and structural integrity of residential and commercial buildings, particularly in regions susceptible to hurricanes and strong wind events. These standards are typically part of the local building codes and are enforced at the county and/or municipality level. Willacy County communities are classified by three wind zones with different design standards based off the 2006 IBC/IRC and are as follows: 1) Seward – 130 mph 3 second gust design wind speed, 2) Inland I – 120 mph 3 second gust design wind speed, 3) Inland II – 110 mph 3 second gust design wind speed.

Recommendations:

Adopt Beyond Building Code for residential and commercial.

Organize a retrofit class for homeowners to fix their homes and reduce risk of damage.

Encourage and educate on the importance of good windows.

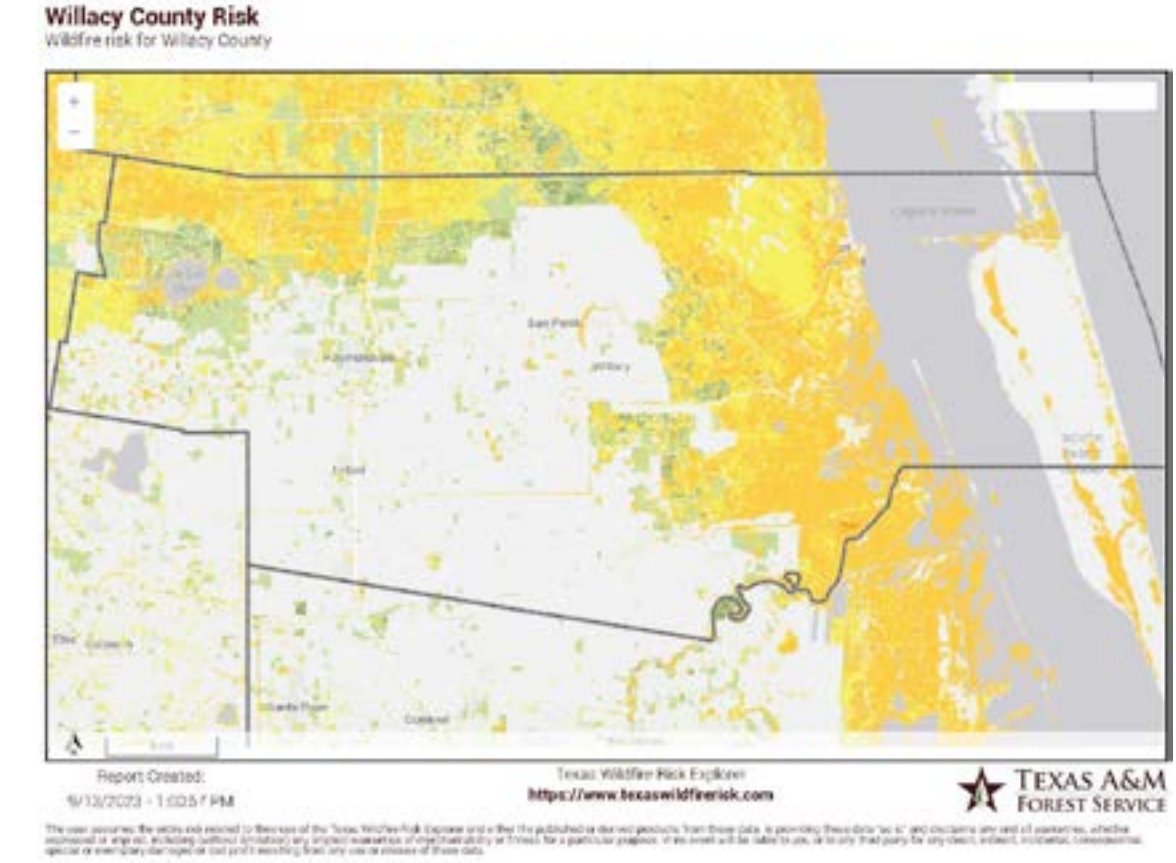
Store all important data offsite to ensure access if there is loss of power or damage to buildings.

Train all relevant staff in damage assessment and choose a software to utilize to record and share out damage after a storm.

Wildfire

Wildfires are a serious threat, particular to drought prone regions like the Rio Grande Valley of Texas. The amount of open space and brush within the county can take a small fire and turn it into an inferno as the dried brush lends fuel. Texas Wildfire Risk Assessment Port from Texas A&M University Forest Service creates and maintains maps of ignition hotspots all across Texas based on the likelihood a fire could happen using surrounding conditions. According to the map, Willacy County has a moderate wildfire risk for 2023. Colonias and manufactured homes in the region are at extreme risk in the event of a wildfire due the materials used to construct them and small size, meaning it would not take too much time for the whole structure to go up.

Wildfire landscaping: One of the best used strategies for protecting homes from wildfire is in the form of fire resilience landscaping. This is essentially creating a buffer around the home with fire resistant plants that will reduce risk to the home. There are no fireproof plants, but some species have characteristics that reduce its combustibility and ignitibility and give it the capacity to withstand long periods of heat and ember exposure. Plants with high-moisture content that have stems that do not have resins, oils and other volatile compounds are the goal. Low growing plants



Recommendations

Home Hardening: the process of reducing a home's risk to wildfire by using non-combustible building materials, keeping the area around your home free of debris and preventing embers from entering the home. Embers are a major concern because of their capacity to shoot off from the main fire source and get carried far distances on wind currents. Using fire resistant materials to construct or improve the home can make a huge difference to the risk the house faces.

can help disrupt the closeness of fuel sources and create vertical separation.

Residential Maintenance: Regular property maintenance can help to reduce the amount of fuel present in the event of a wildfire as brush left on the ground can cause the fire to climb up from the ground to the tree canopy. Pruning the lower branches of trees and making sure lower bushes have a 6-10 feet gap from the top to the bottom of the lower tree branch can help prevent the fire from climbing up.

County Maintenance: Just as with residential homes, the county will benefit from disposing of brush and organic material regularly through dry seasons to make sure there is no ground fuel for fires to spread.

Snow/Hail

Willacy County, Texas, is located in the southernmost part of the state, along the Gulf Coast, and it generally has a subtropical climate. As a result, snowfall in Willacy County is extremely rare. It's not impossible for a light dusting of snow to occur during an exceptionally cold and unusual weather event, but significant snowfall is highly unlikely.

Hail is a possibility in Willacy County, particularly during severe thunderstorms. Hailstones can vary in size, from small pellets to larger, damaging hailstones. Hailstorms tend to be more common in the spring and early summer when weather conditions are conducive to the formation of severe thunderstorms. Residents in the area should be prepared for the possibility of hailstorms and take appropriate precautions to protect their property and vehicles when such storms are forecasted.

Willacy County's extensive coastline is at risk of erosion due to wave action and soil composition. Erosion occurs when land is displaced and/or sediment is removed along the coast. Tropical Storms and hurricanes are accelerators of coastal erosion. Port Mansfield, the only coastal community in Willacy, is already experiencing erosion along its waterfront; erosion of the mainland as well as the barrier island protecting Port Mansfield from storm surges but also normal wave action as ice caps continue to warm and raise the sea level.

Winter Storm Uri

February 13-17 a major winter and ice storm started in the Pacific Northwest and moved from the Southern United States to the Midwest, and Northeastern United States dumping snow and dropping temperatures along the way. Power grids unable to sustain the higher-than-normal demand on energy failed across Texas when temperatures were hovering between 0 and 20 degrees, depending on city. Electrical utilities shut down and many cities had major water lines rupture, disrupting these services across the state. The image to the left depicts the extent of cloud coverage from Texas all the way up to New England and across the Plaine States to the Pacfific Northwest.

Recommendations

Educate residents on how to properly wrap their pipes and ways to prevent their pipes from bursting

Create and share a list for emergency kits that includes cold weather items

Weatherize Utilities and seek grant funding to stock up on generators to power pump stations if power is lost.

Fill out a "Critical Infrastructure Form" with the Power Comany to ensure power is not cut from vital resources.

Coastal Erosion

Seawall construction is a common approach to reducing coastal erosion but can, in fact, exacerbate that process. It is impossible to build a seawall capable of keeping all water out, and water breaches a sea wall, it can wash out land protected by the seawall and cause structural vulnerability. Seawalls prevent the transport of sediment from the land to the coastline to replenish the beaches and sand dunes. Seawalls may also trap stormwater runoff, causing soil and vegetation break-down, creating gaps as seen in example pictures below. These pictures were taking in a community off Baffin Bay, after Hurricane Hanna had hit a few weeks earlier. The hurricane wave action and winds accelerated erosion along the coastline in this community, threatening homes.

Image 3.1 & 3.2. Coastline of Baffin Bay Community after Hurricane Hanna, July 2020.

Source: Ashley Bennis

Regulatory Considerations

A strong and up to date regulatory framework is very important when it comes to protecting residents and property from loss. Strong codes and ordinances are key to successfully regulating new development in the community and ensuring that it will not adversely affect existing structures. For example, the two homes depicted below were built to different standards. After Hurricane Harvey, only one of these homes is able to house people immediately after the storm, while the other will take time for repairs.

Housing Retrofits to Mitigate Damage

Retrofitting homes in coastal Texas to address climate change and sea level rise is essential for enhancing resilience and protecting communities and properties from the impacts of rising sea levels, more frequent and severe storms, and other climate-related challenges. Retrofitting a home can be a significant investment, but it is also crucial for protecting individual property and safety in the face of climate change and sea level rise.

Figure ; Demonstrating how differen building codes fair during a storm

Comprehensive Recommendations

Update Building Codes: Building codes should be regularly updated to incorporate the latest scientific research and climate data. This includes revising wind speed maps to account for changing wind patterns due to climate change.

Sea Level Rise Considerations: In coastal areas, building codes should include provisions for elevated foundations and structures to mitigate the impacts of rising sea levels and storm surges. This may involve setting minimum elevation requirements for new construction above base flood elevations.

Adopt Climate-Resilient Design Standards: Consider adopting climate-resilient design standards that encompass not only wind but also flood resistance, temperature resilience, and other climate-related factors.

Incentives for Retrofitting: Provide incentives for retrofitting existing structures to meet higher standards, especially in areas with a significant amount of older construction that may be vulnerable to climate impacts.

Public Awareness and Education: Educate builders, architects, and the public about the importance of climate-resilient construction practices. This can include training programs and outreach efforts.

Integration with Land Use Planning: Coordinate building standards with land use planning to ensure that development in high-risk areas is minimized or appropriately mitigated.

Green Building Practices: Encourage and incentivize green building practices that not only improve energy efficiency but also enhance resilience to climate impacts.

Retrofit Recommendations:

Elevate the Foundation:

- Consider raising the home's foundation to a level above the projected sea level rise and storm surge levels. Piers or pilings can be used to elevate the structure.
- Ensure proper flow of waters in and out, and flood-resistant construction techniques for elevated homes.

Seal and Waterproof:

- Use flood-resistant building materials and seal all openings to prevent water infiltration during storms.
- Seal in windows and frames around doors.

Elevate Utilities:

- Raise electrical panels, HVAC units, and other utilities above potential flood levels.
- Consider installing a backflow prevention valve to prevent sewage backup during a flood.

Roof and Wall Upgrades:

- Reinforce the roof and walls to withstand higher wind speeds and impact from flying debris during storms.
- Consider impact-resistant windows and storm shutters to protect against high winds and debris.

Landscaping and Erosion Control:

- Create natural barriers like dunes, vegetation, or retaining walls to help mitigate erosion and protect against storm surges.
- Implement landscaping practices that reduce runoff and improve drainage.

Rainwater Harvesting and Permeable Surfaces:

- Install rainwater harvesting systems to collect and store rainwater for non-potable uses.
- Use permeable surfaces for driveways and walkways to reduce runoff and flooding.

Energy Efficiency Improvements:

- Enhance energy efficiency through insulation, sealing gaps, and upgrading windows to reduce heating and cooling costs.
- Consider renewable energy sources like solar panels to reduce reliance on traditional power sources.

Emergency Power Backup:

- Install a backup power generator or battery storage system to maintain essential power during outages caused by severe weather events.

Building Codes Compliance:

- Ensure that all retrofitting work complies with local building codes and regulations, which may have specific requirements for coastal areas.

Flood Insurance:

- Review and maintain flood insurance coverage to provide financial protection in case of flood-related damage.

Community Engagement:

- Engage with local community organizations and government agencies to stay informed about climate adaptation efforts and available resources.

Professional Guidance:

- Consult with architects, engineers, and contractors experienced in coastal construction and climate adaptation to ensure that retrofitting is done effectively and safely.

