

Collaborative Efforts to Build Resilience to Windstorms in Highly Vulnerable Communities: The “60 to 90” Project



**NATIONAL
WEATHER
SERVICE**

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2024 Texas Emergency Management Conference

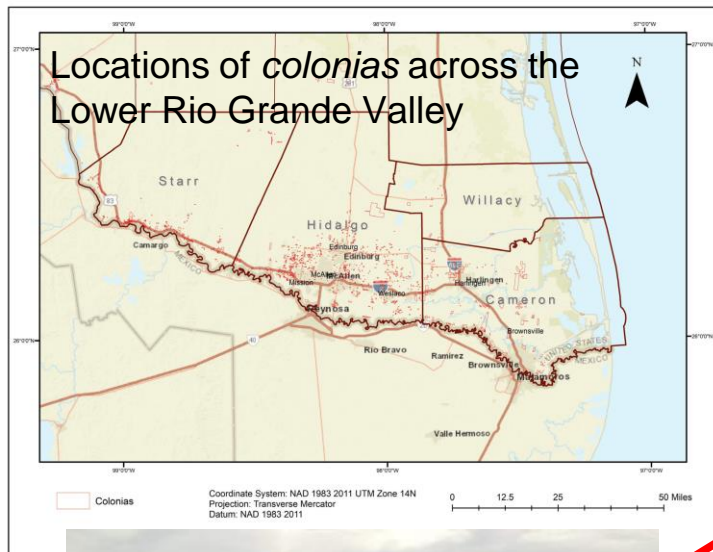


You'd Think We'd Be Most Worried About Hurricanes...

Map of Rio Grande Valley



We Are. But There's More To It



- There are at least 1266 ***colonias*** in the Lower Rio Grande Valley. 846 to 947 are in Hidalgo County (Kyne, 2023)
- **Thousands of makeshift structures** are at high to very high risk to windstorms
- Many of these are exposed to direct wind (lot spacing, on open former farmland)

Colonias: Who Lives There?

- Newer residents are a mix of undocumented and documented immigrants, mostly from the ‘northern triangle’ of Central America and recently, Nicaragua and Venezuela
- Longtime residents also include Mexicans and Mexican-Americans
- Not only are residents LEP, the spoken Spanish varies from *colonia* to *colonia* and *within* them
- At first, they build what they can with whatever they have. **Which isn't much.**



