



Framework Development to Assess Resilience Management of Coastal Infrastructure for SWG

ERDC Dredging Operations Technical Support Program (DOTS)

U.S. ARMY CORPS OF ENGINEERS

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Response Summary:

A framework for quantifying expected gains in resilience associated with alternative coastal storm risk management measures is important for realizing USACE objectives. Resilience gains are generally inferred about measures that protect the health and safety of coastal communities, reduce the risk of storm damage to industries and businesses critical to the national and local economy, and address important coastal ecosystems needing restoration. However, explicit of how whether and how they contribute to resilience is necessary to be able to attribute benefit and guide planning, selection, and design of measures. Opportunity currently exists in Coastal Texas to design measures with resilience performance objectives and avoid designs that suffer the shortcomings of infrastructure based on more narrowly defined objectives. In order to take advantages of this opportunity, resilience needs to be explicated so that appropriate interventions can be illuminated.

The DOTS-supported effort aims to assist Galveston District (SWG) to define resilience objectives for the Coastal Texas context in a way to can support attribution of resilience benefit to alternative approaches and measures. It draws on the Risk and Decision Science Team's research on resilience as it relates to different domains (e.g., biophysical systems, communities, economies, infrastructure, etc.). More resilient measures are expected to leverage natural infrastructure and ecosystem services, to some extent, therefore sediment management plays a central role in the resilience management.

Period of Performance:

February 2019 to March 2020

Benefits of the Response to the USACE Dredging/Navigation Program:

The aims of navigation program and pursuit of resilience via flood risk management and ecosystem restoration are synergistic. Natural Infrastructure, as a general category, has emerged as an important sink for sediment that is dredged from channels. NIs as placement areas are particularly important already for systems with limited capacity to receive material and where upland placement is expensive. Expanding NI implementation will serve to also expand placement area capacity. Conversely, NI can serve to provide operational efficiency as well as, in some cases, reduced need for channel maintenance.

Deliverable:

A framework will be produced for assessing resilience benefit of coastal infrastructure including sediments in the Texas Gulf Coast.



Providing environmental and engineering technical support to the U.S. Army Corps of Engineers
Operations and Maintenance navigation and dredging missions

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