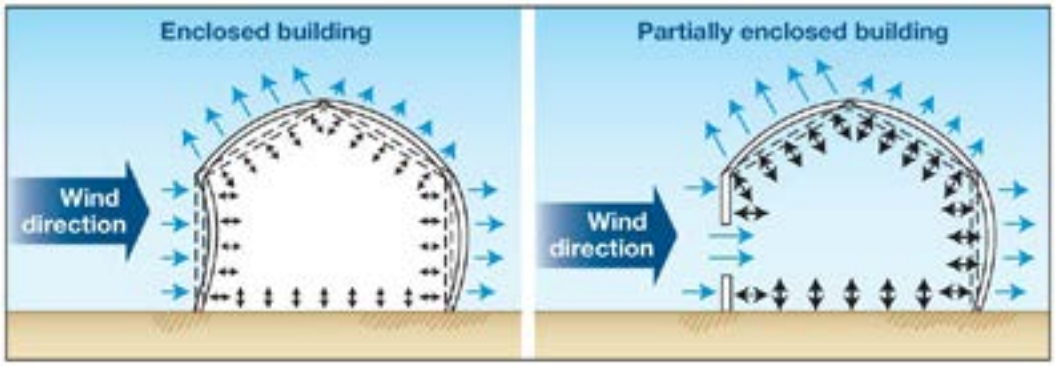
Plan for Future Needs:

- Consider long-term adaptation plans for your property, including the possibility of future sea level rise and changing climate conditions.

Creating Structural Envelope:

A building envelop refers to the rood, exterior walls, and exterior doors and windows of a structure. This envelop is what keeps out wind and rain, and once it is weakened, can lead to damage inside the home. The goal is to keep pressure exerted on the outside of the structure as demonstrated in the Image X. This is a top-down process of connecting the highest components of the home with the lower components.

Figure 3.2 Wind Forces on a Residential Building



Source: FEMA Coastal Construction Manual

Many people are not in the position to start from scratch with their homes, fortunately there are a number of retrofits that homeowners can implement to increase the resilience of their home. According to research undertaken by IBHS, damaged homes were exposed through at least one vulnerable opening. Homeowners must secure their doors, windows, attics, and garage doors to ensure they do not fail. Once an opening fails in a high wind event, the pressure in the home changes and can lead to more extensive damage and rainwater intrusion.

◊ Install an impact resistant garage door. They are equipped with heavy duty metal bracing in every panel and stronger brackets connecting the door to the frame to the structure.

◊ Install deadbolts on entryway doors and use during an event, making sure at least one door is operable for access and exiting.

Dry Floodproof when possible:

o Apply a waterproof coating or membrane on exterior walls.

o Anchoring building when necessary to resist floatation.

o Install backflow valves on sanitary and storm sewer lines.

o Building materials that can withstand flood waters for at least 72 hours: concrete, ceramic tile, pressure-treated lumber, steel, metal, brick, epoxy paint, foam, and closed cell insulation.

Elevate existing structures out of BLE, particularly in coastal zones and structures adjacent to moving water. Since Willacy experiences sheet flow and widespread flooding, elevation of properties is recommended for all residences, even if not in a designated flood zone.

If home has a gable-end roof, lateral and diagonal bracing can be added to strengthen the home from winds. Lateral bracing is when 2X4s are placed along the length of the roof and diagonal bracing is when 2X4s are run from top of gable end to bottom of the truss and vice versa.

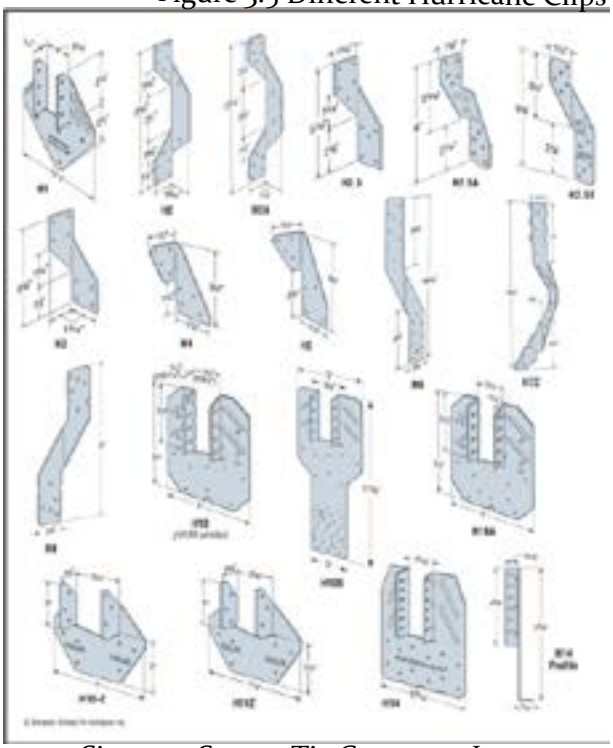
Purchase hurricane clips (Figure 3.5) to better secure roof to wall, to foundation. These clips are specially engineered to withstand strong winds.

Building Redundancies/Resilience in Utilities

On June 24, 2019, a Presidentially Declared State of Emergency was awarded for Willacy, Cameron, and Hidalgo counties following severe flooding and damage resulting nearly 10 inches of rainfall in a 12-hour period, causing severe impacts to utility structures and equipment, and shutting off power for tens of thousands of residents. Shortly thereafter, Hurricane Hanna, in July 2019, damaged electrical lines, cutting off power for much of the Willacy County, and exposing thousands of residents to extreme heat during the peak of summer, a serious public health and safety risk. During this event, local water and wastewater systems were also impacted, threatening access to clean drinking water.

There is growing research in the arena of strengthening utilities related to water, gas, electrical and wastewater. Elevating equipment such as lift stations, HVAC units, and electrical boxes creates resilience for those systems if the region were to flood. Critical facilities, such as utility providers, should be mapped and analyzed for their approximation to flood zones.

Figure 3.5 Different Hurricane Clips



Source: Simpson Strong-Tie Company, Inc.

Mitigating Examples for Utilities collected from FEMA and the EPA:

- Elevate or protect electrical service panels.
- Upsize culverts to better handle flood surges.
- Replace pumps with submersible or inline pumps.
- Establish a leak detection and repair program to reduce water lost.
- Remove debris, trees, and fire-hazard materials from around buildings.
- Ensure plenty of generators.
- Cut power to certain electrical lines if they are damaged in any way to prevent wildfire.
- Investigate feasibility of burying electrical lines.
- Strengthen raw water intake to prevent damage from erosion and flood debris.

For Homeowners:

Encourage and educate homeowners on ways to strengthen their utilities to avoid loss of service. Electrical panels and air conditioning units can be elevated above BFE to avoid inundation from flood waters. Homeowners should be told how to turn off their utilities (water, gas electrical) in the event that breakages or leaks happen.

Recreational Vehicles/Manufactured Housing Units:

Manufactured homes, including mobile homes and recreational vehicles (RVs) are highly vulnerable during a storm. These structures may become dangerous debris as a result of high winds during a storm if improperly tethered. Manufactured homes and recreational vehicles operate best if not placed in a high wind or flood zone. The most important factor for whether Manufactured homes can survive disaster is its ability to withstand strong winds, so it is key to properly install of straps, anchors, and stabilizer components.

Devloping with FORTIFIED

FORTIFIED is a well-established, nationally recognized construction method based scientific research and real-world testing by Insurance Institute for Business & Home Safety (IBHS). IBHS employs science driven research to understand how and why homes fail during different disasters and come up with strategies to strengthen and protect homes from future events. It is a 501 © nonprofit that works with property insurers, reinsurers, and affiliated companies to share their research and better protect people's assets. Smart Home America (SHA) was created in the ensuing crisis created by the 2004 (Hurricane Ivan) and 2005 (Hurricane Katrina) hurricane seasons. A group of thought leaders put their heads together and created SHA to bring awareness to better building standards and employ the FORTIFIED building method across the country. SHA works with the information from IBHS to educate decision makers and elected officials on how FORTIFIED building standards, and adopting stronger building codes can reduce loss and damage after a natural hazard.

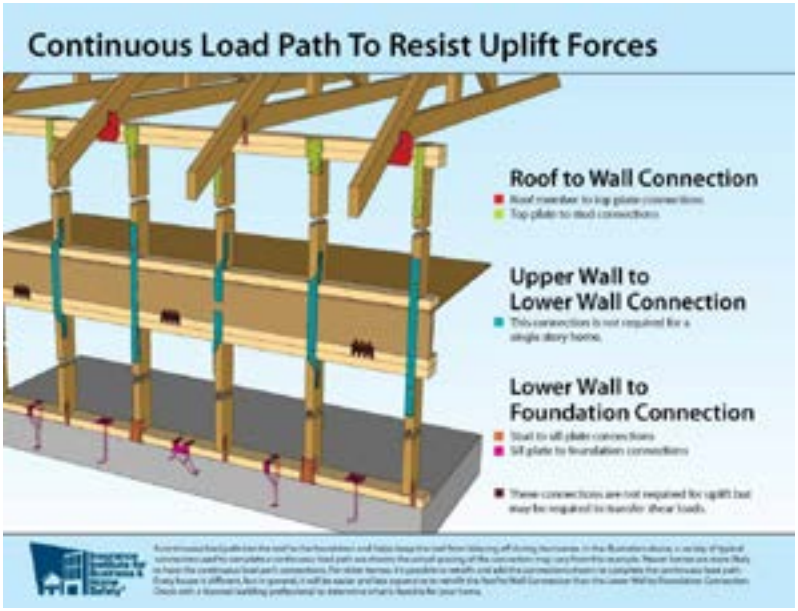
Through decades of research, it is well documented that traditional building codes leave homes and businesses vulnerable to wind, flood, and hail events. The whole concept is predicated on the idea of continual load path connections between the roof, walls, and foundation. Roof damage often occurs when wind gets underneath the roof edge, due to a weakness in the closure of the house, and uplifts it off of the house, exposing the inside of the house to outside elements. FORTIFIED requires specific materials and installation methods to create a stronger system. There are three FORTIFIED levels based on need:

1. FORTIFIED Roof: building standards for the roof including sealed roof decks, use of specific nails and pattern for better attachment and impact-resistant shingles to mitigate threat of hail.

2. FORTIFIED Silver: Includes standards for FORTIFIED roof with extra protections for windows & doors, garage doors, attached structures and gable end bracing. This level reinforces the connection from roof to walls.

3. FORTIFIED Gold: is the higher standard that strengthens engineered components between the roof to wall, story to story and wall to foundation.

Figure X. Illustration of a continuous load path between roof, walls, and foundation.



Source: Insurance Institute for Business and Home Safety. fortifiedhome.org

FORTIFIED program consists of specific design standards for contractors to follow to ensure the building is resilient to withstand events and still provide a livable environment. The program began in Alabama and due to this, Alabama has the highest number of FORTIFIED homes in the United States. Some states have worked with Smart Home America to offer incentives for homeowners and business owners that fortify their properties. There are inspectors and contractors in Texas that are training in FORTIFIED construction standards. For rebuilding and repairs, especially roof damage, it is worth pursuing FORTIED practices.

The county could partner with Willacy County Housing Authority to create opportunities to educate residents about FORTIFIED standards and how strengthened building codes can make a difference.

Wildfires:

Research released in 2018 from the Headwaters Economics found that there are negligible differences in cost to build a home with fire-resistant materials, but the benefits are significant. A significant number of homes are built in close proximity to the wildland-urban interface, boundary between urbanized land and land that is covered in forests or other types of natural vegetation. At the request of Park County, Montana as part of their Community Planning Assistance for Wildfire (CPAW) program, The Insurance Institute for Business & Home Safety partnered with Bechtle Architects and Headwater Economics to explore the actual cost of building a more fire-resistant home. The following graph from the study demonstrates the cost comparisons by components.

Understanding of construction homes with fire-resistant materials comes from standard laboratory testing methods looking at a materials' ability to resist ignition or fire spread. Costs for houses are examined via four vulnerable components: the roof (gutters, vents, and eaves), exterior walls (windows and doors), decks, and near-home landscaping.

Types of available funding sources:

Federal Emergency Management Agency (FEMA):

- FEMA provides various grant programs aimed at disaster mitigation and preparedness, including the Hazard Mitigation Assistance (HMA) program and the Pre-Disaster Mitigation (PDM) program. These funds can be used for resilience projects.
- The Flood Mitigation Assistance (FMA) program specifically supports projects that reduce or eliminate the long-term risk of flood damage.

Community Development Block Grant (CDBG) Program:

- CDBG funds are administered by the U.S. Department of Housing and Urban Development (HUD) and can be used for a wide range of community development activities, including those related to disaster recovery and resilience.