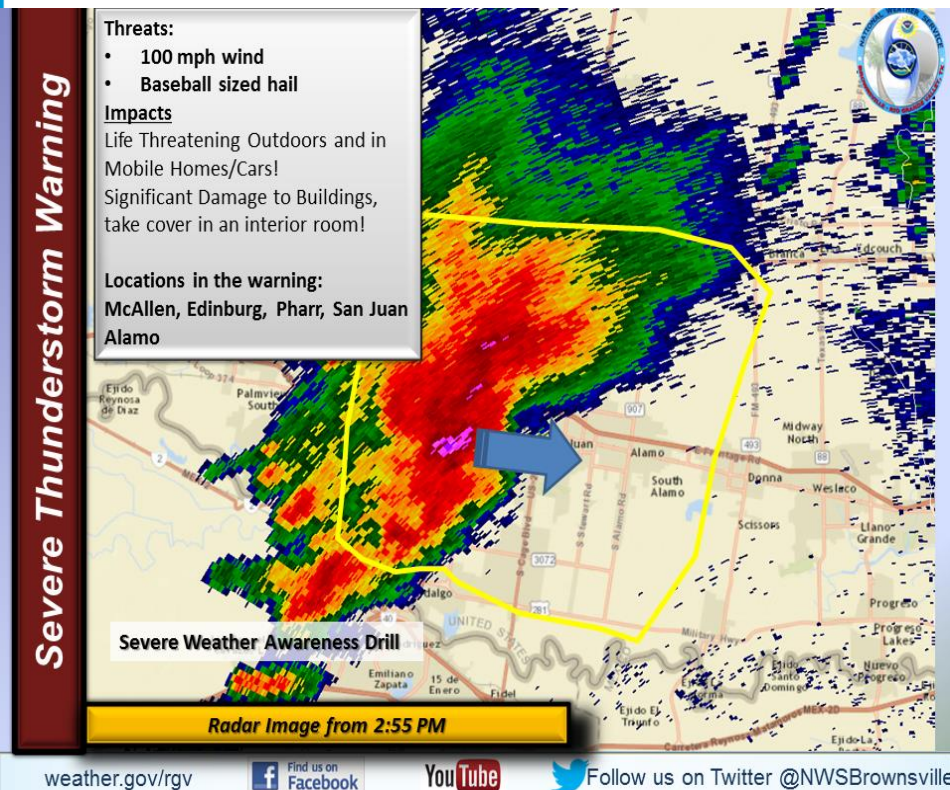
High-Risk Structures

- Initial development consists of makeshift shacks, repurposed vehicles (airstreams, school buses), and poorly built mobile homes.
- Often, the land is in a natural flood plain
- Within a year or two, amenities required for basic living are provided: potable water/sewer, electricity, and improved roads...
- ...but housing quality lags, often by several years
- *Colonias* ultimately transition to a suburban-type subdivision with somewhat better built structures



Mercedes, Texas (Hidalgo County) colonia in 2014 (from Rivera, 2014)

What Keeps Us Up At Night in the RGV



- Most *colonias* are in the yellow-shaded area
- Now imagine:
 - Wind gusts forecast to be 100 mph
 - It's 10 PM to 2 AM on a day in May
 - Extended families, up to 8 people, live in hundreds of poorly built, poorly anchored structures
 - Many have no "safe structure" to evacuate to on short notice
- Reasonable Worst-Case: Mass **casualty** event (multiple deaths)
- Absolute Worst-Case: Mass ***fatality*** event

The Damage We Had Seen



All of these instances were rated at winds below hurricane force (below 74 mph)!





...and Still See (The Nightmare that Nearly Was)



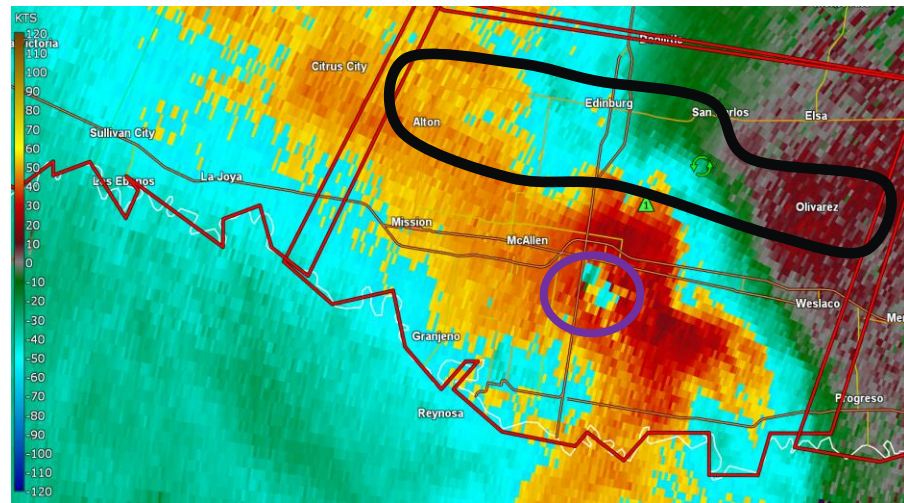
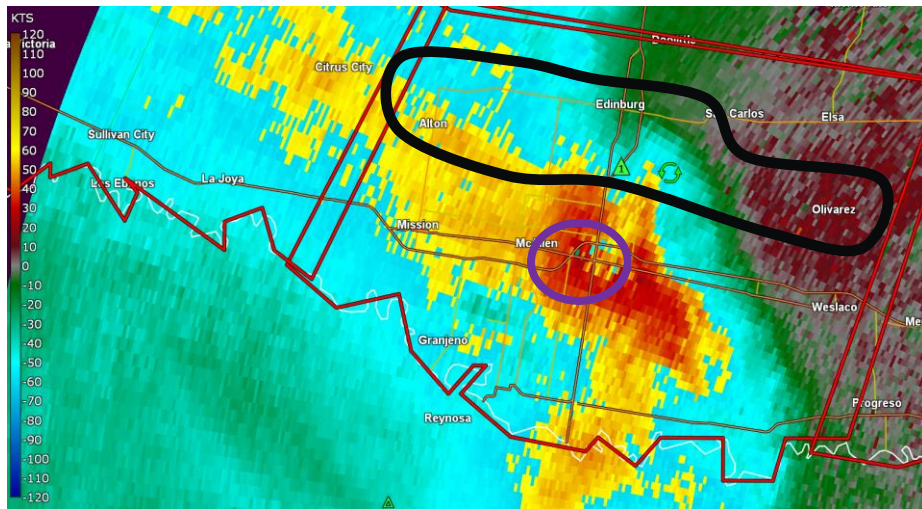
Peñitas, Texas, April 29, 2023



