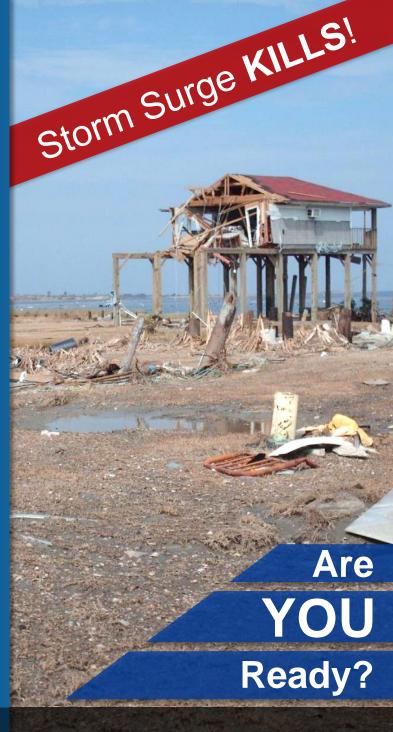


The Official Rio Grande Valley Deep South Texas HURRICANE GUIDE



2023

WEATHER.GOV/RGV

A Letter to Residents



"It Can't Happen Here."

"I Never Thought it Would Be This Bad!"

How many times have these words been uttered by people, before – and sadly after – a major hurricane strike? Unfortunately, far too many times. Each statement is a result of a common human behavioral trait – optimism bias. There are many reasons for optimism bias, but one thread weaves through all of them: hopefulness, instead of readiness. Hopefulness can be based in statistical recency. Those who believe "it can't happen here" will base their reasons on near-misses or close calls over a period of years, if not decades. Others who later thought "it would never be this bad" relied on previous experience with relatively weak hurricanes – or a confidence from experiencing a major hurricane when in reality they were nowhere near the inner eyewall. In 2022, this was the case in southwest and central Florida, where Hurricane lan realized our worst fears of a devastating storm surge and record rainfall. Combined, these water hazards resulted in 66 direct deaths in the state. It did happen there.

The Rio Grande Valley/Deep South Texas region has 21st Century experience with Hurricane strikes – Dolly in 2008 and Hanna in 2020. Dolly and Hanna caused around \$1 billion or more in property and crop damage. Despite the damage, each event – Category 1 (74 to 95 mph) wind, including gusts - may have given many an sense of invincibility. Nothing could be further from the truth. The 1933 Labor Day Hurricane, which we describe on page 17, was much stronger and killed more than two dozen despite the Valley's much lower population and at-risk infrastructure.

There is true hope.

This Guide, along with information at the <u>NOAA Hurricane Preparedness Page</u>, provides critical information from which to build resilience to the wind and water that comes with hurricanes. Resilience is built strengthening buildings and brains – the buildings to withstand the assault of wind and water; the brains to understand how to prepare and how to communicate preparedness to family, friends, neighbors, and strangers. Use this guide to become <u>#hurricanestrong</u>.

I hope you have a safe hurricane season!

Barry Goldsmith

Warning Coordination Meteorologist National Weather Service Brownsville/Rio Grande Valley, TX



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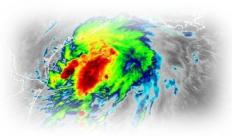
Hurricane Names 2023-2027

Have you ever wondered how a hurricane gets its name? The National Hurricane Center actually does not name tropical storms and hurricanes. Instead, the names are established by the World Meteorological Organization and then rotated every six years. If a storm is too deadly or costly, the name will be retired. If all names in a season are used up, then a will be used.

2023	2024	2025	2026	2027
Arlene	Alberto	Andrea	Arthur	Ana
Bret	Beryl	Barry	Bertha	Bill
Cindy	Chris	Chantal	Cristobal	Claudette
Don	Debby	Dexter	Dolly	Danny
Emily	Ernesto	Erin	Edouard	Elsa
Franklin	Francine	Fernand	Fay	Fred
Gert	Gordon	Gabrielle	Gonzalo	Grace
Harold	Helene	Humberto	Hanna	Henri
Idalia	Isaac	Imelda	Isaias	Imani
Jose	Joyce	Jerry	Josephine	Julian
Katia	Kirk	Karen	Kyle	Kate
Lee	Leslie	Lorenzo	Leah	Larry
Margot	Milton	Melissa	Marco	Mindy
Nigel	Nadine	Nestor	Nana	Nicholas
Ophelia	Oscar	Olga	Omar	Odette
Philippe	Patty	Pablo	Paulette	Peter
Rina	Rafael	Rebekah	Rene	Rose
Sean	Sara	Sebastien	Sally	Sam
Tammy	Tony	Tanya	Teddy	Teresa
Vince	Valerie	Van	Vicky	Victor
Whitney	William	Wendy	Wilfred	Wanda

For a printable hurricane tracking map, please click on this link.

Are You Ready?



Take this assessment to find out if you're ready for this year's hurricane season!

	Yes	No
Do you know where you and your family would go if you have to evacuate?		
Do you have emergency plans for your pet(s)? Most shelters do not allow pets and many animal clinics will close if they are also in harm's way.		
If you take medicine, do you have a 7-day supply of medications or prescription drugs?		
Do you have flashlights? Don't forget batteries!		
Do you have at least a 3-day supply of drinking water and basic, non-perishable foods available? Allow one gallon of water per person per day.		
Will you have cash available if power outages disrupt normal services?		
Do you already have plywood or other materials to protect your windows?		
Is your insurance policy updated for new valuables or housing improvements? Consider taking photos or videos of your belongings.		
Do you have your family's personal records and documents stored in a waterproof container?		
Do you have a generator? Even a tropical storm can disrupt power to your home for several days.		

How many YES responses do you have?

8 or more Very good! You're more prepared than most people!

5 to 7 Not bad. Look into how you can improve this.

4 or less Let's get serious about preparing now! Don't wait until the

storm develops.

Are You Among The Underprepared This Hurricane Season?

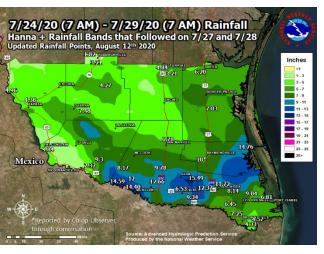
Being underprepared for hurricane season is not something people readily admit, yet FEMA surveys reveal that nearly 1/3 of residents at risk for hurricanes are not prepared at all. Worse, less than 1/4 of respondents said they were well prepared for a hurricane. So why do people living in hurricane zones not take hurricane preparation more seriously?

