

Historic Harris County Watershed Management Actions as an Example of the Future of the Coastal Bend Watersheds

Moderator:

Mason Liebau PE, SIT, CFM at Lockner:

Panel:

Travis Prusky, Chief Operations Officer - Nueces River Authority

Jason Krahn AC, PMP, Chief Infrastructure and Operations Officer at Harris County Flood Control District

Emily Martinez MPA, Executive Director Coastal Bend Council of Governments

Juan Moya, PhD, PG, Geomorphologist and Building with Nature Lead at Lochner



Introduction: Building With Nature Vs. Nature-Based Solutions in Flood Control Projects

How to Build Resilient Communities and Reduce Flood Risk?

Juan Moya (2024)

Building With Nature (BWN) Vs. Nature-Based Solutions (NbS)

*Asked Gemini AI and Claude AI the most cited references for **BWN** and **NbS** definitions*

BWN and **NbS** are closely related concepts

BWN is a more holistic approach focused on infrastructure development

NbS are specific actions and strategies that can be part of **BWN** frameworks

BWN:

- Works with natural systems to address societal challenges, particularly in the context of water-related infrastructure.
- Promotes a shift from traditional hard infrastructure to a more sustainable and adaptive approach that considers the dynamics of the natural environment.
- Aims to find solutions that are both effective and environmentally sound.

NbS:

- Specific actions and projects that utilize natural ecosystems or modify them in ways that address social, economic, and environmental challenges.
- It can include a wide range of strategies, from restoring wetlands to creating green roofs or implementing permeable pavements.
- **NbS** is often used as part of a broader **BWN** framework.

BWN and Resiliency Concepts for Flood Control Actions

General Conclusions:

BWN includes the overall approach of designing the actions to minimize infrastructure impacts of river-stream ecosystems and potentially control the river's natural processes to enhance the stream stability.

NbS represent the actions taken to implement the **BWN** principles, which may include the specific technologies like using natural materials like wood or installing a wetland to filter runoff from the streets.

BWN is a broader, overarching approach to water infrastructure development in balance with the natural processes and the community needs: **It requires understanding of the natural processes!**

Resilience: Refers to the capacity to bounce back from adversity.

Resilient Communities have the ability to anticipate, prepare for, respond to, and recover from floods with minimal damage to social well-being, the economy, and the environment through:

Preparedness, Response, Recovery, & Adaptation.

BWN aims for **Natural Flood Mitigation** and provides a sustainable and adaptable approaches to flood risk management to the communities, natural habitats and infrastructure, **making communities more Resilient**

Panel Discussion

Questions 1. Resiliency

To Juan: As Geomorphologist that has worked for the state on hazard mitigation plans and the recommended actions in the Coastal Texas Feasibility project, what would be examples of concepts related to Resiliency for storm protection and flooding used in Texas?

To Jason: How has **HCFCO** defined the concept of Resiliency? How have investments in Resiliency morphed over the years and how has the effort “Paid Off” in Harris County?

To Emily: How has **CBCOG** incorporated Resilience concepts in the region?

To Travis: How has the **Nueces River Authority** contributed or participated in Resilience actions and how these actions improved flood control issues?

Questions 2. Watershed Management

To Jason: Can you provide examples on how Harris County has developed **Comprehensive Watershed Management** and provide the lessons learned that brought significant benefits for flooding mitigation?

To Travis: Where can the Nueces River Authority participate and support Coast Bend region in establishing **Comprehensive Watershed Management actions**?

Question 3. Public Awareness and Policy Advocacy

To Jason: How has Harris County improved **Public Awareness and Policy Advocacy** through the years and especially after Harvey?

Panel Discussion

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To Travis: How important and effective are **Flood Warning Systems and Realtime Monitoring** for **Resilience Plans**?

To Jason: How do you see the role of **BWN** actions to improve **Community Resilience**?