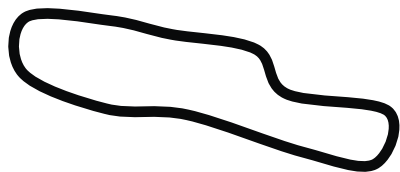
- Family survived by huddling in interior of RV
- What if that RV had rolled?



The (Almost) Nightmare, April 29, 2023



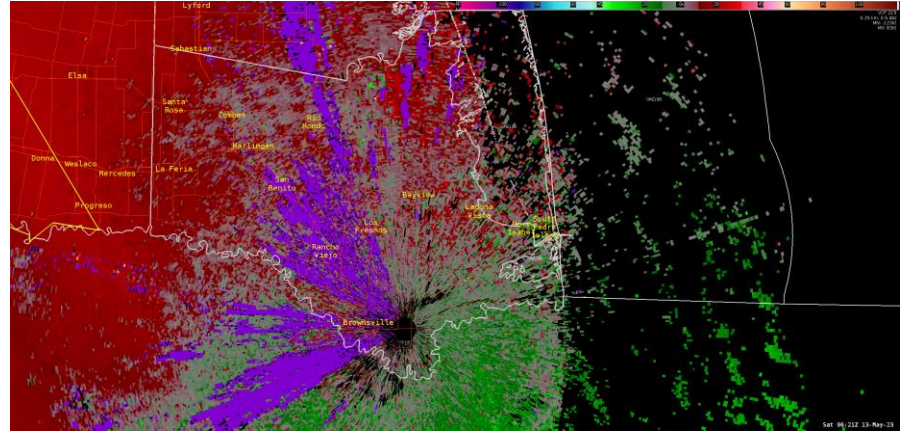
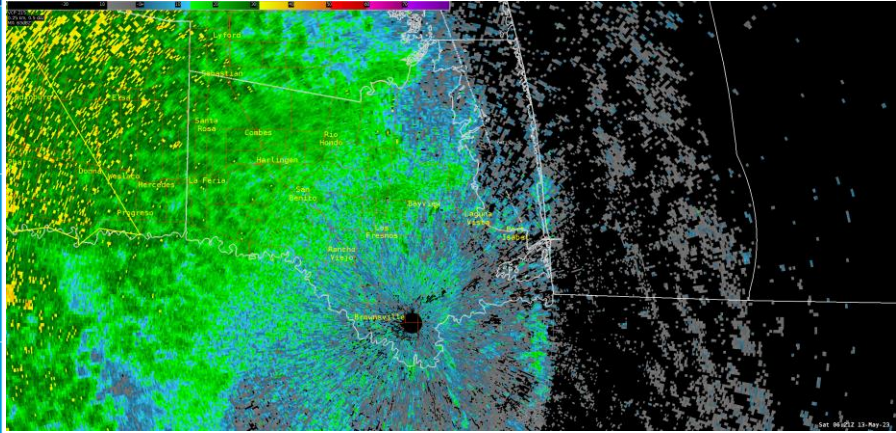
○ Core of 75 to 85 mph winds (City of McAllen)