Natural Resource Conservation Service (NRCS):

- NRCS provides funding for projects related to soil conservation, erosion control, and water management. These projects can contribute to coastal resilience efforts.

Texas General Land Office (GLO):

- The GLO administers various grant programs aimed at coastal management and resilience, including the Coastal Erosion Planning and Response Act (CEPRA) program and the Coastal Management Program (CMP) grants.

Texas Water Development Board (TWDB):

- TWDB offers financial assistance for water-related projects, including those that address flood control, water supply, and infrastructure improvements.

Environmental Protection Agency (EPA):

- EPA provides grants and assistance programs related to water quality, pollution prevention, and environmental resilience that may be relevant to coastal projects.

National Oceanic and Atmospheric Administration (NOAA):

- NOAA offers grants and funding opportunities for projects related to coastal resilience, marine resources, and climate adaptation.

Foundation Grants:

- Foundations, such as the Texas Coastal Resiliency Fund and other philanthropic organizations, often provide grants and funding for resilience projects in coastal areas.

Non-Profit Organizations:

- Non-profit organizations, such as The Nature Conservancy and the Texas Sea Grant program, may offer funding and resources for coastal resilience initiatives.

Local and Regional Grants:

- Local and regional government agencies may have their own grant programs and funding sources dedicated to resilience and disaster preparedness.

Community Development Financial Institutions (CDFIs):

- CDFIs may provide financing options and support for community development and resilience projects.

Crowdfunding and Public-Private Partnerships:

- Consider exploring crowdfunding platforms and public-private partnerships to raise funds and leverage community support for resilience initiatives.

Tool and Resources:

Data Access and Inventory (access to information about repetitive loss)

- Resources:
    - https://agents.floodsmart.gov/sites/default/files/fema_nfip-policyholders-guide-severe-repetitive-loss-brochure-07-2023.pdf
    - https://www.gao.gov/assets/gao-04-401t.pdf
    - FEMA Severe Repetitive Loss Program | Adaptation Clearinghouse

Regulatory Tools for damage and loss reduction

- Open space conservation
    - Overview of Selected Parishes' Freeboard, Fill, and Open Space Rules and Projects within Louisiana's Region Seven Watershed | Adaptation Clearinghouse
- Drainage requirements for new developments
    - Building a Better Norfolk: A Zoning Ordinance of the 21st Century - Norfolk, Virginia | Adaptation Clearinghouse
    - California Coastal Commission DRAFT Coastal Adaptation Planning Guidance: Residential Development | Adaptation Clearinghouse

Retrofit Homes: Guidance for elevating homes- 2ft

- Resources:
    - Resources | FMIA (floodmitigationindustry.org)
    - https://www.fema.gov/sites/default/files/documents/fema_elevating-your-house-chapter-5.pdf
- Example Ordinance: Mexico Beach, Florida - Floodplain Ordinance 712 | Adaptation Clearinghouse

Floodproofing commercial

- Resources/Examples:
    - 6 Ways to Flood Proof | SEMSWA
    - Massachusetts Port Authority Resiliency Program and Floodproofing Design Guide | Adaptation Clearinghouse
    - Floodproofing | Key West, FL (cityofkeywest-fl.gov)

Early warning systems

- Resources/ Examples:
    - Flood Early Warning System | Raleighnc.gov
    - Early Warning Systems for Floods: Technology to Reduce Climate-related Risks | Yale Economic Growth Center

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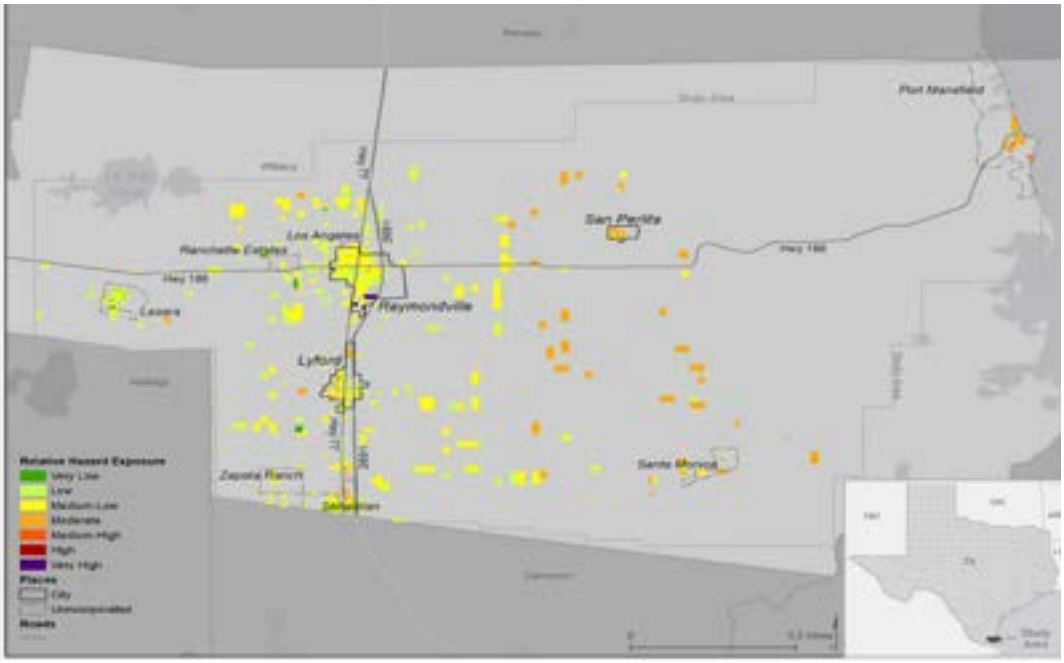
CHAPTER FOUR | DISASTER RECOVERY HOUSING

Road to Recovery

A recovery plan is a guidance document used by county and city staffs to support community recovery following a disaster. Developing a comprehensive plan for housing recovery, in particular, is crucial in ensuring that affected individuals and communities can quickly and effectively address their housing needs and rebuild any lost housing stock to withstand future disasters. Housing recovery plans should offer guidance on shelter during a storm, temporary housing access in the event of damage, available repair programs, and replacement housing options. These plans should be tailored to unique local or regional characteristics, conditions, and risks, and specific impacts of each type of possible disaster. In Willacy County, possible disruptions include flash flooding, tropical storms, storm surge, high wind events, wildfires, tornadoes, and winter weather.

Between 2015 and 2019, Willacy County has experienced two disaster declarations for flood events either within their border, or by the neighboring counties, Hidalgo, and Cameron. These devastating events in the state's four southernmost counties resulted in numerous damaged homes and properties, water rescues, and highway closings. These devastating events prompted a LRGV River Basin Study of drainage and potential flood mitigation projects, funded by the Texas GLO. Due to these most recent events and the continued vulnerability of the region, this chapter outlinesidentifies strategies and recommendations for Willacy by emergency management phases and recommends mitigation activities during "blue sky" days. "Blue Sky" in reference to emergency management is a normal day. If the four phases of emergency management encompass preparedness, response, recovery, and mitigation, "blue sky" planning would occur during preparedness phase, before there is even a threat of a disaster. Willacy County and its municipalities should

To establish a baseline data for housing (inventory, dwelling type, home conditions, property values, etc.) and conduct, and to understand previous and future trends, the comprehensive plan process conducted a market analysis to identify previous trends and potential effects of in Willacy County consider how future market forces on existing and futurewill affect housing. Factors such as vacancy status, gross rent, and sale only units divide by the total housing units. The vacancy rate in Willacy County as of 2017 is at a rate of 20.6%. Out of 7,224 housing units, around 1,487 are vacant, with 17.6% constituting renters and 61.8% comprising of homeowners. Not only is the owner-occupied rate in Willacy higher than the State of Texas and the United States overall, but of these houses, most of them were built before 1980 which means they are more vulnerable than homes built after 1990s. The county is in need of updated housing stock. This data will provide with a foundation and help establish need in the event of a disaster and post-disaster analysis is conducted. This information can be gathered during blue skies and used when the county is establishing damage costs and requesting funds for reliefportion of that designated as affordable housing built since stricter wind codes took effect in the early 2000s.



Relative Housing Risk Across the County

Source: Texas Community Watershed Partners. Willacy County CHARM Workshop August 31, 2023.

In referencing to post-disaster recovery in Texas; the Housing Recovery process be broken into three distinct phases according to Texas GLO and FEMA: short term, medium term, and long term.

Short term recovery occurs during the immediate aftermath, typically : (within six6 months,) Immediate aftermath of a disaster as damage and needs are being assessed.

- Rapid Recovery Rental
  - Manufactured Housing Units- FEMA
  - Multifamily Lease & Repair (MLR)- FEMA
- Rapid Recovery Rehab
  - Non-profit/VOAD Existing Home Rehab- CBDRG
  - Existing Home Rehab- FEMA
- Other Revitalization Efforts
  - Demolition- City/County
  - Code Enforcement- City/County
  - Credit Counseling

Medium term recovery occurs after: (within 1-3 years) After the initial shock and debris clean-up, within 1-3 years of a disaster, while the county and/or city is in the process of rebuilding, often with assistance of outside organizations.

- Home & Neighborhood Recovery
  - Org- CBDRG
    - Non-profit/VOAD Existing Home Rehab
    - Outside Resources- CDBG-DR
  - Org.-City/County
    - Extreme Neighborhood makeover program- City/County
    - Brush with Kindness- Habitat for Humanity
    - Amend Development Code- City/County
    - Rental Apartment Rehab
    - Infill Development- City

During long term recovery, which may take Long Term: (five plus years or more, disaster impacted areas receive) Receiving outside resources that support new development programs through external funding opportunities.

- Workforce Housing/Other Housing/New Rental/New for Sale
  - Developer/Builder Programs
    - Housing Tax Credit program- used to fund construction.
    - HOME Program- Multi-family/SF- Loans or grants
    - MF Housing Preservation Initiatives- loans/grants for rehabilitation of existing affordable rental communities in rural Texas
    - MF Mortgage Revenue Bond- loans for purchase or construction
    - Housing Trust Fund
    - Texas Bootstrap Loan Program- self-help housing construction program that assists very low-income households to purchase a real property on which to build or repair a home. $45K/household, 0% interest loan for a term of up to 30 years. The following census tracts are identified as low-income communities eligible for this opportunity.
      - 9503
      - 9504
      - 9505
      - 9506
      - 9507
    - Affordable Rental Program- Supports rehabilitation, reconstruction, and new construction of public housing and affordable multi-family housing. Provides funds to for-profit developers/borrowers, public housing authorities. Local government entities and non-profit developers/borrowers.
  - Incentive Policy
  - Infrastructure
  - Outside Resources- State/Federal programs
  - Grants
  - Individual Programs

        - Small Business Association (SBA)- do not have to be a business owner to apply for this funding. Can be used to repair, personal property, relocation assistance and sometimes mortgage refinancing.
    - Individual Loan Assistance
    - Individual down payment assistance
    - Code Enforcement

The Texas General Land Office (GLO) works closely with FEMA and the U.S. Department of Housing and Urban Development (HUD) to oversee housing program administration in disaster affected counties and communities. HUD's programs in support of recovery include the Community Development Block Grant (CDBG) Program. This program offers funding assistance for Low to Moderate Income (LMI) households to assist in blight elimination and meeting urgent disaster-related needs.

Affirmatively Furthering Fair Housing (AFFH), HUD

The AFFH is a federal nondiscrimination requirement under the Fair Housing Act, aimed at ensuring that housing development and recovery plans are adopted and provided to all groups regardless of national origin, religious, gender, family, or disability status or identity. The Fair Housing Act requires at least 70 percent of CDBG-DR funds benefit LMI households.

Resource Link: https://www.hud.gov/AFFH

Pre-Disaster

Pre-disaster denotes the time between learning of a potential disaster until the disaster strikes. During the pre-disaster period, households and communities should prepare their homes, deploy sandbags and other temporary flood mitigation strategies, review evacuation and safety routes, and inventory and prepare food, water, medical, or other supplies. Community leaders can play a key role in ensuring the safety of their citizens by providing information and resources to harden their structures and plan evacuation.

1. Blue Sky Day Planning:

- Assessment and Risk Analysis: conduct a thorough assessment of community vulnerabilities to different types of disasters (e.g., hurricanes, floods, wildfires) and identify high-risk areas.
- Building Codes and Land Use Planning: review and update building codes and land use regulations to enhance resilience and reduce future disaster risk.
- Public Education: implement public education campaigns to inform residents about disaster preparedness, evacuation routes, and emergency shelters.
- Emergency Response Teams: train and equip emergency response teams, including search and rescue, medical, and shelter management teams.
- Make an inventory of existing shelters and buildings that can transition to shelters during an event. Make a note of how many they can accommodate, energy capability (electricity for charging phones, Wi-Fi, back up generators, etc.) and if they allow for pets.
- Create a contractor referral list of vetted contractors that residents can use if their homes become damaged due to a disaster. There are an influx of fraud to communities that suffer a disaster but a pre-approved list can help homeowners with knowing who to trust.