Believe it or not, a big reason why so many people are underprepared for hurricane season is something called optimism bias. Psychologists found that roughly 80% of humans are conditioned to think that negative events are less likely to impact them compared to their peers. This bias certainly extends to hurricanes. Such extended lulls can cause residents to believe their overall risk is low and as a result they downplay their hurricane preparedness. Optimism bias an actually increase risk and reduce resilience! Consider the two types of hurricane resilience: Physical resilience - the ability of infrastructure to withstand wind and water impacts, and knowledge resilience - the ability to communicate and understand the threat from wind and water in order to make safety decisions to protect people.





Extensive damage to colonias east of Edinburg, TX, following Hurricane Hanna in July, 2020.



Map of rainfall associated with Hurricane Hanna. Damage to buildings and agricultural loss from the resulting floods was estimated to be around [\$xxx million].

So how do we deal with optimism bias? Studies show that when we analyze our risk factors we become more aware of our vulnerabilities. Did you take our self-assessment quiz in this guide? Are you more aware of your shortcomings and what you can change to keep you and your family safe? We hope so! There's no shame in admitting you're not ready for hurricane season. But failing to take corrective actions could jeopardize you and your loved one's lives and safety. As with any natural disaster - plan for the worst and hope for the best!

About Hurricanes



Above: High resolution satellite image of Hurricane Hanna approaching the Padre Island National Seashore in Kenedy County on July 25, 2020. Image - NOAA

Hurricanes form over warm ocean waters, like those found in the Gulf of Mexico. The hurricane season starts June 1 and ends November 30. The peak threat for the Texas coast exists from August through September. However, hurricanes can and have struck the Texas coast during every month of the hurricane season.



Above: Highly sheared Potential Tropical Cyclone 4, centered about 70 miles east-northeast of La Pesca, Tamaulipas (Mexico) at 10 AM Saturday, August 20, 2022. Image – NOAA

The Rio Grande Valley was fortunate during the 2022 hurricane season. Our coastline was only threatened by one event: Potential Tropical Cyclone 4 (PTC-4). PTC-4 produced locally heavy rainfall along and east of the southern and central Tamaulipas (Mexico) coast on August 19th -20th, and over the Gulf of Mexico just east of South Padre Island on the 20th. Two quiet seasons (2021 and 2022) are not always the case, no matter the forecast. Stay prepared in 2023.

Since 1851, 64 hurricanes have struck the Texas coast. That is one every three years on average.

Hurricane Surf



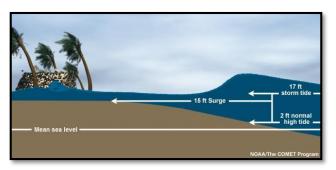
- Very rough, high, and "confused" surf is a hallmark of Gulf of Mexico tropical storms and hurricanes. For most swimmers, the surf is not inviting!
- Rip Currents typically form at the low spots in the surf, at the breaks in the sandbars, and near jetties and piers. Rip currents pull swimmers rapidly away from shore.
- The north side of Isla Blanca jetty is renowned for intense rip currents when tropical cyclones are in the Gulf.
- Hurricane Surf is especially dangerous because the strength and size of rip currents are related to the size of the surf and wave periods.
- Longshore Currents, more common in fall through spring on the Lower Texas Coast, push swimmers *up* the beach. These are not common with tropical cyclones.



Rip Current Awareness Page (courtesy of NWS Corpus Christi)

Storm Surge Defined

Storm surge is an abnormal rise of water generated by a storm, over and above the predicted astronomical tides. This rise in water level can cause extreme flooding in coastal areas resulting in storm tides reaching up to 20 feet or more in some cases. Along the Texas coast, these flood waters can penetrate far inland depending on the elevation of the land. If the storm tide is greater than the land elevation (even if well inland) then storm surge flooding will be possible.



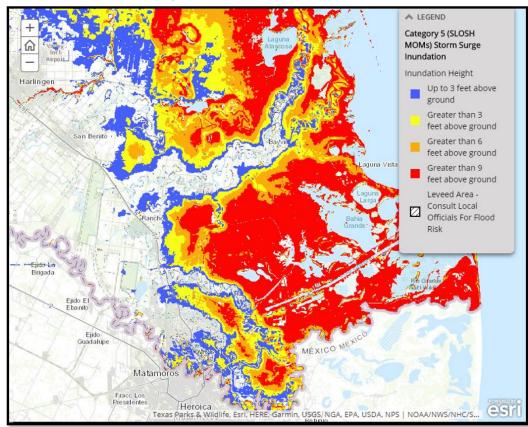
Storm Surge Can Be Deadly! Here are 6 Tips to be Ready

- 1. Storm surge flooding is often the greatest threat to life and property from a hurricane. It poses a significant threat for drowning. A mere six inches of fast-moving flood water can knock over an adult. It takes only two feet of rushing water to carry away most vehicles.
- Storm surge can cause water levels to rise quickly and flood large areas in just minutes, and you could be left with no time to take action if you haven't already evacuated as instructed.
- 3. Storm surge is not dependent on the Saffir-Simpson Hurricane Wind Scale. Hurricane categories are based only on winds and do not account for storm surge. Any wind category can all cause life-threatening storm surge.
- 4. Many Gulf Coast areas are vulnerable to storm surge including areas many miles inland from the coastline depending on elevation of the coastal plain. Find out today if you live in a storm surge zone (see pages 5-7 in this guide).
- 5. Storm surge can occur before, during and after the center of the storm passes through an area, and can sometimes cutoff evacuation routes. The water can also rise well in advance of the coming storm, in some cases 36 hours or greater. When an evacuation is ordered, do not wait until the last minute to leave.
- 6. During the peak of a storm surge event, it is unlikely that emergency responders will be able to reach you if you are in danger.



For more information about storm surge, please see this NHC Storm Surge Video: https://www.youtube.com/watch?v=bBa9bVYKLP0

Coastal Cameron County

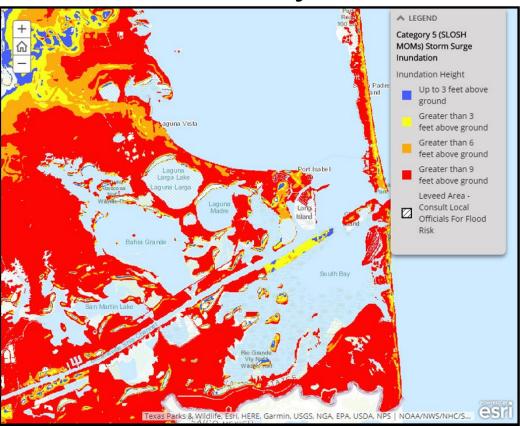


Above: This map shows the height above ground the water <u>could</u> reach and depicts the reasonable worst-case scenario from storm surge flooding.

