

Aransas Pass, Texas: A Community Self-Assessment on Coastal Resilience



Introduction

Texas Sea Grant, in partnership with the Mission-Aransas National Estuarine Research Reserve, led a Coastal Resilience Index meeting on March 11, 2014. The purpose of this meeting was to assist the City of Aransas Pass in coastal storm preparation and recovery, as well as identify areas that can be improved upon prior to future storm events. The target audience for this meeting was the City of Aransas Pass officials and staff from relevant departments.

A total of 22 participants from key staff from the following departments: Emergency Management, Harbormaster, Utilities, Finance, Municipal Court, Building, Police, IT, and Fire. This group will make up the Aransas Pass Resilience Team.

The meeting consisted of a hurricane scenario building exercise and the completion of the Coastal Resilience Index. Following the Index assessment, the Aransas Pass Resilience team discussed options for increasing the City's scores on the assessment.

What is Resilience?

DISASTER RESILIENCE is the capacity of a community to adapt, either by resisting or changing, in order to reach and maintain an acceptable level of structure and function after being exposed to a hazard.

RESILIENCE is determined by the degree to which the community is capable of organizing itself to increase its capacity for learning from past disasters.

What is the Coastal Resilience Index?

The Coastal Resilience Index is a simple and inexpensive tool that communities can use to assess how prepared they are in the face of coastal hazards. The Index is a tool used to guide discussion among community leaders about the community's resilience in the face of coastal hazards.

Aransas Pass, Texas: An Assessment on Coastal Community Resiliency

Scenario Building

The purpose of the scenario building exercise was for the Resilience Team to identify a benchmark storm that affected the Aransas Pass area in the past, identify the different variables of the storm, and then use those variables to characterize a future storm that would be more severe than the benchmark storm. The benchmark storm was determined by identifying the most recent major storm to impact the local community. The variables used to determine storm severity included: wind speed at landfall, total rainfall over 24 hours, storm surge level (in feet), direction of the storm at landfall, speed of storm movement, storm duration (in hours), tidal influence, and location of storm landfall and subsequent track.



Surveying damage after Hurricane Celia. Source: Caller Times.

Variables	Hurricane Celia	Hurricane Sylvia
Wind speed at landfall (mph)	130	150
Rainfall (total/24 hours)	5-7 in.	10-14 in.
Storm Surge (height in feet)	9.2	12
Direction	N/NW	N/NW
Speed of Movement	10 mph	6 mph
Tidal Influence (High or Low)	Low	High
Landfall Location	Port A./Corpus Christi	Conn Brown Harbor

Scenario 1: Historical Benchmark Storm

The benchmark storm was identified as Hurricane Celia, which made landfall in the Aransas Pass area in 1970. Wind speed at landfall was approximately 130 miles per hour. Rainfall totaled 5 to 7 inches in a 24-hour time period. Storm surge ranged from 6.4 to 9.2 feet, and the direction of the storm was West/Northwest with a speed of movement of 10 miles per hour. Duration of the storm overall was five days and was centered on the local area for approximately 30 hours. The tidal influence was low, and Hurricane Celia made initial landfall at the cities of Port Aransas and Corpus Christi.



Hurricane Celia Path. Source: texascoastalgeology.com

Scenario 2: Greater Intensity Future Storm

The future storm identified was named by the Resilience Team as "Hurricane Sylvia". Hurricane Sylvia would be a slow-moving storm that would result in large amounts of rainfall, and would have a higher storm surge. Wind speed at landfall was defined as 150 miles per hour, with rainfall totals at 10-14 inches over a 24-hour period. The Resilience Team also determined that Hurricane Sylvia would make landfall in Aransas Pass, specifically at Conn Brown Harbor, and that it would have a high tidal influence.

Aransas Pass, Texas: An Assessment on Coastal Community Resiliency

Resilience Index Assessment

Texas Sea Grant and the Mission-Aransas Reserve led the Aransas Pass Resilience Team through the Coastal Resilience Index. The Coastal Resilience Index approach and assessment was developed by the Mississippi-Alabama Sea Grant Consortium, and is designed to be a self-assessment completed by community officials. The Index consists of six sections and eight pages that contain mostly yes and no questions. Each section was addressed individually and the following scores were calculated:

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

Interpreting Resilience Index Results

Coastal Resilience Index scores can be summarized as follows:

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.

While Critical Infrastructure and Critical Facilities received a “Low” rating, this is not uncommon in the Coastal Bend region, and is a common trend in communities across the Gulf of Mexico. These areas of resilience are the ones that require the heaviest capital investment, and are therefore some of the hardest to address. Business Plans and Social Systems also received a “Low” rating, and these categories can be viewed as low-hanging fruit for the city to address. By engaging local businesses, local industry, and the strong faith-based and civic organizations in the area in its resilience planning efforts, the city can quickly improve this score to a “Medium” or “High” rating.

Community Plans and Agreements, 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”. Encouraging City staff to participate in planning organizations such as the American Planning Association, Texas Floodplain Manager’s Association, and the Public Works Association, developing plans to address natural disasters, and developing relationships and agreements with other local communities to assist during a disaster will all increase the scores in these categories.

Areas for Future Action

The purpose of the Coastal Resilience Index is to identify areas of weakness that make communities vulnerable to coastal hazards, and provide communities with a starting place to address those weaknesses. While improvements to critical infrastructure and critical facilities can be expensive undertakings, there are several areas that Aransas Pass could begin addressing now that will have a huge impact on improving the City's Index scores in the next assessment. The following list are just suggestions of actions that the City could undertake within the next year that would result in increased scores and increased resilience to coastal hazards for the community at large.

1. Develop a plan for offsite critical records storage.
2. Have appropriate staff begin the process for receiving American Institute of Certified Planners credentials.
3. Revise the City's mitigation plan.
4. Begin working with local communities to develop Memorandums of Understanding (MOU) or Agreement (MOA) to assist one another in the event of a disaster.
5. Develop a strategic plan that addresses disaster preparedness.
6. Have relevant City staff participate in groups such as the American Society of Civil Engineers, the American Planning Association, and the American Public Works Association.
7. Develop an education program about disaster mitigation options for the community.
8. Develop a shoreline restoration plan for critically eroding areas in the City.
9. Work with local businesses such as HEB, Tractor Supply, Lowes, and fuel distributors to understand what their plans are for natural disasters, and work to develop agreements for mutual assistance during a disaster.
10. Work with local faith based organizations (Interfaith, Tri-County Christian, etc.), local civic organizations (Rotary Club, Women's Club), and local industry (Gulf Marine Fabricators) to discuss how they could help Aransas Pass residents during a natural disaster.

This list is not meant to be a checklist for disaster preparedness. Rather, it provides the City of Aransas Pass with many different options and available actions for starting on the road to coastal community resilience.

This report has been developed for the use of the City of Aransas Pass. All information contained in this report, or in the Coastal Resilience Index assessment, are confidential and may not be distributed without the express permission of the City of Aransas Pass.

For more information, contact:

Heather Wade
Coastal Planning Specialist
Texas Sea Grant
361-825-2011
hbwade@tamu.edu

Kristin Ransom
Coastal Training Program Coordinator
Mission-Aransas National Estuarine Research Reserve
361-749-3048
kristin.ransom@utexas.edu



A Community Self-Assessment

Understanding how prepared your community is for a disaster