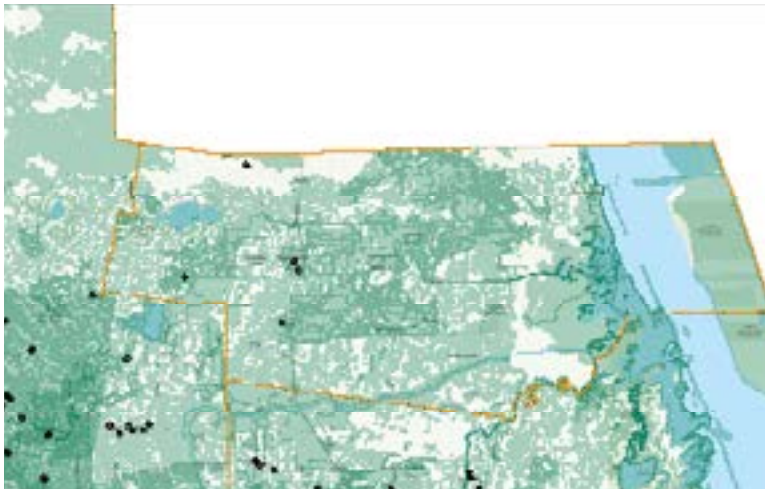
2. Pre-Disaster Prep

- Review database of vulnerable residents that need extra time to evacuate.
- Remind citizens about coastal storm surge regions and floodplain maps. Also, make sure evacuation routes are clear and available during all emergency messaging to the community.
- Distribute public notices/information about storm ready supply packs with nonperishables, water, medications, batteries, and flashlights, and other essential items.
- Deploy sandbags in vulnerable areas.
  Preemptively close roads with high risk for flooding.
- Remind citizens to take pictures of their homes and belongings; this will support post-disaster claims and simplify the process.
- Input valuables and important documents into waterproof cases.
- Backup all date to a drive or bring and/or bring an external drive within waterproof case.
- Begin home protection measures, such as adding plywood/shutters or impact resistant polycarbonate boards to protect windows and doors.

- Wedge sliding glass doors with a brace or broom handle to precent them from being lifted from their tracks or being ripped loose by wind vibrations.
- Cover/tie-up or bring in any outdoor patio furniture or pots. These things become airborne weapons when the wind picks up.
- If evacuating, consider turning off all electricity with the main switch near the meter, turn off gas to prevent leaks and turn off water in the event pipes burst.

3. Immediate Shelter:

- Prepare any backup emergency shelter locations that can quickly accommodate displaced individuals and families.
- Establish communication channels to inform the public about shelter locations and availability.
- Prepare any available liquid trucks with water to prepare for the loss of drinking water.
- Ensure shelters are equipped with generators, supply of fresh water and is safe from flooding.



Map showing the location of identified shelters in Willacy and surrounding counties of Cameron and Hidalgo.

4.Temporary Housing/Interim Housing: housing may be immediately used after a disaster and may be lived in from six months to over a year after the event. Extent of damage and availability of contractors and construction materials play a major role in this timeline.

- Emergency Housing Assistance: provide emergency financial assistance or vouchers to individuals and families for temporary lodging in hotels or rental properties.
- Temporary Shelter Communities: establish temporary shelter communities with modular or prefabricated housing units.
- Transitional Housing Programs: collaborate with non-profit organizations and government agencies to provide transitional housing options for those displaced for an extended period.
- City/County may waive some regulations to allow for an expanded placement of MHUs.
- Direct Assistance through Limited Home Repair (DALHR) and Partial Repair and Essential Power for Sheltering (PREPS) provides limited repairs and is not intended to restore homes to pre-storm conditions. Rather, this type of assistance provides repairs to bring disaster-impacted homes to a livable state and restores essential utilities while the homeowner pursues other funding options for full restoration.

The Early Rapid Recovery process matches residents with the appropriate financial assistance programs to support their housing recovery process.

Willacy County struggles with a shortage of affordable housing options for citizens and the labor force in the form of smaller size units like multi-family housing. Consequently, a large share of its working population relies on substandard housing/manufactured homes that may not be built or maintained to building code or ordinance standards. These homes may thus suffer significant damage or destruction during a disaster and result in the displacement of the worker population. This is a crucial population in the aftermath of an event because they help to run the stores and

After Hurricane Harvey, the City of Rockport lost all of its multi-family housing, which housed the workers that supported the tourist industry. A large portion of that population had to relocate to other cities, with 20% never returning. In the event that this type of housing is damaged, there needs to be back up options.

institutions that get the communities back to functioning.

Rapido Housing:

The Lower Rio Grande Rapid Recovery Re-Housing Program (RAPIDO) is a holistic approach to housing recovery as it offers a cost-effective way to construct housing for families that sustained damage to their homes.

5. Housing Repair and Rehabilitation:

- Texas A&M AgriLife Disaster and Recovery Agents can help with training staff and other stakeholders to conduct damage assessments to determine the extent of damage to homes and infrastructure. Create an easy-to-use database to collect information to declare a disaster as soon as possible.
- Review resources that provide grants or low-interest loans for emergency repairs to make homes habitable quickly. Put out a database of the organizations that provide this assistance can help speed up this process.
- Streamline building permit processes to expedite repairs during a certain time period after the disaster with possibility of timeline updates.
- As residents recover, the Homeless Prevention program, administered by the GLO, may provide utility bill assistance, short-term mortgage assistance, and tenant-based rental assistance to prevent foreclosure and loss of shelter.

6. Replacement Housing:

- Reconstruction Assistance: offer financial assistance to homeowners whose properties are beyond repair to rebuild or replace their homes.
- Utilize assistance through Habitat for Humanity, HUD and GLO to develop more affordable housing options, making sure they are built to a high standard.
- Identify and catalog the damaged and destroyed homes in impacted cities and counties. Maintain a database to support buyout/acquisition programs for repetitive loss structures. These programs are usually offered through FEMA and GLO in response to disasters. Grants that prioritize “resilience” also are options for buying out land, as long as the benefit can be demonstrated.

7. Long-Term Recovery:

- Work with county elected officials and city council in Raymondville to implement new codes and ordinances for mitigation measures, such as flood control infrastructure (weirs, detention basins, dams, seawalls, drainage canals) improved building standards (freeboard, stronger standards for doors and windows), and green infrastructure (rain gardens, bioswales, restored coastal habitats, pervious pavers).
- Work with local advocacy groups, non-profits, ISDs, and municipal departments to educate the public about risk and mitigation measures throughout the year. Employ engagement strategies during community planned events unrelated to disaster and emergency management. The key is to make preparedness an everyday action, rather than a once-a-year activity.
- Put on education workshops that go over all the different types of insurance, what they cover, and the importance of insurance coverage for disaster recovery.
- Set a monitoring meeting, once or twice a year to check on progress of implementation. Each meeting should identify upcoming projects and programs and take time to recheck relationships.

This housing recovery plan should be developed in collaboration with local government agencies, non-profitorganizations, community stakeholders, and emergency management teams. It should be adaptable to various types of disasters while prioritizing the safety and well-being of affected individuals and community.

Debris Management:

Debris on private property is not reimbursable under the Public Assistance Program (PA). However, when there is enough debris on private property to threaten public health and safety or economic recovery, FEMA may provide PA funding for debris removal from private property. The debris removal must be deemed to be in the public interest, not to benefit individuals or limited groups of individuals within impacted communities. In these cases, FEMA works with State, territorial or local government agencies to designate specific areas where debris removal

from private property, including private waterways, is eligible.[1]

Casitas Los Olmos:

A development of 80 units in one-, two-, three- and four-bedroom formations, in the heart of Raymondville. Community Development Corporation of Brownsville (CDCB), bcWorkshop and the Low-Income Housing Tax Credit (LIHTC) program was used to fund part of this development. Units were set aside from households that earn less than 50-60% of the area median income. This development offers innovative and sustainable living options by providing a walkable atmosphere with stormwater drainage and water quality considerations incorporated into the landscape design.

Resident Engagement & Education:

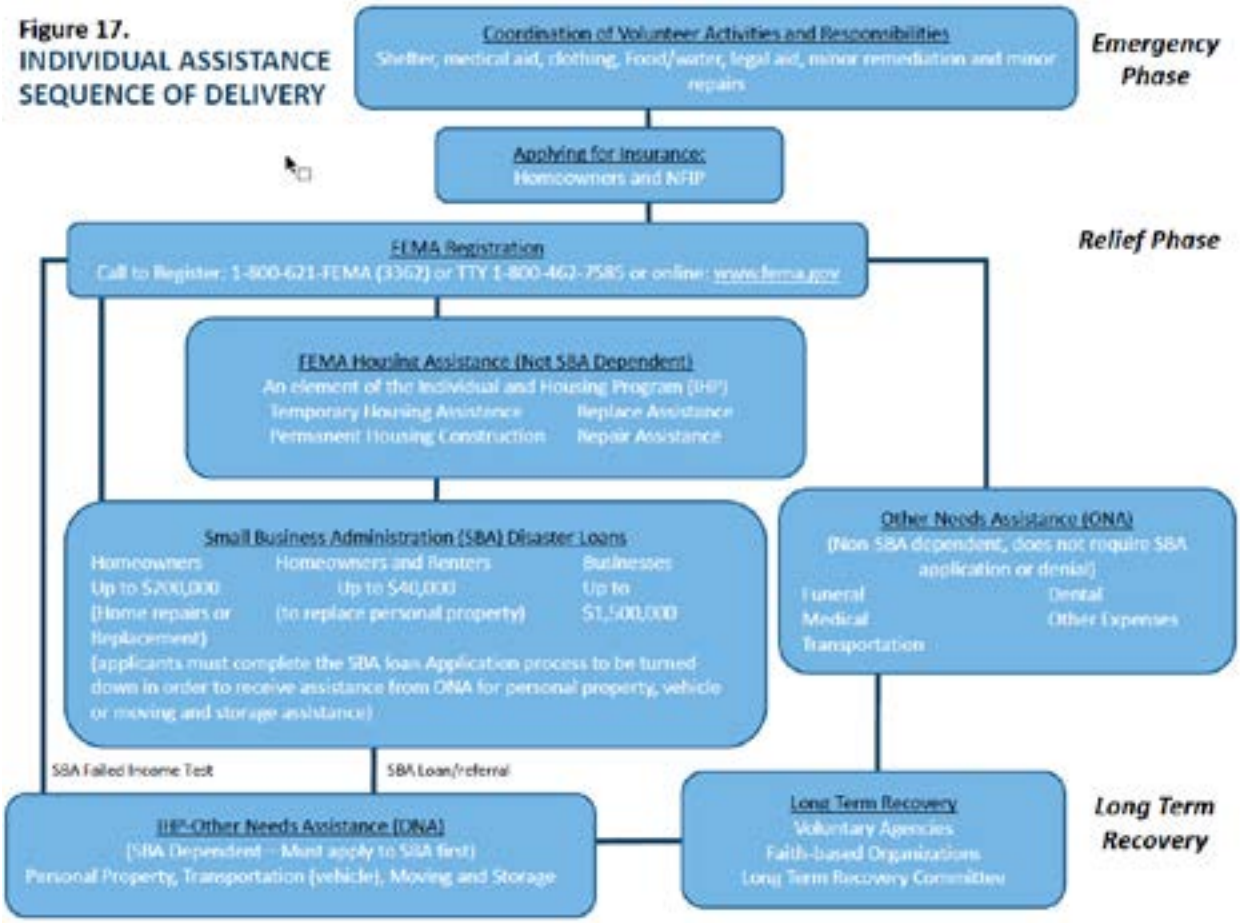
Disaster recovery, including damage assessment and recovery funding, and eligibility requirements may depend heavily on state and federal agency policies. Residents, business owners, and other local and regional stakeholders, however, offer an important perspective on community needs and how feasible recommended strategies are for a successful recovery. Public meetings or events to relay information on protecting life and property should be held throughout the year as part of any community outreach and education efforts. County and municipal staff

1 FEMA. Fact Sheet for Disaster Recovery. September, 2017

should review evacuation routes, share locations of flood zones, highlight areas at risk for flooding, provide a database of community resources, and communicate importance of flood insurance with the public on an annual basis. Between April and June of each year, countywide disaster preparedness and recovery fairs may help key stakeholders to disseminate important information on risk mitigation and safety before, during, and after a disaster.