"The greatest potential for loss of life related to a hurricane is from the storm surge."

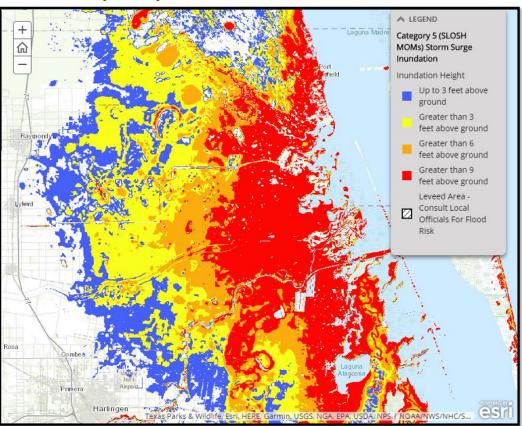
-National Hurricane Center

Zoomed: South Padre, Port Isabel, and Laguna Vista



Above: This map shows the height above ground the water <u>could</u> reach and depicts the reasonable worst-case scenario from storm surge flooding.

Coastal Willacy County



Above: This map shows the height above ground the water <u>could</u> reach and depicts the reasonable worst-case scenario from storm surge flooding.

Click below for more high resolution storm surge maps:

National Storm Surge Hazard Maps

Inland Flooding

There are numerous examples of significant flooding caused by land-falling tropical cyclones in Texas. Storms with a slow forward motion are the most dangerous as heavy rains persist for a longer period of time.

Five Practical Ways to Protect Yourself and Others From the Dangers of Inland Flooding

Protect Your Personal Documents and Special Items

- Store valuables in plastic tubs with locking tops
- In case of an evacuation, you should be able to secure and move all your valuables within 15 minutes

Buy Flood Insurance - A Plan for Replaceable Items

- The National Flood Insurance Program (NFIP) is available from an insurance agent or the NFIP
- · For more information see

Flood Proof Your Home - Take Steps to Minimize Flood Damage

- · Consider installing a floodproof membrane around the base of your home
- Raise outside air conditioning units onto platforms above ground level
- Store rarely used or expensive items in the attic or on high shelves
- Prior to landfall, shut off the main circuit breaker to prevent appliances from short circuiting and eliminate the threat of electrocution

Develop a Family Flood Plan

- Develop a plan of action to keep from panicking or withdrawing during an emergency
- Have an evacuation route and alternatives planned in the event you are asked to evacuate
- Communicate your plans with friends or family outside of your home area
- Battery powered radios or televisions can be used in the event of a power outage

Never Drive on Flooded Roads

- Driving into flooded roadways puts your life and the lives of others at risk
- Unless told to evacuate, you are probably safest staying at your current location
- If you encounter flood waters when driving, Turn Around, Don't Drown!



It Doesn't Take a Hurricane...to Tell Which Way the Water Flows





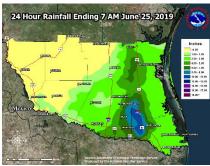




Rainfall Flooding Has Cost the Valley More than \$350 Million Since June 2018

The Great June 2018 Flood. The June 2019 "Sequel" Flood. Flooding from rainfall outside of the core of Hurricane Hanna. Flooding on July 6-9, 2021. What do these recent memorable events have in common? Three (2018, 2019, and 2021) were not associated with a tropical cyclone, and the fourth was generated largely by feeder bands on the back side of Hanna, outside of the inner core, combined with residual rainfall two days after landfall. In total, damage to property and agriculture was estimated to be more than \$350 million – though the value could be much larger based on a lack of insured or compensated damage across many poor drainage locations across the Rio Grande Valley.

Will the summer and early autumn of 2023 see a another year with a damaging flood event outside of the core of a tropical cyclone? Or will a slow moving named tropical cyclone create even heavier rainfall and worse flooding than experienced since 2018? Regardless of the source of the torrents, residents of the Rio Grande Valley and Deep South Texas ranch country need to be prepared for the water as well as the wind.





Tornadoes and Destructive Winds

Tropical cyclones also produce tornadoes. These tornadoes most often occur in thunderstorms embedded in rain bands well away from the center of the hurricane; however, they can also occur near the eyewall. Tornadoes produced by tropical cyclones are relatively weak and short-lived, but still pose a threat.

Hurricane force winds of 74 mph or more can destroy buildings, mobile homes, trees and power poles. Debris such as signs, roofing material, siding, and small items left outside become flying missiles in a hurricane. The strongest winds occur in a region of the hurricane called the eyewall. Wind gusts in the right side of the eyewall are the most destructive. Hurricane force winds can be felt as far as 150 miles from the coast



Above: Damage to the community of Copano Village in Aransas County, TX in the wake of Hurricane Harvey in 2017.



Above: Container trailer leaning on a recreational vehicle in San Pedro, following EF0 tornado associated with Hurricane Alex in 2010.

MOBILE HOME RESIDENTS MUST EVACUATE!

- No mobile home or manufactured home no matter how new it is - can provide safe shelter from hurricane force winds.
- Straps or other tie-downs will not protect a mobile home from the high winds associated with a hurricane.
- Mobile home residents must evacuate when told to do so by local authorities.

Saffir Simpson Hurricane Wind Scale

- o Category 1 Winds 74 to 95 mph
- o Category 2 Winds 96 to 110 mph
- o Category 3 Winds 111 to 129 mph
- o Category 4 Winds 130 to 156 mph
- o Category 5 Winds 157 mph or higher

More to the Story Than the Category!







Left: Bolivar Peninsula scraped clean by Ike's Storm Surge in 2008. Center: Damaged and destroyed homes along the Jersey Shore from Sandy in 2012. Right: Interstate 10 along Jefferson/Chambers Co. Line in 2017 during Harvey.

Flooding - on Land and by the Sea - Often Trumps the Wind

A hurricane, by definition, is a "bad" storm. At minimum, a hurricane will disrupt a routine for a few days. At maximum, a hurricane will change a community forever. For many people over the past five decades, the perception of hurricane "badness" came from the Saffir-Simpson Hurricane Scale. It seemed so easy to grasp. A Category 1 hurricane contained 74 to 95 mph winds, a storm surge of 4 to 5 feet, and surface pressure ≥980 mb. A Category 5 hurricane contained wind greater than 155 mph, a storm surge >18 feet, and surface pressure <920 mb.

Then came Allison. Charley. Katrina. Ike. Sandy. Harvey, and Ian!

Each of these storms damaged billions of dollars in property, and all but Charley killed dozens to hundreds of people. None of these storms had impact that purely matched the Saffir-Simpson Scale. Only Charley (2004) met the wind criteria, now the only feature of the Saffir-Simpson Hurricane Wind Scale (SSHWS). The following table summarizes each storm.