Locations of Highly Vulnerable and Exposed Homes

The Mini-Nightmare, May 13, 2023

Laguna Heights Tornado



Tale of the Tape:

- EF1 (85 to 105, possibly 110 mph)
- **1 death, 11 injuries, 2 critical (head injuries)**
- Struck the most vulnerable population along/near the Lower Texas coast...
- ...At just after 4 AM on a Saturday morning when most residents were home

The “What If” became the “What WAS”



The Mini-Nightmare, May 13, 2023

Laguna Heights Tornado



- This could have been even **worse**.
- Momentum is **building**. Building better saves lives.

Local Effort Began in 2016: Resiliency Rallies



- Two “Conferencias de Emergencia” held in late 2016 at Rio Grande Valley churches
- Sponsored by churches and local emergency management
- Public/private partnership involves local hardware and “big box” hardware stores
- Focus on inexpensive or assistance programs to reduce substandard structures through “hardening”

“...Teach a Person to Fish...”

- While “Shelters of Faith” is noble and should still be pursued, there are drawbacks:
 - Will people actually GO? Consider *colonia* structure, poverty, culture. Fear of **looting** is real
 - While nearby churches are safe havens of trust, how many in each *colonia* attend and know their faith-based leaders?
 - NOAA Weather Radio – will they actually be used as the enterprise desires?
- **Resilience**, however, gives *colonia* residents “skin in the game” to take pride in hardening/strengthening their homes, giving a sense of pride
- Resilience can also include **knowledge**.
- Ample funding provided by government/private sector programs could be the linchpin – for the next decade!

Consider What We Saw on May 24th, 2022



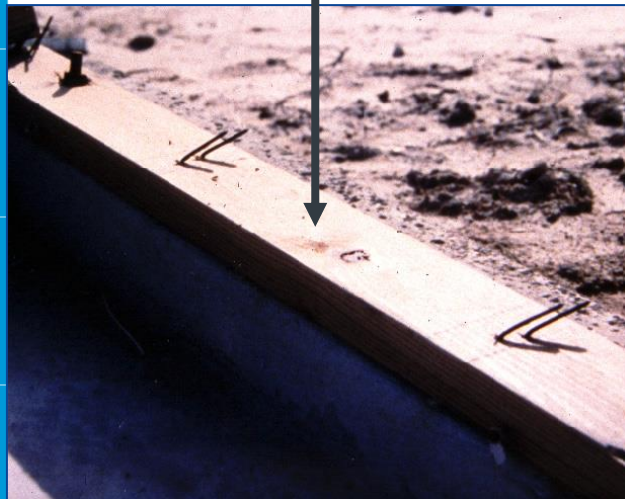
Contrast between substandard construction and well-built construction, in colonia near Moorefield Air Base (unincorporated Hidalgo Co, northwest of McAllen). Estimated winds: 60-65 mph.

These homes are across the street from each other!!

- The long game: Getting all structures from D/F to A/A+
- But now, how do we give D a chance to improve grade to C/B?