Recovery Diagram:

The process for individuals to seek out relief after a disaster is outlined in Figure X. The diagram is broken into three phases: Emergency Phase is the immediate aftermath of the disaster event, the Relief Phase is the months following, and Long Term Recovery Phase is six months to one year after an event.



Program Support

A range of partners can aid with home rebuilding and repairs following a disaster. The table below lists some, but not all, possible recovery partners and the type of housing recovery support they offer.

	Repair Exist-ing Rental	Repair Existing Homes	Repair Existing Multi-F	New Rental 2F-TH	New Homes for Sale	New Apts	Elevate	IA: Down Pymt Mortgage Counseling
Case Work-ers	X	X	X	X	X	X	X	X
Private Builders				X	X	X		
FEMA/GLO/ COG	X		X				X	
TDHCA	X	X	X	X	X			X

HUD/CD-BG-DR	X	X	X	X	X	X	X	X
SBA		X				X		X
Rebuild TX Fund				X	X	X	X	X
USDA				X	X			X
Nonprofits		X			X		X	X
TSAHC				X	X			X
CBDRG		X					X	X
Banks-CRA	X	X	X	X	X	X	X	X

The U.S. Department of Agriculture (USDA) Rural Development Program (RDP) offers loans, grants, and loan guarantees to support economic development and housing security in rural communities through technical assistance for agricultural producers and cooperatives to improve the operational efficiency post-disaster. The RDP program may also expand access to high-speed internet, improve electric and transportation infrastructure, and support foundational programs for healthcare, housing, education, and other essential resources. [2] In Willacy County, agriculture is a primarily agricultural economy and as such, may benefit from USDA assistance through the RDP or other programs.

Program	Eligible	Type	Uses
Single Family loans- Section 502	Family/Individuals	Direct Loans	Repair or Rehab permanent residence. Buy or build improve
Single Family Loans- Section 502	USDA Approved Lenders	Loan Guarantees	Purchase new or existing home for permanent residence
Single Family Home Repairs- Section 504	Homeowners, 62-yr +	Direct Loans and Grants	Repair or replace: roof, heating, structural repair, water/sewer connect fees etc.
Mutual Self-Help Housing- Section 502	Family/Individuals	Direct Loans	Construction of a new home
Mutual Self-Help Housing- Section 502	Non-profits/public bodies	Grants	Technical assistance for groups to help build each other homes
Multi-family Rental Housing- Section 515	Individuals, Non-profit	Direct Loans	New construction & rehab of existing multi-family
Multi-Family Rental Housing- Section 538	Individuals, Partnerships, LLC, State & Local Agencies	Loan Guarantees	New construction, permanent loan or substantial rehab of multi-family rental
Housing Preservation Grants- Section 553	Public bodies and Non-profit	Grants	Finances for repair and rehab of single family and small rental properties

Recommendations:

Review/Adoption of codes

- Review thresholds for requiring permits for emergency roof or window repair.
- Allow a general permit program to streamline emergency repairs.

2 USDA. Rural Development Programs. About RD | Rural Development (usda.gov)

- Encourage infill development to equip empty lots with access to electricity and water.
- Amend zoning regulations to allow for permitted builds like duplexs, triplex, four-plex, townhomes and DADU/ADU
- Develop programs for education. Education programs at least twice annually to inform residents about home retrofit options
- Offer non-profit housing repair assistance programs.
- Compile list of vetted local or regional contractors.
- Adopt an Inclusionary Zoning Ordinance that ties affordable housing to market rate housing, usually requiring a specific share of each unit type within the same development.
- Provide incentives promoting affordable unit development:
    - Streamline the development process,
    - Parking reductions.
    - Tax abatements, and
    - Reduce development fees for a short time =post-disaster when recovery funds are received.
- Allow smaller lots or infill on existing lots with Detached Accessory Dwelling Unit
- Tax Increment Financing: estimate future tax revenues and borrowing against these revenues.
- Structural Insulated Panels: allow the use of modular walls, built off-site and assembled on-site. Modular walls can be used for both the interior and exterior of a structure and can improve buildings' energy efficiency.

CHAPTER FIVE | COMMUNITY EDUCATION AND ENGAGEMENT

Building a Culture of Preparedness

The goals and recommendations outlined in this chapter cannot be achieved without the support of the stakeholders and residents that work, live, and play in the county. A number of stakeholders participated in the completion of this report and provided insight into existing information networks, community events and how to build trust. Public engagement in regard to disaster planning and recovery is effective if it is a consistent and ongoing conversation between residents and decision makers. There are opportunities to educate and inform at every community event by building coalitions and sharing the load across different organizations. Messaging needs to be concise and consistent across all jurisdictions in Willacy.

The following elements are outlined in this chapter to guide the community in strategies to educate and genuinely engage with the public to build overall community resilience. Those elements include:

1) Mapping a prioritization of stakeholders.
2) Outline of roles and responsibilities.
3) Strategies and tactics for engaging different stakeholder groups.
4) Governance structure for measuring progress, monitoring risk, and reporting.

The engagement goals for this guide will align with goals outline in chapter 1 and are aimed at identifying the resources and pathways to build community resilience for the future of Willacy County.

1) Consistent and maintained engagement of decision makers and community champions that identifies community needs and prioritizes projects and programs for funding.
2) Facilitation of informational brochures available to the public as well as working to upload and maintain important public details about housing and risk on county and city websites.
3) Development and implementation of engagement best practices to ensure transparent, continuous two-way communication between elected officials, decision makers and the public.
4) Co-create a consistent and strong message for all the communities within the county to convey to residents and across jurisdictional boundaries.

Picture taken during the August 31, 2023 CHARM workshop with Texas A&M AgriLife Extension Program Texas Community Watershed Partners. County Officials and Staff look over a tabletop map to provide input on housing.

Effective engagement with the community is consistent and happens every year. The conveyance of information should happen at all types of meetings and events to build best practices into the fabric of the community. Over the course of a year, Willacy County and its communities host a variety of events that are great opportunities for decision makers to engage with residents and build strong relationships and trust. The following section outlines numerous partners and programs ongoing in and around Willacy County. The county could benefit from an assessment of recurring activities in the county to understand what kind of messaging and education can be incorporated.

Small, rural communities can be tough to break through and start to build trust but utilizing networks that they already trust can be a catalyst for creating those bridges. Organizations below have a history of working with residents and different stakeholder groups in the county. A process of stakeholder mapping that involves first, identifying all the organizations and working stakeholders in the county, narrowing the list down to focus on certain aspects. The following groups all play some role or provide resources in housing and/or disaster recovery.

Local Partners

A number of organizations provide support for homeowners and renters through financing support, homebuying guidance, repair/rebuilds or acquiring a lot to rebuild a new unit. It is overwhelming and difficult to navigate the real estate sector but there are support systems in place to help. The county and municipalities should become familiar with and get to know organizations and non-profits that are dedicated to this type of work and operating within the county limits.

Housing

Willacy County Housing Authority:

The Housing Authority in Willacy County was established in 1949 to provide decent, safe, and sanitary housing for residents. Currently, the WCHA provides 108 affordable housing apartments and homes for rent and manages the choice voucher program. This program is more of a property management organization but can provide important resources for the community.

Come Dream, Come Build (CDCB):

Previously known as the Community Development Corporation of Brownsville, but is now known as *Come Dream Come Build*. This non-profit community housing development organization that provides affordable, sustainable housing opportunities throughout the Lower Rio Grande Valley through collaborative partnerships. 12 community-based board of directors volunteer their time to determine policy around issues of model financing, efficient home design and superior construction.

Building Community Workshop (bcWorkshop):

Texas based nonprofit community design center seeking to improve the livability and viability of communities through the practice of thoughtful design and making. They undertake a unique approach to community engagement, building trust through collaborative design work, educational activities, and utilizing social media channels to reach a broad segment of the population. They have an office in Brownsville that was opened in 2011.

Economic

Port Mansfield Chamber of Commerce:

Developing community-based initiatives to improve and enhance the quality of life for Port Mansfield by promoting local businesses, tourism, recreation, and economic development. The serve as a resource for local businesses and help to plan new community events that highlight the unique character of the city.

The chamber has an event center with kitchen where they can host different events. Many fishing tournaments are held here that bring in thousand of participants and spectators from all over.

Raymondville Chamber of Commerce:

Organization dedicated to attracting new businesses, promoting existing ones, promoting tourism, and assisting in economic development in Raymondville and Willacy County. They offer events that help with training. They can also help with marketing campaigns to draw in tourism, particularly after a disaster.

City of Raymondville Economic Development Corporation:

Help existing businesses in Willacy County to remain successful, foster local entrepreneurship through funding programs, and recruit new industry and businesses. This organization runs the Raymondville Rural Technical Center & Small Business Incubator Center that support up and coming entrepreneurs and provide access to technology.

Raymondville Workforce Solutions:

Provides employment, training and supportive services that help individuals gain employment and become self-sufficient. Programs include Workforce Investment Act (WIA), Work Experience Program, WIA Individual Classroom training referral program, WIA On-the-Job Training, and Job Development Activities.

Rio Grande Valley LEAD:

A Nonprofit facilitating partnerships between education and industry, supporting students to be college and career ready so they can enter the workforce. They focus on developing the intellectual capacity of people in Cameron, Hidalgo, and Willacy counties to strengthen workers capabilities to service the population. They do this through fundraising, scholarships, and mentorships for students and local teachers.

Regional/Annual Events in Willacy County:

- Port Mansfield Harbor Market Days: Monthly event organized by the Port Mansfield Chamber of Commerce with fresh food, vendors, live music and activities for families. This event showcases the waterfront and offerings of Port Mansfield. Event could be utilized for education and engagement purposes as well.
- Banquet/Gala de l'Ordre de la Chambre
- Grand Openings and Ribbon Cuttings
- Training of New Teachers (participates by welcoming new teachers and providing info)
- Golf Tournament in Winter in Texas
- Each month, we host a networking breakfast.
- 4th of July Parade & Celebration
- Parade de Noel Annual
- Festival de la nature et de la culture "Wild in Willacy"
- Tree Lighting at Christmas
- Mini conference on H.E.E.L.S.
    - Market Days
    - Willacy County heritage Gala
    - Live Stock Show
    - "Welcome Back Winter Texan" BBQ dinner
- Christmas Tree Lighting

Community Based Organizations

Food Bank of Rio Grande Valley, Inc.:

Services Cameron, Hidalgo and Willacy counties and is a proud member of Feeding America and Feeding Texas. They provide food assistance, nutrition education and access to community services.

Communities Against Substance Abuse:

Bring awareness to and combat substance abuse among youth in Willacy County. The organization teams up with the school districts to educate counselors on what to look for and how they can recognize signs of addiction. The hold various events in the community and organize a back to school drive annually to gather supplies for students.

Loaves and Fishes:

Full-service shelter that helps community by providing hot meals, family emergency assistance with utilities and rent, basic health and wellness education and services, temporary housing assistance for homeless individuals, and offers courses for education and job assistance.

Raymondville Facebook Sales:

A Facebook page for information about small businesses in Raymondville. One individual started this page to highlight and promote local spots in Willacy County.

Willacy County Coastal Literacy Program and Resource Center:

Willacy County Coastal Land Resource Center, built in 2017 under a project initiative funded by US Fish & Wildlife, works to promote ecotourism and fishing, as well as to hone partnerships with the public, local businesses, community conservation groups, and academic and research institutions.

Texas A&M AgriLife Extension Program in Willacy County:

Willacy County Extension Office is located in Raymondville and works with the public to educate them about science, technical processes and products that have been developed and tested through rigorous scientific research. This program is a statewide educational agency and member of the Texas A&M University system that is also uniquely linked to the United States Department of Agriculture Cooperative Extension System. The county governments employ and house AgriLife staff for the purpose of providing programing and resources to residents. The program puts out resources and information related to agriculture, health and wellness, community and economic development, emergency preparedness, and youth education and development. In 2021, the cooperative extension staff worked with county commissioners, county judge and business owners to release information related to hurricane season preparedness. AgriLife extended invitations to KRGV meteorologist.

Healthy People of Willacy County: AgriLife

Comprehensive effort put forth from Texas A&M AgriLife Extension Service and Texas A&M University Science Center to educate and build a healthier population. The offer education for the public on healthy food preparation, encouraging regular physical activities and resources for preventing diabetes, asthma, and infectious disease. Partnership with local community partners, clinics, and hospitals to reach a variety of community members.

Regional/External Partners

Housing

Habitat for Humanity:

Active in the Rio Grande Valley since 1988, HH aids with rebuilding communities following disasters and offering the Habitat's Disaster Risk Reduction and Response Program. This program helps with providing shelter assistance, education, training, and partnerships.