Storm	Main Impact Area	Year	SSHWS (landfall)	Damage (\$billions)†	Primary Impact
Allison	Houston	2001	None	5.5	3+ feet of rainfall; record inland flooding in Houston
Charley	Southwest Florida	2004	4	15.4	Extensive Wind Damage, but only a 4 to 7 foot storm tide
Katrina	Louisiana and Mississippi	2005	3	81.3	Storm tide up to 28 feet. Catastrophic storm surge flooding; thousands of persons drowned
lke	Upper Texas and Southwest Louisiana	2008	2	29.3	Storm tide up to 20 feet. Extensive to catastrophic storm surge flooding; several dozen persons drowned or missing
Sandy	Northeast U.S.	2012	1*	50+	Vast majority of damage from ≥10 foot storm tide along NJ/NY coast; dozens of persons drowned
Harvey	Texas	2017	4	125+	\$100 billion from freshwater flooding in SE TX when system was Tropical Storm
lan	Florida	2022	4	112.9	The vast majority of damage was from storm surge and freshwater flooding

^{*}Storm considered Post-Tropical at Landfall †Dollar values in year of landfall

The 1933 Labor Day Hurricane, 90 Years Later



A Deadly Hurricane for the Valley

The 1933 Labor Day (September 4-5) Hurricane remains an event of unfortunate record. Between 22 and 26 persons lost their lives during the storm in communities along both sides of the Rio Grande; others died from critical injuries for a total of 40 deceased. Several hundred were injured from the combination of wind and water impact. Initial damage, listed at nearly \$17 million (1933 dollars) may have been closer to \$50 to \$60 million. Normalized damage based on 2008 population and inflation would have been up to \$3.8 billion, and likely over \$5 billion today.

Devastating impacts were noted from winds reaching 125 mph, rainfall that ranged from 12 to 18 inches, and a storm surge of



Downtown Harlingen. Photo credit: Valley Morning Star.

at least 13 feet impacted the lower Valley. The majority of deaths in Cameron County were from collapsed, substandard structures from Rio Hondo through La Feria. At least ten persons perished along the Mexico side of the Rio Grande between Reynosa and Matamoros. Winds leveled hundreds of buildings in Cameron and southeastern Hidalgo County, and the wind and flooding rain destroyed farmland, including a complete loss of the Cameron County citrus crop. The storm surge, which included violent waves, swept away dozens of buildings between the Mouth of the Rio Grande and Port Aransas. The Island was abandoned until after World War II.



Notable incidents included the collapse of a suspension bridge between McAllen and Reynosa from the flooding Rio Grande, and a harrowing escape from death by four boys who floated to safety on the King Ranch in an abandoned ice box after twenty cottages at Redfish Pass (now Port Mansfield) were swamped by the storm surge.

1933 reminds us to be ready for potentially deadly hurricanes every year.

Hurricane Preparation

Home Preparation

Elevation Matters

 Know the elevation of your home! Are you in a flood and/or evacuation zone?

Mobile Homes

- Check tie-downs for rust or breakage.
- Residents of mobile homes must evacuate when told to do so!!

Landscaping

- Trim trees, shrubbery and dead limbs, especially ones close to your home.
- Above: This well built home in the community of Copano Village in Aransas County, TX survived Hurricane Harvey in 2017.



Roofing

- Inspect the roof for loose tiles, shingles or debris. Consider replacing old or damaged shingles with new ones rated for hurricane force winds.
- Clear loose and clogged rain gutters and downspouts.

Doors

- Reinforce garage doors and tracks or replace with a hurricane tested door.
- Reinforce double entry doors with heavy duty foot and head bolts.
- Use a security dead bolt with a one inch minimum bolt length.

Windows

- If possible, install tested/manufactured hurricane shutters.
- Inspect existing shutters to ensure they are in good working order.
- Alternative: Use 5/8" or greater exterior grade plywood secured by 2 1/2" screws and/ or special clips. Obtain wood and fasteners, cut wood to size, pre-drill holes and place anchors on homes.

For more information on home preparedness, and how to be #HurricaneStrong, go to http://www.hurricanestrong.org/





Additional Preparation

Business and Employee Preparation

- Identify and protect vital records. Backup and store key files off site.
- Protect electronic equipment from possible water damage.
- Have extra cash and blank checks in case extra money is needed after the storm.
- Develop a 24-hour emergency contact with phone numbers of key employees.
- Set up telephone numbers for employees to check in and receive company information.
- Establish a temporary location for business operations in case your facility is damaged.
- Give employees enough time to secure their homes and families.
- Consider paying employees before they leave to prepare their homes.

Boat Preparations

- Check with the manufacturer for proper ways to secure your boat during a storm.
- Purchase necessary hurricane materials such as additional mooring lines, crew anchors, fenders, fender boards, chafing gear, and anchors.
- Safe storm moorings should consist of good condition ropes of sufficient diameter and length, with at least three or four substantial anchor points.
- Do not moor parallel to bank. Receding tides often capsize boats in this type of anchorage.

Preparing for Your Pet's Safety

- Your pet should be part of your overall hurricane preparation plans. Below are a few important things to help you prepare:
- Make sure your pet's vaccinations are current and have proof they are current. DO NOT assume that a public shelter or hotel will accept your pet.
- Be sure to have a current photo of your pet.
- Each animal should have a properly sized pet carrier. The carrier should be large enough for the animal to stand up and turn around.
- Pack enough food and bottled water for the duration of your evacuation. DO NOT let your pet eat food or drink water from outside that may have become contaminated.
- Be sure to pack all medications your pet may need along with a muzzle, collar, leash, paper towels, and trash bags.
- Make sure your pet has a proper ID collar.

Insurance Tips

Before the Storm

- New and existing policies will not be written or modified when a storm nears the Gulf of Mexico.
- Make sure you fully understand what perils are covered and excluded in your policy.
- Make sure your coverage is adequate to replace your home and contents in today's dollar.
- Determine whether your policy covers additional living expenses for a temporary residence if you are unable to live in your home because of damage from a disaster.
- Before hurricane season, prepare detailed written and/or photographic inventory of your home's contents and store it in a safe place with your policy.
- If your insurance company does not cover flood or windstorm perils, ask about coverage through the Texas Windstorm Insurance Association or the National Flood Insurance Program.

After the Storm

- Give prompt written notice to your insurance company.
- Photograph or videotape damaged structures and all damaged property. Make a list
 of damaged or lost items.
- DO NOT throw out damaged property before your adjuster has inspected the debris unless it is a health hazard or impedes local cleanup.
- Protect your property from further damage.
- Keep an accurate record of temporary repair and living expenses if a loss of use is suffered.