The ABCs of Smart Construction

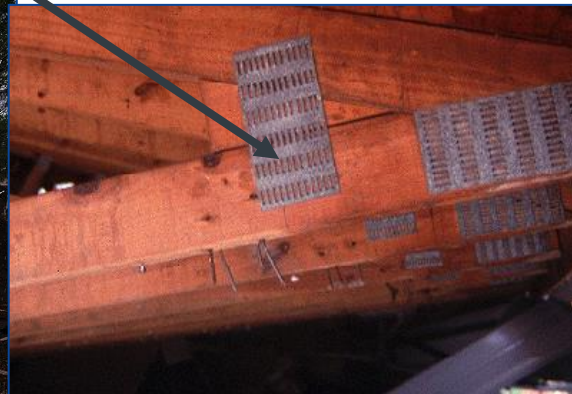
Anchors, **B**races, and **C**onnections



Wall to foundation



Roof to wall
(Gable End)



Trusses/Beams
(Hurricane Clips)

Credit: Tim Marshall, P.E. Haag Engineering Co.



The Short-Term WIND GOAL:

- **Improve Wind Resilience from 60 mph to 90 mph in all substandard buildings.**
 - Use a combination of public/private sector funds for low-cost structural strengthening



The 11/17/2022 Stakeholders “Brainstorm” Meeting

- Held at LRGVDC (Weslaco)
- Attendees included invested public/academic/private partners from Texas and the Rio Grande Valley
- Discussion focused on tangible steps to begin the resilience process.



Through Lines from The 11/17/2022 Meeting

- The Action Items:
 - **Outreach** (short term but continuous)
 - **Research** (short/medium term)
 - **Funding** (short/medium term)
 - **Political** (short/medium/long term)

Who's In

PROYECTO AZTECA



Building a better world



VALLE DEL RIO GRANDE



TEXAS ADVANCED COMPUTING CENTER



IDRT



Who's Next



Habitat for Humanity



August 2023 Conference (Alamo)

CONFERENCIA DE PREPARACIÓN PARA EMERGENCIAS

Con el apoyo de los socios del Grupo de Trabajo de Vivienda de Voces Unidas



The University of Texas
Rio Grande Valley



8/25 8:30 am to
12:30 pm
1429 South Tower
Road, Alamo, TX
78516



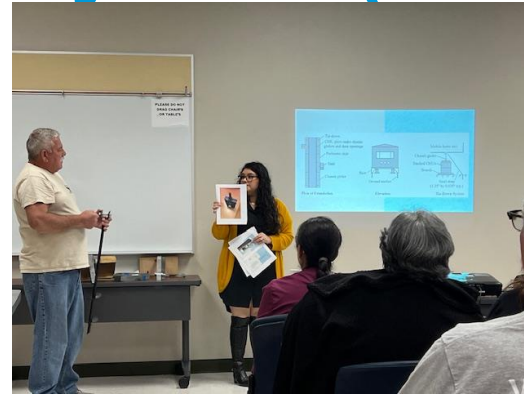
Most Recently: January 2024 (Cameron Co)

CONFERENCIA DE PREPARACIÓN PARA EMERGENCIAS 1/23, 1/24 & 1/26
9 am - 12 pm
Santa Rosa, Laguna Heights & Brownsville

Con el apoyo de los socios del Grupo de Trabajo de Vivienda de Voces Unidas RGV








¡Gracias a nuestros colaboradores!





Summary of Conferencias

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- 
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- 
- 
- Each included reps from federal, state, local government ***and*** organizations invested in underserved/vulnerable communities across the RGV
 - Overall focus was on emergency preparation, but included damage reporting and bi-national situations
 - NWS focus, joined with Proyecto Azteca, was on **physical and knowledge resilience**



Next Steps...and Challenges

- Leverage (more) stakeholders in all sectors. Even for minor repairs, \$\$\$ is crucial on the larger scale
- Keep the momentum building, even through
 - Potential government budget shortfalls
 - Political changes (all levels)
 - Consider: The Texas focus on the border
 - Consider: Texas has no required building code for unincorporated locations...still
 - Difficulty making time for these efforts with staffing profiles and other priorities





Open Discussion: How do we get there (resilience) from here (vulnerability)?



Thank You!

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