# Carolina Beach Storm Reduction Project Roadmap

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# Project Problem Statement

For this project, a site in Carolina Beach will be characterized and analyzed to create a design to reduce storm impact for 50 years that falls within the budget.

Scarp near house in Rodanthe, NC.

Photo by Ryan Mieras

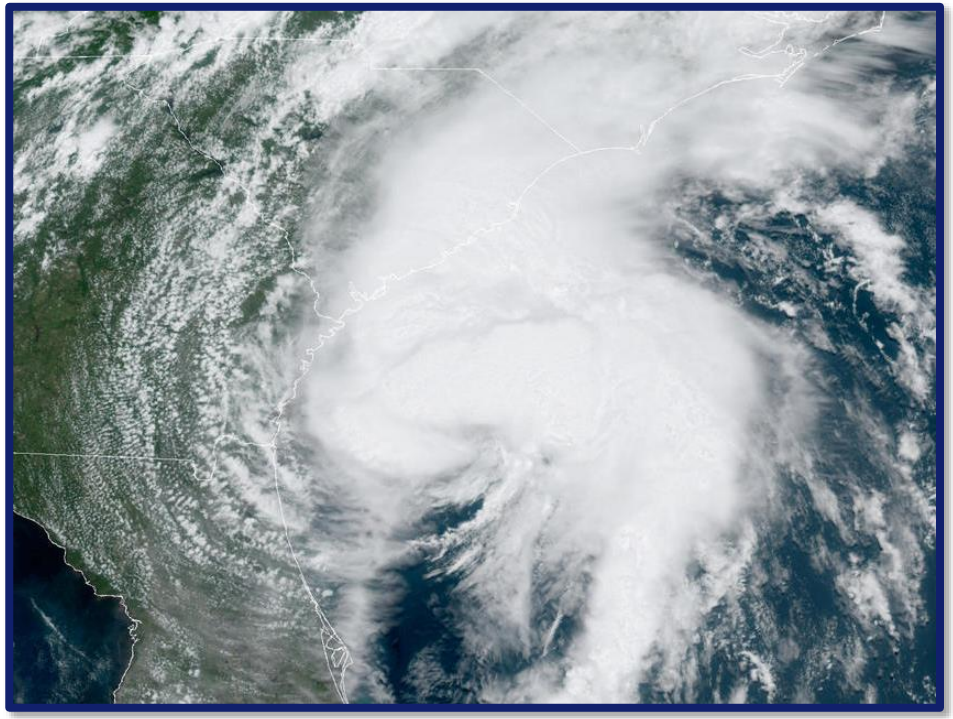
# Site Characterization

The first step in the project is understanding the physical processes that occur at the site. These include:

- Plotting survey data over time to see profile evolution (note years of storms)
- Getting erosion rates
- General wave characteristics
- Grain size
- Prior storm studies/overwash sites at this location
- Understanding sea level rise for the next 50 years
- Any other coastal processes that should be considered

# Case Studies

The first step in choosing a design is case studies of other projects with similar interests of this project. It is important to understand the successes and failures of other projects to maximize this effort to complete the task within our set budget.



Hurricane Isaias

Photos by CBS and Port City Daily

# Economic Benefits

When picking a design for the site, the economic benefits must be considered when picking a design. Is the project going to be beneficial for recreation, homeowners, community, environment? These factors are important in generating a good return on the investment.

Zane Williams Surfing

# Geotechnical Components

Regardless of the design picked, sediment will have to be placed onto the beach for backfill or nourishment reasons. This involves finding potential offshore borrow sites. From the grain size analysis of the beach, an offshore site should be compatible with the current beach. This requires core samples of multiple areas with detailed analysis of the samples. Also based on the design, an estimate of cubic yards needed for the project must be calculated. The borrow sites must hold this amount of sand for the project.

# Environmental Components

Regardless of the design picked, environmental concerns must me taken into consideration. This means taking into consideration wildlife, habitat, pollution, and quality of sand when constructing the design. The goal is to complete the project to the best of its ability while also reducing the footprint during construction.

# Modeling Proposed Design

Once a design is selected (models of multiple designs should be ran too), extensive models need to be ran to determine effects that storms, and normal wave events will have on the design. This is important in understanding the life span of the design and understand if maintenance or a renourishment cycle is required.

# Coastal Engineering

Whenever constructing the design, it is important to consider the time of year that construction will be taking place. Will the construction impact local areas for prolonged time periods?

When constructing the project, it must be monitored to make sure that the project is being completed in an accurate manner. This involves surveying progress to make sure the construction meets the design needs.

# Future Considerations

After construction is complete, monitoring of the project is crucial is determining if other changes or maintenance is required.

Also, environmental effects should be considered and monitored after construction to ensure no lasting effects are left on the site.

# Comments or Questions?

**Contact**

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