American Red Cross of South Texas:

This chapter of the red cross services Willacy, Cameron and Hidalgo Counties with disaster recovery support. Their website provides information to help prepare for and recover from disasters and manages influx of donations.

Rio Grande Valley Empowerment Zone (RGVEZ):

Communities working together to enhance quality of life through programs and services. They focus on Community youth development and helping victims of crime to recover.

Economic

Regional Small Cities Coalition:

Regional capacity building and information sharing forum for small cities of the RGV to further expand opportunities for economic growth, job creation, infrastructure development and tourism.

Lower Rio Grande Valley Development Council (LRGVDC):

Voluntary association of local governments formed under Texas Law in 1967 as one of Texas' 24 regional Council of Governments (COG's) serving Cameron, Hidalgo, and Willacy County. LRGVDC carries out is vast designated duties and responsibilities through four (4) programmatic departments:

- Community & Economic Development
- Health & Human Services
- Public Safety
- Transportation

Advocacy & Community-Based

Area Agency on Aging

As part of Texas Health and Human Services and the Lower Rio Grande Valley Development Council, this agency coordinates services for people 60 years of age and older and their family. Health coaching, medication management, case management, and information for informal caregivers are examples of services provided.

It's Time Texas

This organization hosts many programs, events, and partnerships to empower "Texans to lead healthier lives, build healthier communities, and contribute to a healthier state."23 It's Time Texas has resources for many community sectors including schools, businesses, individuals, and organizations.

American Legion:

Organization aimed at enhancing the well-being of America's veterans, their families, military and communities. Locations are used to set up youth programs, raise awareness on local issues, raise money for causes and emergency funds.

Raymondville Lions Club:

Lions Clubs are community volunteer groups that work together to make their communities a better place through leadership, community support and service. The are active in a number of community causes and can be a great liaison when working with the public. This chapter meets every other week in Raymondville.

Willacy County Veterans Office L. Najera VCSO:

County department that aids veterans and dependents. They provide advice regarding education, medical and home loans and serve as a liaison between the Veterans Administration.

Rotary Club of Willacy County:

An organization dedicated to promoting local business, organizing youth activities, fundraising for different health initiatives, and volunteering services around the community. There is also a Disaster Emergency Preparedness, Relief and Recovery Plan for their work helping with disaster relief.

Education

The Rio Grande Valley is home to a number of renowned educational institutes, offering programs, certificates and degrees for a broad range of blue-collar and white-collar jobs. Educational institutes offer a great opportunity to engage with the community and students in a meaningful way on a variety of topics. Willacy County should explore prospects to open communication with educational institution leadership and staff to learn about their research and programs available for the community. Many institutions that are research based will conduct research in their own backyard, research that can help support data gaps and uncover important information. The following list includes education institutions from the whole Valley region.

Universities:

- University of Texas-Rio Grande Valley (various campuses)
- Regional Christian University
- Texas A&M University
- University of Houston- RGV

Colleges:

- Rio Grande Valley College
- South Texas College
- The College of Health Care Professions
- Texas Southmost College
- Texas State Technical College- Harlingen

Institutions:

- Valley Grande Institute
- Southern Careers Institute, Inc.

Willacy County ISDs:

- Lyford Consolidated Independent School District
- Lasara Independent School District
- Raymondville Independent School District
- San Perlita Independent School District

Disaster Recovery

American Red Cross of South Texas:

This chapter of the Red Cross serves seven counties: Jim Hogg, Brooks, Kennedy, Willacy, Cameron, Hidalgo, and Starr County. They help Valley residents prevent, prepare for and respond to emergencies. They arrive onsite to support day-to-day activities in shelters including reception, registration, feeding, providing information and resources. They can also aid with hands on medical care.

Texas A&M Engineering Extension Service (TEEX):

In partnership with FEMA and the National Emergency Response and Recovery Training Center, has a number of training courses and workshops for emergency responders, senior officials, public works staff, and medical personnel. These courses are developed and led by trained and experienced homeland security experts. Courses cover a wide range of topics focused in Awareness, Performance, and Management and Planning.

- Awareness courses are “designed to gain skills necessary to recognize and report a potential catastrophic event.”
- Performance courses are “for first responders who perform tasks during the initial response to a catastrophic incident.”
- Management and Planning courses are created “for leaders responsible for their communities’ preparedness, response and recovery capabilities.”

Team Rubicon:

Veteran-led humanitarian organization that services global communities before, during and after a disaster. They organize and employ volunteers across the country, and the world, to respond to disaster and help get communities back to functioning level. They have been active in this region for previous floods. Leadership should set up a meeting with Team Rubicon to ask about their services and understand how the operate after a storm.

Faith-based Organizations

The faith-based organizations in Willacy County are highly valued by the citizens, as expressed in the 2021 Countywide Comprehensive Plan. A total of 33 religious facilities are spread across the county including 21 in Raymondville, seven in Lyford, two is Sebastian, two in Lasara and one in Port Mansfield. Their roles cannot be overstated as they contribute major roles in transportation, community facilities and the economic sectors of the county. An open line of communications will be key to understanding what services a church may provide in the event of a disaster. The county should set up a meeting with groups around the county and maintain a database of services offered.

Faith-based organizations located in Willacy County include:

1) First United Methodist Church
    - Lyford
    - Raymondville
2) First Baptist
    - Lyford
    - Raymondville
    - Iglesia Bautista Lasara
3) Catholic Diocese
4) Mennonite Disaster Service (MDS):
    - This organization is a collaboration of Anabaptist churches that respond to and help communities with recovery after natural and man-made disasters. They cooperate with other faith-based organizations, local recovery groups and agencies to lend skills and labor for rebuilding and restoring communities to before disaster status. They were active in the wake of the June 2018 floods with clean-up and restoration work.
5) Church of Jesus Christ of Latter-Day Saints
6) First Assembly of God Church
7) Trinity Fellowship Church
8) Cross Church- Raymondville
9) St. Patrick's Catholic Church
10) Galvan Revival Church
11) El Tiemplo Consolador
12) St. Monica Catholic Church
13) Arroyo Baptist Chapel
14) Life Tabernacle
15) Texas Baptist Men (TBM): This group provides a range of assistance for communities that have been affected by hurricanes, tornadoes, and shootings. They help clean up, do damage assessments, supply, and distribute food, install temporary roofs and childcare assistance. They worked closely with Willacy County after the 2019 floods by helping to restore homes, prepare meals, distribute supplies to families and provide access to showers. These are key aspects after a disaster that can make a world of difference to survivors.

U.S. Census Bureau:

Mission to serve as the nation's leading provider of quality data about its people and economy. The data collected is applied for future planning, tax rates and investment in areas. This data is used by communities, organizations, and non-profits across the country to make informed decisions.

Building Strong Relationships

Meeting the public where they actually go is a great way to engage and avoid stakeholder burnout. Street festivals can be an opportunity to set up a table and provide brochures and visuals. The county should reach out to new groups and organizations that organize events to see how educational components can be incorporated. When holding events, making sure to show appreciation for people's time but providing food. The Mayor of San Perlita holds an annual event to

Making sure to include food and work closely with the food bank when trying to invite the public to an event.

San Perlita Fire Department: Annual Fall event- Cookoff- have different vendors. Mayor distributes new information.

Rebar Memorial Library:

Provides support to community through access to computing and internet services, adult education programs.

HEB:

Texas-based grocery store that offers Texas-based products such as produce, deli/prepared foods, pharmacy, meat, and seafood. During times of crisis, HEB's have been crucial to providing supplies and relief in the aftermath of an event. They can offer financial support, emergency supplies, drinking water, and food. Willacy has one HEB store and should develop a relationship with leadership and think about incorporating them into the emergency operations procedures.

Collaborating with Local ISDs:

Through public engagement, it was apparent how important local ISDs are to the community, particular with conveying information. **Map X** shows the number of school systems across the county, at least one in every major urbanized area. These systems are crucial to conveying important information out to the community, particularly families with young children. Building a strong relationship that involves consistent communication can lead to an increase in awareness campaigns surrounding different topics including public health, disaster preparedness and available resources. Local municipalities and the county should meet annually to establish agreements and consider how programming can be co-created to reach the public.

Ecotourism:

Ecotourism is a modern concept of traveling to different regions to enjoy the natural resource offerings. With only about 7-8% of the county designated as urban, Willacy has vast offerings of outdoor tourism activities. Port Mansfield is known as a fishing oasis and puts on numerous festivals and tournaments throughout the year that attract thousands of visitors. The county's location along a major bird migration route makes it not only a must see for bird enthusiast, but anyone fascinated by the air-born creatures. The vast rural area also fosters consistent hunting activities throughout the year. Willacy is a gateway that connects the Valley to the rest of Texas and could utilize these existing networks to draw in more visitors.

Voluntourism:

In the wake of powerful storms like Katrina, Harvey and Ida, a new industry started rising up, created by individuals that travel to offer volunteer support for communities after a disaster. In the aftermath of Harvey, the Rockport Chamber of Commerce market opportunities for non-profit and business groups to come in for a few days and help build homes, clean up debris or sort donations as a way to see a new place while all supporting community recovery. Thousands of volunteers traveled through Aransas County after Harvey and helped the community get back to a functioning level. The local Chamber of Commerce, and Economic Development Corps. can be utilized to help market this concept out after an event that require support in the form of manpower. The county and municipalities can set up meetings with these organizations to come to an agreement.

Communication:

The most important system to have in place before, during and after a disaster is multiple forms of communications. The county can partner with advocacy and community groups to deseminate information about reverse alert systems and other forms of communication that will be utilized during a disaster event. The ISDs can pass along flyers and information in both Spanish and English about these systems, and an information booth can be set up at community events to pass along resources. The more individuals are signed up for and aware of these systems, the more the county and municipalities can communicate important information about flash flooding, road closures, spills, public health warnings and a host of other issues.

Recommendations:

A number of educational resources can be created and disseminated through schools, organizations and events. Local university groups may have research opportunities or work share programs to contract work from students. Incorporate risk awareness and education into other community focused events (festivals, farmers market, school sporting events).

Create a "What's my Risk" brochure that includes all the hazards and information regarding flood zones, evacuation routes, and wind zones. This resource should include website and other resources residents can seek out to get

more information. Translated in both Spanish and English.

Create an informational brochure for new residents with basics about weather, evacuation, community resources. South Texas is a different environment and region than where most expats come from. Disseminate through chamber of commerce, welcome centers, real estate offices and economic development corporation.

Identify those groups and establish an annual check in meeting and adopt a response plan with agreements.

A	Community Outreach and Engagement
B	Disaster Relief ($$)
C	Disaster Response
D	Disaster Education
E	Shelter?
F	Repair/Rehabatation
G	New Build/Rebuild
H	Home Buying Guidance
I	Home Financing
J	Business Financing
K	Rent/Utility Support
L	Food Assistance
M	Grant/low interest loan
N	Job Training/Career Development
O	Youth Education
P	Elder Care/Support Programs
Q	Tourism
R	Data Access
S	Economic Development
T	Marketing/Recruiting
U	Public Health

Table 5.3 Services Offered by Community Organizations

Name of Org:	Online Resource:	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
Willacy County Housing Authority	Willacy County Housing Authority (willacycountyha.com)	X																				
Come Dream Come Build (CDCB)	Home (cdcb.org)	X																				
Building Community Workshop (bcWorkshop)	[bc] (bcworkshop.org)	X																				
Advocacies, Non-profits, Local Business																						
Food Bank of Rio Grande Valley, Inc.	Who We Are - Food Bank of Rio Grande Valley (foodbankrgv.com)	X											X									
Loaves & Fishes	How We Help - Loaves & Fishes of the Rio Grande Valley (lfrgv.org)	X										X	X									
Communities Against Substance Abuse (CASA)	bhsst.org	X														X						
Willacy County Coastal Literacy Program and Resource Center		X													X	X		X	X			
Texas A&M AgriLife Extension program	Willacy County - Texas A&M Agrilife Extension Service (tamu.edu)	X		X (DAR)	X										X	X				X	X	
Area Agency on Aging	https://txregionalcouncil.org/agencies-on-aging/area-agency-on-aging-of-the-lower-rio-grande-valley/#:~:text=It%20is%20the%20representative%20agency%20of%20the%20Texas,years%20of%20age%20and%20older%20and%20their%20family.	X															X					X
It's Time Texas		X											X									X
American Legion				X												X	X				X	
Raymondville Lions Club				X												X	X				X	
Willacy County Veterans Office L. Nejera VCSO		X			X												X					
Rotary Club of Willacy County		X	X	X	X											X		X		X		
HEB Grocery Store		X	X										X		X					X		X
Economic Development																						
Port Mansfield Chamber of Commerce		X									X							X		X	X	
Raymondville Chamber of Commerce		X									X							X		X	X	
City of Raymondville Economic Development Corp		X													X					X	X	
Raymondville Workforce Solutions		X													X	X					X	
Rio Grande Valley LEAD		X													X	X						
Raymondville Facebook Sales		X																			X	
Regional Small Cities		X													X	X		X		X		
Lower Rio Grande Valley Development Council		X			X										X			X	X	X	X	X
Disaster Response/Recovery																						
Habitat for Humanity		X					X	X	X	X				X								
American Red Cross of South Texas		X		X	X		X						X									X
Rio Grande Valley Empowerment Zone		X														X						
Texas A&M Engineering Extension Service (TEEX)		X		X	X										X	X						X
Team Rubicon		X		X	X		X	X								X						
Faith-based																						
First United Methodist				X			X															
First baptist				X			X															
Mennonite Disaster Service (MDS)							X															
Texas Baptist Men																						
Church of Jesus Christ of Latter-Day Saints																						
First Assembly of God Church																						
Trinity Fellowship Church																						
Cross Church- Raymondville																						
St. Patrick's Catholic Church																						
Galvan Revival Church																						
El Tiemplo Consolador																						
St. Monica Catholic Church																						
Arroyo Baptist Chapel																						
Life Tabernacle																						
Catholic Dioceses																						

CHAPTER SIX | STRATEGIC FUNDING

Funding to Implement

The guide outlines risks and recommendations to address. The final section focuses on where Willacy County should seek and strategically target Federal and other funding opportunities to pursue, receive and make effective use of available funding before and following a disaster.