Important Online Insurance Information

- National Flood Insurance Program <u>www.floodsmart.gov</u>
- Texas Windstorm Insurance Association <u>www.twia.org</u>
 Consumer help line 800-788-8247
- Texas Department of Insurance <u>www.tdi.texas.gov</u>
 Consumer Help Line 800-252-3439

Contact Info and Supplies



Emergency Contact Information

Out of Town Contact Address:
Out of Town Contact Phone Number:
Work Telephone Number:
Cell Number/Spouse Cell Number:
Children Cell Number:
School Telephone Number:
Doctor Telephone Number:
Bank/Credit Card Telephone Number:
Insurance Company Information:

Whatever comes your way, you'll know what to do.

Red Cross mobile apps put help in your hand.















24 hour number to call for assistance 1-800-RED CROSS (1-800-733-2767)

Download our preparedness apps today. Call "REDCROSS from your mobile phone and we'll send you a link to download the appe, or search the iTunes app store or Google Play for American Red Cross-

Hurricane Supply Kit

The South Texas chapter of the American Red Cross recommends that you have the following items in your Hurricane Supply Kit.

- At least a 7-day supply of non-perishable food and water. One gallon of water per person per day is recommended
- Battery powered portable television or radio with extra batteries
- · Flashlight with extra batteries
- First Aid kit and manual
- Sanitation and hygiene items such as instant hand sanitizing gel, moist towelettes, toilet paper, and feminine hygiene products
- Whistle
- Kitchen accessories, cooking utensils, and manual can opener
- Cash
- Extra clothing, blankets, and sleeping bags
- Matches in a waterproof container
- Photocopies of identification, insurance, prescriptions, household inventory, credit cards, and your latest utility bill
- CD or photocopies of important documents such as birth/marriage certificates and titles
- Prescription medications, eyeglasses, contact lens solution, and hearing aid batteries
- Formula, baby food, diapers, and pacifiers
- Pet carriers, leashes, shot records, and food for each animal evacuating with you
- A good map showing county roads and highways
- Tire repair kit, booster cables, pump, and flares
- White distress flag
- · Toys and games for children
- List of family phone numbers and addresses outside the area

Tourist Safety Guide

How to Prepare for Hurricane Season

Actions To Take When Threatened By A Hurricane:

- Listen frequently to radio,
 TV, or NOAA Weather Radio
- Fuel your vehicle
- Stock up on batteries, food that will keep, first aid supplies, drinking water, and medications
- Have cash on hand in case power goes out and ATMs don't work
- Follow instructions from local officials and leave if ordered

Terms To Know:

Tropical Storm/Hurricane Watch: Conditions are possible within 48 hours

Tropical Storm/Hurricane Warning: Conditions are expected within 36 hours

Continue to check hurricanes.gov for the latest forecast information!

How will you get alerts while on vacation?

- Local media (TV, radio, newspaper, etc)
- Our website weather.gov/corpuschristi
- Wireless Emergency Alerts or WEA
 - WEAs are free notifications on your smartphone that can indicate hazardous weather.
 - WEA alerts include: Tornadoes, Severe Thunderstorms, Flash Floods, Extreme Winds, Hurricanes, Tsunamis, Storm Surge and Winter Weather

What should you do if you receive a WEA?

 Follow any action advised by the emergency message. Seek more details from your favorite TV or radio station, NOAA Weather Radio, news website, desktop application, mobile application, or other trusted source of information.

For more information about Wireless Emergency Alerts, visit: weather.gov/wrn/wea

Student Information Checklist

- Assure that all contact information and emergency contact information is accurate with your campus' registrar's office.
- If your campus offers an emergency management communication system, register as a user of the system.
- Plan your method of evacuation and your destination before a storm enters the gulf.
- Monitor local radio and TV stations for updates.
- Contact your campus Student Affairs Office if you need assistance with evacuation.
- If you require any assistance due to a disability-related accommodation, please contact your campus Disability Services Office to make necessary arrangements.
- Communicate with your family regarding status and location
- If your campus is evacuating, you will not be allowed to remain on-campus and it is highly recommended that you leave the city. Do not go to a coastal location.
- Take your driver's license, student I.D. card, and a copy of your housing lease as well as medical insurance cards and other important documents when you evacuate.
- If you bank with a local bank or credit union whose infrastructure may be damaged by the storm, withdraw some funds as you may not have access to them once you leave the area.
- International students must take passports with US student visa inside, I-20, I-94, student I.D. and class schedule.
- If using personal transportation, take as many of your valuable or irreplaceable items as you are able.
- If driving, make sure all roads that you are driving are open and safe. You can call
 the Department of Transportation at 1-800-452-9292 or check on-line for
 conditions at www.bxdol.gov
- Follow baggage limits if participating in an assisted evacuation program.
- Take a 30-day supply of medications in original pharmacy containers.
- Make a record of any valuables left behind (description, serial numbers, etc).
 Take pictures of all belongings.
- If you are evacuating to a shelter, make appropriate arrangements for pets. Most shelters do not accept pets.
- Do not plan to return to campus until an all-clear is given (monitor media and campus web-site).

Final Checklists

Actions to Take When a Storm is in the Gulf

- Listen frequently to radio, TV, or NOAA weather radio for bulletins and forecasts of the storm's progress.
- · Double check items in your emergency supply kit.
- · Fuel and service your vehicles.
- · Inspect and secure mobile home tie-downs.
- Board up windows (if shutters do not exist) in case storm moves quickly and you have to leave!

TAPE PROVIDES NO PROTECTION!

- Store lawn furniture and other loose, light weight objects, such as garbage cans and garden tools.
- Garage or store vehicles that are not being used.
- · Follow instructions issued by local officials.

EVACUATE IMMEDIATELY IF ORDERED TO DO SO!

Final Actions to Take if Leaving

- Turn off propane tanks.
- Unplug small appliances.
- Empty refrigerator and freezer.
- · Turn off utilities if ordered to do so.
- Lock home securely.
- · Take pets with you.



Final Actions to Take if Staying

- Close storm shutters.
- Notify family members of your evacuation plans.
- Lower water level in swimming pool by one foot.
- Turn refrigerator or freezer to coldest setting and open only if necessary.
 (25 pounds of dry ice will keep a 10-cubic foot freezer below freezing for 3-4 days.)
- Follow instructions from emergency managers and be prepared to turn off utilities if ordered to do so.
- Board up remaining doors, brace garage door, and remain inside. Stay away from boarded up windows.
- Take refuge in a predetermined safe room, such as an interior closet, bathroom, or hallway.
- DO NOT EXPECT EMERGENCY RESPONDERS TO BE OF ANY ASSISTANCE DURING A LANDFALLING HURRICANE!