Program Name	Agency	Description	Amount
Federal Funding Sources			
EDA Grant	U.S. Economic Development Admin	EDA's role in disaster recovery is to facilitate the delivery of Federal economic development assistance to support long-term community economic recovery planning and project implementation, redevelopment, and resiliency.	Total Disbursed: $587 million
Public Assistance	Dept. of Homeland Security- FEMA	Provides funds to assist communities responding to and recovering from major disasters or emergencies declared by the President. PA provides grants to state, tribal, territorial, and local governments and certain types of PNP organizations so that communities can receive assistance for debris removal, life-saving emergency protective measures, and the repair, replacement, or restoration of disaster-damaged publicly owned facilities, and the facilities of certain PNP organizations.	Federal/Local 75%/25%
Hazard Mitigation Grant Program	Dept. of Homeland Security- FEMA	Provides funding for long-term public assistance mitigation measures following major disaster declarations. Funding is available to implement projects in accordance with State, Tribal and local Priorities.	
Community Development Loan Program	Dept. of Homeland Security - FEMA	Helps communities impacted by disasters obtain funds to maintain essential municipal operations. Loans are based on need and shall not exceed 1) cumulative estimated revenue loss for the fiscal year or 25% of approved operating budget, 2) If the estimated revenue loss is at least 75% of the government's operating budget, the loan may be 50% of the local government's operating budget.	Max Amount: $ 5 million per gov. entity
Community Development Block Grant-Disaster Recovery	Housing and Urban Development	Appropriated funds from Congress after a Presidential Disaster have been declared, delegated to HUD. Funds go towards unmet needs pertaining to disaster relief, long term recovery, restoration of infrastructure, housing, and economic revitalization.	Appropriated to TX: $ 5 billion
USDA Loans	U.S. Dept. of Agriculture	Gap loan funding to help communities and homeowner's recovery. This can be in the form of home repairs, loss wages due to a disaster, financial relief to small businesses.	
Coastal Habitat Restoration and Resilience for Underserved Communities	U.S. Dept. of Commerce - NOAA	NOAA will engage underserved communities in habitat restoration activities that promote resilient ecosystems and communities. It will provide the capacity for these communities to participate in developing future transformational habitat projects more fully.	
Transformational Habitat Restoration and Coastal Resilience Grants	U.S. Dept. of Commerce- NOAA	This funding will prioritize habitat restoration actions that rebuild productive and sustainable fisheries, contribute to the recovery and conservation of threatened and endangered species, use natural infrastructure to reduce damage from flooding and storms, promote resilient ecosystems and communities, and yield socioeconomic benefits.	
National Coastal Resilience Fund	U.S. Dept. of Commerce - NOAA	Restore, increase, and strengthen natural infrastructure to protect communities while also enhancing habitats for fish and wildlife.	
Promoting Resilient Operations for Transformative, Efficient, and Cost Saving Transportation (PROTECT)	U.S. Dept. of Transportation	This includes funding for evacuation routes, coastal resilience, making existing infrastructure more resilient, or efforts to move infrastructure to nearby locations not continuously impacted by extreme weather and natural disasters.	

Program Name	Agency	Description	Amount
Gulf Environmental Benefit Fund	National Fish and Wildlife Foundation (NFWF)	GEBF funds are awarded to state and local organizations with boots on the ground, boats in the water, and expertise on-hand to implement projects with immediate and long-term benefits to Gulf Coast natural resources. projects to conserve and enhance coastal habitats, restore beach and dune habitats, protect habitats important to coastal bird species, enhance commercial and recreational fisheries, and increase the capacity of networks to respond to mass stranding events benefiting marine mammals and sea turtles.	
Ocean Technology Transition Project	U.S. Dept. of Commerce - NOAA	A national and regional partnership working to provide ocean, coastal and Great Lakes observations, data, tools, and forecasts to improve safety, enhance the economy, and protect our environment	
State Funding Sources			
Texas Coastal Management Program	Texas General Land Office	Federal Coastal Zone Management Act funds to state and local entities to implement projects and program activities for coastal management. Projects fall under categories of; coastal natural hazards response, critical areas enhancement, public access, waterfront revitalization and ecotourism development, permit streamlining/assistance, governmental coordination and local government planning assistance, water sediment quantity and quality improvements.	Annual: $2.2 million
Coastal Erosion Planning Response Act	Texas General Land Office	Applications considered for funding include studies and projects intended to address habitat restoration, coastal erosion, mitigate the effect of coastal erosion, or maintain or enhance beach stability or width.	
Resilient Communities Program	Texas General Land Office	The Resilient Communities Program will fund the development, adoption, and implementation of modern and resilient building codes and flood damage prevention ordinances to ensure that structures built within the community can withstand future hazards.	
Regional Mitigation Program	Texas General Land Office	Councils of Governments (COG) will develop a local Method of Distribution (MOD) allocating CDBG-MIT funds to eligible entities. HUD Approved MODs Coastal Bend; Central Texas; Deep East Texas; Houston-Galveston Area Council Southeast Texas RPC	
Texas Capital Fund	TX Dept. of Agriculture	Supports rural business development, retention, and expansion by providing funds for public infrastructure, real estate development or eliminate deteriorating conditions in communities. Donations from private individuals to assist farmers and ranchers to rebuild fences, restore operations etc.	
Dislocated Worker	U.S. Dept of Labor	Projects to support Texas Workers after Hurricane Harvey through projects relating to 1) disaster relief employment in a disaster area and 2) assistance to the substantial number of workers who were forced to relocate from an area due to a disaster.	Total: $10 million
Neighborhood Stabilization Program	Texas Dept. of Housing and Community Development	NSP single-family and multifamily activities will include the establishment of financing mechanisms for purchase and redevelopment of foreclosed homes and residential properties, purchase and rehabilitation of homes and residential properties that have been abandoned or foreclosed, establishment of land bank/trusts, removal of blight, and the redevelopment of demolished or vacant properties.	Texas Action Plan to distribute and use $91 million

Program Name	Agency	Description	Amount
Homeowner Reconstruction Assistance	Texas Dept. of Housing and Community Development	Funds projects related to: • Reconstruction of owner-occupied housing on the same site; • New Construction of site-built housing on the same site to replace an existing owner occupied Manufactured Housing Unit (MHU); • Replacement and relocation of existing housing located in a floodplain to a new MHU or New Construction of housing on an alternative site; and • New Construction or a new MHU to replace a housing unit that has become uninhabitable as a result of disaster or condemnation by local government.	
HOME Disaster Relief	Texas Dept. of Housing and Community Development	The Texas HOME Disaster Relief Program is a long-term housing program designed to help eligible organizations serve income eligible households impacted by disasters.	$ 1 Million

APPENDICES

COURSE OF ACTIONS (COAS)

Chapter one outlined the goals of the guide, this section incorporates objectives and action items that will help with implementation. Each goal will have at least one objective followed by course of actions that guide the implementation of the goals. The County will maintain this list and review every year to assess what has been completed and plan for the next year. This is a living document and should be reviewed and updated every five years and/or after a major disaster event.

Planning for Hazards

- **Goal:** Coordinate response and recovery activities across the Willacy County.
  - **Objective:** Establish procedures so all entities in the County align with hazard planning actitivites.
    - **Course of Action:** Establish an annual recurring meeting with county and municipal staff to discuss Hazard Mitigation procedures.
    - **Course of Action:** Consider joining the Community Rating System to get discounts on Insurance for residents.
- **Goal:** Review floodplain ordinance and consider enhancements.
  - **Objective:** Adopt ordinances to protect new development.
    - **Course of Action**: Adopt a No Adverse Impact ordinance to ensure that no new development creates flooding issues for existing developments.
    - **Course of Action**: Consider feasibility of adopting a freeboard standard to elevate homes located in the floodplain.
- **Goal**: Monitor and catalog damage to residential homes.
  - **Objective**: Create a database to track status of housing and make repairs.
    - **Course of Action:** Create a damage assessment database to monitor damage according to NFIP requirements.
    - **Course of Action:** Create and maintain database for Severe Repetitive Loss (SRL) properties, and dilapidated properties..
- **Goal:** Assess utility system risks and create a plan to mitigate.
  - **Objective:** Work with city and county staff to analyze each utility system for vulnerability.
    - **Course of Action**: Develop a checklist and disperse to city and county staff to asssess water, electrical and gas utilities for vulnerability. For example, take a damge assessment and loggin issues after an event.
    - **Course of Action:** Make a database of vulnerabilities and start identifying funding for improvements.
    - **Course of Action:** Weatherize utilizes to withstand extreme temperatures.
    - **Course of Action**: Fill out a “critical infrastructure form” with Power Company

Housing/Subdivision Standards

- **Goal:** Adopt Smart Home America FORTIFIED Standards across the county and communities.
  - **Objective:** Strengthen homes in Willacy County to withstand hazards.
    - **Course of Action:** Reach out to Smart Home America Representatives to learn about standards.
    - **Course of Action**: Hold a meeting with all communities to educate about FORTIFIED standards
- **Goal**: Develop new housing to a higher standard.
  - **Objective**: Set standards to develop homes to withstand high winds, flooding, excessive rain and heat.
    - **Course of Action:** Adotp FORTIFIED building standards
    - **Course of Action:** Elevate homes located in a floodplain or within the coastal hazard home.
    - **Course of Action:** Pass an ordinance that ensures no new development creates flooding issues for the surrounding homes. A "No Adverse Impact" ordinance.
    - **Course of Action**: Adopt the most up to date building codes.
- **Goal:** Update Subdivision Regulations
  - **Objective**: Develop subdivisions standards to guide development.
    - **Course of Action:** Set conservation subdivision standards to ensure proper drainage.
- **Goal:** Conserve existing housing through restoration and rehabilitation
  - **Objective:** Preserve and strengthen housing across the county.
    - **Course of Action**: Identify areas in which technical support and tax or other incentives available from the City will assist owners to maintain or modernize their properties.
- **Goal:** Idenitfy land acquisition and buy-out properties that may alleviate flooding for surrounding areas.
  - **Objective:** Prevent future damage to vulnerable properties
    - **Course of Action**: Explore funding opportunities from FEMA and Texas Division of Emergency Management to buy out land and preserve for drainage.
- **Goal:** Pass ordinance to preserve valuable land.
  - **Objective:** Preserve land for drainage and infiltration.
    - **Course of Action:** Encourage passage of a parkland dedication ordinance.
- **Goal:** Update Subdivision Regulations
  - **Objective**: Creat conservation subdivisions that manage drainage properly.
    - **Course of Action**: Set density standards and open space conservation to ensure infiltration of water.
    - Course of Action: Adopt a tree didication ordinance and set construction standards to preserve trees when developing a new subdivision.