Texas Emergency Registry



The State of Texas offers the option to register with the STEAR program, a free registry that provides local emergency management planners and responders with information related to your needs during an emergency.

Who Should Register?

- People with disabilities
- People who are medically fragile
- · People with functional needs such as:
 - Limited mobility
 - Communication barriers
 - Require additional medical assistance during an emergency event
 - Require personal care assistance
- People who require transportation assistance







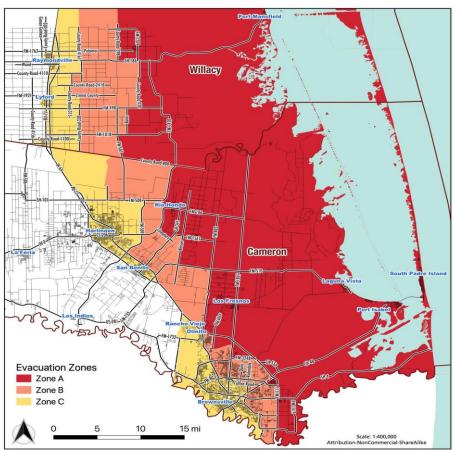
Register online at Stear.tdem.texas.gov



Call 2-1-1 or use your video phone relay option of choice

Registering in STEAR **DOES NOT** guarantee you will receive a specific service during emergencies.

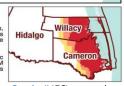
Valley Hurricane Evacuation Zones



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://mrc.arch.tamu.edu/research/HES/index.html



After more than a decade of research, a new <u>Valley Hurricane Evacuation Study</u> (HES) was released in 2016. The study map was developed through a combination of updated tidal and inundation data as well as population and behavioral data to update clearance times.

The HES is a guide used by county and city public safety officials to help inform the public on the need to evacuate, based almost entirely on the forecast threat for storm surge inundation. This study consolidated a five-tiered system into three for both simplicity and improved communication. Numbers were replaced with letters (A, B, and C) since a storm category is not synonymous with the impact of surge (see page 16 for more).

Evacuation Routes



Evacuees need to consider the projected path of the hurricane when choosing an evacuation route and destination. When local authorities order an evacuation of your area, leave immediately!

Final Actions before Evacuating

- Follow evacuation orders provided by your local officials.
- Once the evacuation order has been given, LEAVE IMMEDIATELY!
- · Take your Hurricane Supply Kit with you.
- Leave as early as possible to avoid heavy traffic and hazardous weather.
- Do not stay in a mobile home near the coast under any circumstance.
- Remember that large boats and travel trailers may not be allowed to cross local bridges and causeways once high winds commence.
- Prepare to stay at your evacuation destination for a week or more, as re-entry into the affected area may be restricted.

Texas Road Information

- TXDOT Highway Conditions 1-800-452-9292 or
- TXDOT Rio Grande Valley Office, Pharr 1-956-702-6100
- Emergency Broadcast Information KURV News Talk 710 AM
- Twitter @TxDOTPharr

Forecast Information - NHC



Latest Weather Information

National Weather Service

www.weather.gov/rgv 24 Hour Phone Recording: (956) 504-1432 ext. 1



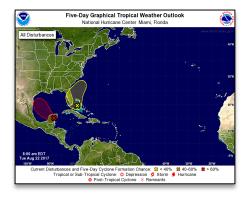
National Hurricane Center

www.hurricanes.gov



Graphical Tropical Weather Outlook (May 15 – Nov 30)

 This NHC product provides an overview of all tropical cyclone activity and indicates areas of interest that have potential for tropical cyclone development.



NHC Forecast Advisory

- Most recent position for a storm along with all coastline watches and warnings. Includes a 3 or 5 day track with error cone.
- Error cone represents a 5 year average error. Storms only stay within the error cone 67% of the time.
- DO NOT focus too closely on the exact track forecast – the little back line.
- Impacts may occur well outside the cone.



Forecast Information

Hurricane Watch/Warning Tropical Storm Watch/Warning

- A Hurricane Watch means hurricane conditions are possible in your area within 48 hours.
- A Hurricane Warning means hurricane conditions are likely within your area within 36 hours.
- A Tropical Storm Watch means tropical storm conditions are possible in your area within 48 hours.
- A Tropical Storm Warning means tropical storm conditions are likely within your area within 36 hours.
- If you are under a hurricane watch or warning, prepare for possible evacuations and evacuate if instructed to do so.



Hurricane Watch vs. Warning Know the Difference



Do you have Wireless Emergency Alerts (WEA) turned on for your phone?

WEAs are sent by authorized government agencies through your wireless provider and alert to extreme weather.

WEAs include a special tone and vibration, both repeated twice. Check your wireless phone's menu settings to ensure WEAs are enabled:

- Android: Settings > Connections > More Connection Settings > Wireless Emergency Alerts
- Apple: Settings > Notifications > Government Alerts



Graphical depiction of peak storm surge Inundation values along the U.S. Gulf & Atlantic coasts, Puerto Rico, and the U.S. Virgin Islands

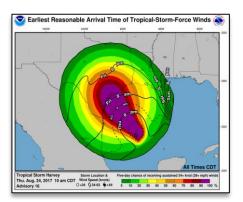
 Values represent the peak height water could reach above normally dry ground somewhere in the specified area



Forecast Information

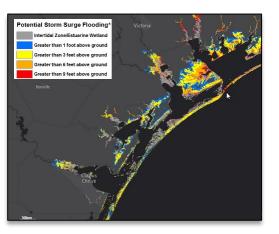
Time of Arrival Graphics

- These maps are useful planning tools.
- One map shows the earliest reasonable arrival time of tropical storm force winds.
- A secondary map will show the most likely arrival time of tropical storm force winds.



Potential Storm Surge Flooding Map

 If a hurricane is threatening your community, go to <u>hurricanes.gov</u> and view the potential storm surge flooding map, which will show the reasonable-worst case scenario from storm surge inundation for your area.



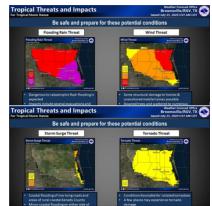
Storm Surge Watch/Warning

- A storm surge watch is the possibility of life-threatening storm surge within 48 hours.
- A storm surge warning is the danger of lifethreatening storm surge within 36 hours.
- If you are located in a storm surge watch or warning, you are not safe. Take action to protect your life. Promptly follow evacuation and other instructions from emergency management officials.