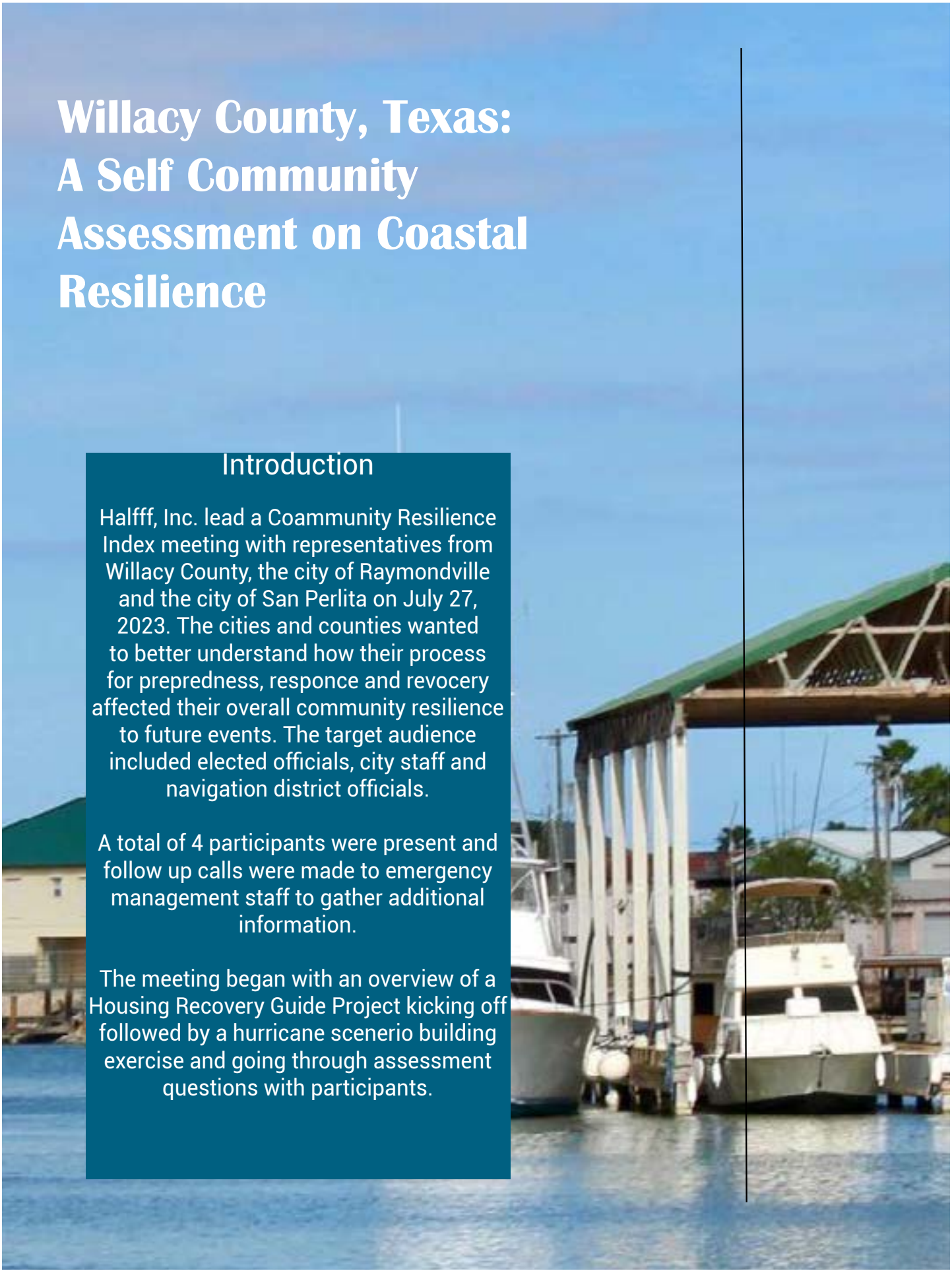
Recovery

- **Goal:** Outline preemptive approach to post-disaster recovery strategy.
  - **Objective**: Set up guidance for all communities that aligns with the County.
    - **Course of Action**: Review the Community Resilience Index with all communities and work on implementing suggestions.
- **Goal:** Establish agreements with organizations that provide community support throughout recovery.
  - **Objective**: Set Memorandoms of Understanding with surrounding communities
    - **Course of Action**: Set up meetings with Cameron and Hidalgo County officials to talk through emergency plans.

Community Outreach

- **Goal:** Host programs to help residents improve and update their homes to withstand hazards.
  - **Objective**: Provide tools and resources to residents to imrpove their homes
    - **Course of Action**: Organize workshops in every community that introduces concepts to improve homes against the elements and risk of hazards.
- **Goal:** Incorporate risk awareness into other social events.
  - **Objective**: Existing community events can be utlized for educational and awareness purposes.
    - **Course of Action**: Partner with nonprofit and community groups to set up at farmers market, festivals and school events.
    - **Course of Action:** Work with educators to icnorporate risk awareness into lesson plans for K-12.
- **Goal:** Make hazard information available to the public.
  - **Objective**: Make resources and information accessible to build a more informed constituent.
    - **Course of Action**: Create a “What’s My Risk?” brochure in English and Spainish.
    - **Course of Action:** Put flood maps on city and county websites so the public can access information and make informed decisions.
- **Goal:** Pursue partnerships with local and state entities to work on education campaigns for the public.
  - **Objective**: Utilize resources to help build a more informed constituent.
    - **Course of Action**: Reach out to Texas Department of Insurance to get a representative to visit and hold workshops to educate the residents about their insurance.

Willacy County, Texas: A Self Community Assessment on Coastal Resilience



Introduction

Halfff, Inc. lead a Coammunity Resilience Index meeting with representatives from Willacy County, the city of Raymondville and the city of San Perlita on July 27, 2023. The cities and counties wanted to better understand how their process for prepredness, responce and revocery affected their overall community resilience to future events. The target audience included elected officials, city staff and navigation district officials.

A total of 4 participants were present and follow up calls were made to emergency management staff to gather additional information.

The meeting began with an overview of a Housing Recovery Guide Project kicking off followed by a hurricane scenerio building exercise and going through assessment questions with participants.

Willacy County, Texas:
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Scenerio Building

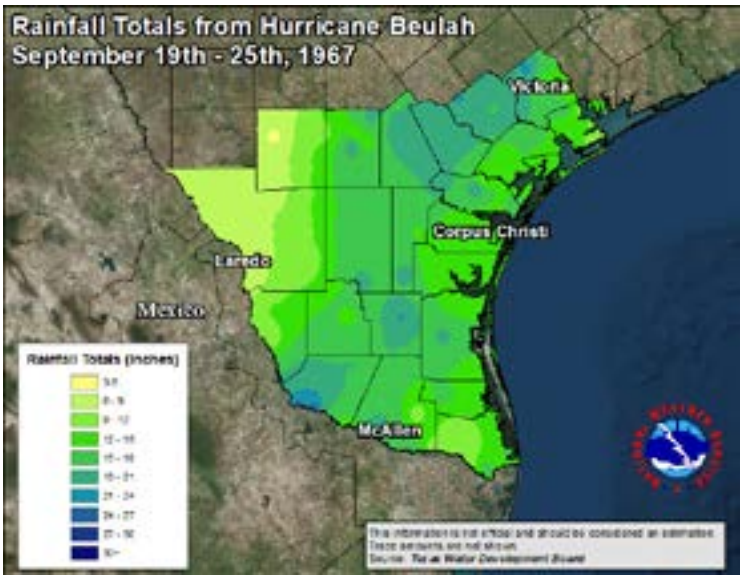
To Kickoff the conversation, Halff worked with the participants to identify a benchmark storm that caused widespread damage to the county. The key was to identfy a storm that participants could remember as to give them an idea of how their city and county systems were affected and if they were up and operational after the storm passed. The factors considered was wind speed, storm speed, total rainfall over a 24-hr period, storm surge level in feet, storm duration, tidal influence and where the storm would make landfall.

Variables	Hurricane Beulah	Hurricane C
Wind Speed at landfall (mph)	160 mph	125 mph
Rainfall (total/24 hrs)	27inches over 36hrs	20 in
Storm Surge (height in feet)	20 feet	25 feet
Direction	Northeast	Northwest
Speed of Movement		7mph
Tidal influence (High or Low)	Low	High
Landfall Location	Port Isabel	South of Port Mansfield

Scenerio 1: Historical Benchmark Storm

Hurricane Beulah served as the benchmark storm for this exercise, with some influence from Hurricane Dolly, a less intense storm but more recent on the timeline. On September 20, 1967, a category 3 hurricane made landfall near Brownsville Texas, with wind speeds up to 136 MPH. The region also experienced between 15-25 inches of rain when Beulah made landfall. The region experienced rainy weather earlier in the summer, which left the ground saturated. Flash flooding occurred in communities across the Texas valley due to saturation and poor drainage conitions.

Hurricane Beulah was responsible for 58 fatalities and over $217 million dollars in damages, which adjusted for inflation is $1.59 billion dollars in 2017 terms. Flooding brought on by torrential rains caused much of the damage.



Scenerio 2: Future Storm with Greater Intensity

Next step involved assessing the benchmark storm and enhancing different aspects to create a future storm with greater intensity. Future storm X will have a wind speed of 125 MPH, 20-25 inches of rain, 10 feet of storm surge with a duration of 10 hours. The tides will be high upon landfall, increasing storm surge heigh and risk for communities near the coast. The storm will make landfall just south of Port Mansfield at the border of Willacy and Cameron counties, putting port Mansfield on the right side of the storm.

Resilience Index Assessment

Willacy County is participating in a pilot project to develop a Housing Recovery Guide that will assist the community with enhancing housing and recover after potential disasters. On July 27th, 2023 Halff representative met with some Willacy County staff to go through the resilience index assessment. Four individuals from the county, city of San Perlita and Raymondville were in attendence. Halff followed up with the county's emergency manager, and the city manager of Port Mansfield at a later date to fill in some knpowledge gaps. The index consists of six sections with yes or no options. Each section was addressed individual and the following list outlines the scores for each section. The focus of this excercie is not on the scores themselves but on understanding the current state of response and recovery in the county and recommendations for improvement. The overall goal is to plan for, and omplement stretgies to reduce loss of life and propoerty and to shorten the time needed for recovery.

1. Critical Infrastructure: Low
2. Transportation Issues: Medium
3. Community Plans and Agreements: Low
4. Mitigation Measures: Medium
5. Business Plans: Medium
6. Social Systems: Medium

Interpreting Resilience Index Results

The Coastal Resilience Index scores are scored using the following definitions:

Low: Community should pay specific attention to this category and make efforts to address the areas of low rating. If the critical infrastructure category received this rating, re-occupation of the community may take more than 18 months before basic services are restored.

Medium: More work can be done to improve the resilience in this category. If the critical infrastructure category received this rating, re-occupation of the community may take less than two months before basic services are restored.

High: Community is well prepared for a storm event with respect to this category.

Based on these definitions, Willacy County received an average Medium rating across all of the categories. Some long term recommendations are outlined as well as low hanging objectives that could be addressed within the next year or two.

Social Systems, Business Plans, Transportation Issues, and Mitigation Measures all received a rating of “Medium", and within these categories there are also opportunities to raise the scores to “High". Training more city staff to obtain their Floodplain Management certification and encouraging City staff to participate in planning organizations such as the American Planning Association, Texas Floodplain Manager's Association, and the Public Works Association are very important steps for enhancing knowledge about response and recovery. The county is currently undergoing a Hazard Mitigation Plan update which is a great opportunity to include lanaguage that addresses natural disasters, and reviewing and updating relationships and agreements with other local communities to assist during a disaster and incorporating nature-based solutions into future in frastructure planning will all increase the scores in these categories.

Areas for Future Action

One to Five Years

1. Adopt the most up to date building codes across all municipalities.
2. Train more staff and certify more floodplain managers.
3. Establish parkland dedication or open space conservation ordinance.
4. Partner with faith-based organizations and non-profits to organize more disaster preparesness fairs and educational opportunities for the public.
5. Work with local faith based organizations (Interfaith, Tri-County Christian, etc.), local civic organizations (Rotary, Club, Kiwanis), and local industry to discuss how they could help Willacy County residents during a natural disaster.
6. Request inventory of Repetitive Loss Structures from FEMA and track.
7. Set up a meeting with county staff, municipal staff, Navigation District and ISDs to assess response plans. Opportunities to coordinate better across the county.

Five to Twenty Years

1. Look into adopting unified development codes across the county to make development after disaster more streamlined.
2. Learn more about and adopt FORTIFIED construction standards for all residential and commercial development.
3. Encourage all municipalities to store their records digitally.
4. Create and adopt a shoreline restoration plan.
5. Apply to the Community Rating System to receive insurance discounts.
6. Look into adopting a “no-adverse impact” ordinance. This will help ensure that new development does not pose flood risk to existing development.