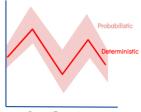
Hurricane Threats and Impacts

- This product issued by local NWS offices will summarize potential impacts expected from a tropical cyclone.
- Click on the colored area and text that describes potential impacts will display.
- www.weather.gov/srh/tropical?office=bro



Understanding Probabilistic Forecasts

For decades, your National Weather Service has been providing a single 5 day forecast for cities across the nation. We call these forecasts deterministic forecasts. Fact is, weather forecasting is not a perfect science and the farther you go out in time the less accurate forecasts become. Therefore it's important to look at the probabilities that weather conditions will have a certain outcome. These forecasts are called probabilistic forecasts. Let's examine this more closely.



Forecast Temperatures

A deterministic forecast does not include elements of randomness. In other words, it provides a single solution and does not indicate any other potential options. A probabilistic forecast does include randomness by providing multiple solutions to one problem. This helps us message the uncertainty in the forecast. The graph (top right) shows a very simplified example comparing the two. The dark red line shows one outcome - the deterministic forecast. Meanwhile, the probabilistic forecasts (light red shading) shows us the range of possible outcomes.

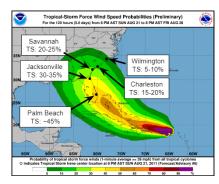


Hurricane forecasts are not perfect either. The National Hurricane Center (NHC) provides a 5 day track forecast showing where the storm will go, however, it rarely follows that exact path. What happens if the storm tracks farther to the left or right? What are the chances for tropical storm force winds at my location if the track is accurate or if the storm deviates?

Let's examine how tropical wind speed forecasts are made and how they help to answer this question. When you want to know the chances for tropical storm force winds at any one location, taking into account the uncertainty in the track and intensity of the storm, we look at the wind speed probability forecast. These are based on 1.000 realistic alternative scenarios created using the official NHC 5 day track and intensity forecast, plus historical track and intensity errors, and the climatology of storm tracks over the years.

For example, if 450 out of 1,000 scenarios indicate tropical storm force winds occurring at a given location, the map is colored orange indicating a 45% percent chance. When you add up all of the cumulative model solutions out to 5 days, you get the cumulative probability forecast for any one location.

It is extremely important to keep in mind that these probabilities can and will change with each forecast advisory issued. Make sure to check each advisory to follow the overall trend for your location. Hopefully this quick explanation will help you determine your risk during this hurricane season! As always, listen to local officials for recommended actions, including possible evacuations.



Local Tropical Webpage

NWS Brownsville/Rio Grande Valley Tropical Webpage

Outlook Social Media Threats and Impacts Satellite Radar Preparedness There are currently no active storms in the North Atlantic, Caribbean Sea, or Gulf of Mexico. Local Briefing from the National Weather Service office in Brownsville Two-Day Graphical Tropical Weather Outlook Five-Day Graphical Tropical Weather Outlook

Click each image above to view the full-size image

Special Tropical Weather Outlook NWS National Hurricane Center Miami FL 220 PM EDT Fri May 31 2019

For the North Atlantic...Caribbean Sea and the Gulf of Mexico:

A broad area of low pressure accompanied by cloudiness and showers centered over the Yucatan Peninsula is forecast to move westward over the southern Bay of Campeche during the weekend. Some gradual development of this system is possible through early next week as long as it remains over water. Regardless of development, the disturbance will likely produce heavy rainfall over portions of southern Mexico during the next few days. Regular issuance of the Tropical Weather Outlook will begin at 2 AM EDT tonight with the beginning of the Atlantic hurricane season.

* Formation chance through 48 hours...low...20 percent. * Formation chance through 5 days...low...30 percent.

Forecaster Avila/Zelinsky

Oprima aquí para ver la Perspectiva sobre las Condiciones del Tiempo Tropical en Español

- One-Stop Shop for all tropical related forecast information. tailored to each forecast area along U.S. coastline.
- Active Storms tab appears when **NHC** initiates Tropical Cyclone advisories.
- **Local Products tab** also becomes active when WFO Issues Watches/Warnings for local area.

- Satellite and Radar data is always available.
- **Preparedness** tab is always available and provides quick access to local evacuation maps, preparedness guides, and videos.
- Scrolling down the page provides access to NHC products related to each active storm and WPC rainfall products.

2023 Rio Grande Valley/Deep South Texas Hurricane Guide

Returning Home

IF YOU EVACUATED THE AREA, WAIT FOR AN ALL CLEAR FROM THE CITY OR COUNTY BEFORE ATTEMPTING TO RETURN TO YOUR HOME. BE PREPARED TO SHOW PROOF OF RESIDENCE BY HAVING A COPY OF YOUR LATEST UTILITY BILL.

Debris Cleanup

- Cities and counties will publish a schedule for debris pick-up and removal.
 Debris cannot be removed from private property.
- Construction materials, vegetative debris, household hazardous waste and household appliances will need to be placed into separate piles and moved to the curbside for pick-up.



General Cleanup

- Be cautious of structural damage and downed power lines.
- DO NOT attempt to move structural supports or large pieces of debris.
- DO NOT run power generators indoors. Inhalation of carbon monoxide from the exhaust can cause death. Ensure exhaust is well ventilated.
- DO NOT use open flames indoors.
- Restrict your driving to emergency use only. Road conditions may not be safe until road debris is cleared.

Water

- Listen for instructions regarding public water supply. Use only bottled, boiled or treated water until you know that your water supply is safe.
- You can use household chlorine bleach to treat water for drinking or cleaning. Add 1/8 teaspoon of bleach per gallon of clear water or 1/4 teaspoon of bleach per gallon if water is cloudy. Allow water to stand for 30 minutes before using.

Interior Cleanup

- Disinfect and dry interior buildings and items inside. This will prevent growth of some bacteria, viruses, mold, and mildew that can cause illness.
- Clean walls, floors, and counter tops with soap and water. Disinfect them with a solution of 1 cup of bleach to 5 gallons of water.
- Wash all clothes and linens in hot water. Air dry and spray all unwashable items with disinfectant. Steam clean carpets. Throw away all items touched by water that cannot be disinfected.

Returning Home

Utility Cleanup

- Check for gas leaks. If you smell or hear gas leaking, leave immediately. DO NOT use the phone or turn on lights in your home. Call the gas company from a neighbor's phone.
- Report any visible damage of power lines to the electric company. Turn off power at main breaker if any electrical equipment or circuits have been exposed to water.
- DO NOT connect generators to your home's electrical circuits. If a generator is on line when electrical service is restored, it can become a major fire hazard. Also, line workers working to restore power will be endangered if a generator is hooked up to the home's circuits.



• It is likely that an electric company other than your own will reconnect the lines to your home; however, they cannot turn the service back on. Only your electric company can actually turn the power back on to your house.

Sewage Cleanup

- If you suspect water or sewage lines are damaged, do not use your plumbing (toilets, sinks, etc.). Contact the water company or a plumber for repairs.
- A chemical portable commode can be created by the following:
 - Use 5 gallon buckets with tight lids, lined with heavy duty plastic garbage bags.
 - Add kitty litter to the bucket as a disinfectant and deodorizer. Keep lids on firmly.
 - Keep buckets in a cool, dark place. Clean and disinfect buckets immediately.
- Your toilet can also be used by flushing until the bowl has no water. Then, line
 with heavy duty trash bags and disinfect with chlorine bleach after each use.
 Remove waste to an outside location.
- If significant sewer outages have occurred, instructions for disposal of human wastes will be announced.
- DO NOT dispose of human waste through your regular trash!

NOAA Weather Radio in Spanish





NOAA Weather Radio Is Bilingual in the Rio Grande Valley

In a world plugged into continuous weather information, NOAA Weather Radio remains a critical tool that can alert people to potentially life-threatening weather in the middle of the night when the power goes out. Across the Rio Grande Valley, weather-vulnerable neighborhoods contain a significant number of residents whose primary language is Spanish. Understanding and being able to translate an alert from English to Spanish can be difficult for many of these residents; the additional time to process the information and take action could literally be the difference between life and death. Until now.

A Homeland Security Grant from FEMA sparked a two-year collaborative effort among the National Weather Service, the State of Texas, and the Lower Rio Grande Valley Development Council culminating with the Spanish Language Public Safety Warning System. The Warning System's core components include two new NOAA Weather Radio transmitters, broadcasting from Harlingen and Pharr. Broadcasts and special alerts will cover nearly all communities. Spanish language radio and television stations that are part of the Emergency Alert System will be able to select the feed(s) from the Spanish language transmitters, removing the need for a third party to translate the information from English to Spanish.

Should a hurricane threaten the Rio Grande Valley, owners of NOAA Weather Radios will be able to tune to specific frequencies and receive critical information that will describe the hazard, potential impact, and recommended safety actions in the language they are most comfortable hearing.

Transmitter Location	Station Identification	Frequency
Bluetown/La Feria	WZS-2542	162.450 (channel 3)
Pharr	WZS-2541	162.475 (channel 4)

Emergency Information

CAMERON COUNTY

County Emergency Management

956-547-7000

Twitter: @cameron_county Facebook: cameroncountyem

 County Sheriff 956-544-0860*

• City of Brownsville 956-504-7405

oem.cob.us

Twitter: @BOEMHS Facebook: 546HELPCOB

City of Harlingen

956-216-5920 myharlingen.us

Twitter: @Harlingen_Texas Facebook: Harlingen, Texas

 City of La Feria 956-797-3121 cityoflaferia.com

· Town of Laguna Vista

956-943-1792 lytexas.us

Twitter: @LagunaVistaPD

Facebook: lvtexas

• City of Los Fresnos

956-233-5768

citylf.us

Twitter: @CityofLosFresnos Facebook: City of Los Fresnos

City of Port Isabel

956-943-2727

portisabel-texas.com/cityhall

Twitter: @portisabeltexas Facebook: Port Isabel Texas

· City of San Benito

956-361-3800

cityofsanbenito.com Twitter: @SanBenitoTX

Facebook: San Benito, Texas

City of South Padre Island

956-762-8144

myspi.org

Twitter: @SouthPadreTexas Facebook: South Padre Texas

HIDALGO COUNTY

County Emergency Management

956-318-2615

hidalgocounty.us

Twitter: @HidalgoCoOEM

Facebook: Hidalgo County Office of

Emergency Management Instagram: @HidalgoCoOEM

 County Sheriff 956-383-8114*

· City of Alamo

956-781-2004

alamotexas.org

Twitter: @CityofAlamo Facebook: City of Alamo

City of Donna

<u>cityofdonna.org</u>

Twitter: @CityofDonna Facebook: cityofdonna

· City of Edinburg

956-383-7691

<u>cityofedinburg.com</u>

Twitter: @cityofedinburg

Facebook: CityofEdinburgGovernment

· City of Hidalgo

956-843-2286

cityofhidalgo.net

Facebook: cityofhidalgotx

City of McAllen

956-681-1234

mcallen.net

Twitter: @CityofMcAllen Facebook: McAllenTX

City of Mercedes

956-565-3102 cityofmercedes.com

Facebook: The City of Mercedes

Do Not Call 911 for Non-Emergencies! *24 hour number

Emergency Information

HIDALGO COUNTY (continued)

• City of Mission 956-580-8705

missiontexas.us

Twitter: @CityofMissionTX

Facebook: City of Mission Government

• City of Pharr 956-787-7541

pharrem.com

Twitter: @PharrTX Facebook: CityofPharr

• City of Palmview 956-432-0300 cityofpalmviewtx.us

Facebook: CityofPalmview

• City of Weslaco 956-973-8591*

Weslaco Emergency Management

Twitter: @WeslacoCity Facebook: CityWeslaco

STARR COUNTY

• County Emergency Management 956-716-4800

www.co.starr.tx.us

- County Sheriff
 956-487-0672*
- Rio Grande City 956-487-0672 cityofrgc.com

Twitter: @CityofRGC Facebook: CityofRGC

• City of Roma 956-849-1411 cityofroma.net

Facebook: cityofroma

WILLACY COUNTY

• County Emergency Management 956-689-5456

Willacy County Texas
Facebook: CountyofWillacy

• City of Lyford 956-347-3512 lyfordtx.us

Port Mansfield
 956-689-3332
 portofportmansfield.com

• County Sheriff 956-689-5577*

• City of Raymondville 956-689-2443 raymondvilletx.us

ZAPATA COUNTY

 County Emergency Management 956-765-9942 Zapata County Texas

 County Sheriff 956-765-9960*

BROOKS COUNTY

 County Emergency Management 361-326-3681
 Brooks County Texas

 County Sheriff 361-325-3697*

• City of Falfurrias 361-325-2420 ci.falfurrias.tx.us

Facebook: Falfurrias, TX

JIM HOGG COUNTY

 County Emergency Management 361-527-4100 Jim Hogg County Texas

KENEDY COUNTY

 County Emergency Management 361-595-8527 Kenedy County Texas

 County Sheriff 361-294-5205*

Do Not Call 911 for Non-Emergencies! *24 hour number

Emergency Notes

	
	
	
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Local NWS Office Information

National Weather Service Brownsville/Rio Grande Valley, TX

20 S. Vermillion Avenue Brownsville, TX 78521

Phone: (956) 504-1432

Fax: 956-982-1766





weather.gov/rgv



BECOME AN AMBASSADOR TODAY!

Visit: www.weather.gov/wrn/