DNREC Shoreline Management Economic Study Public Meeting

BEN BLACHLY (IEC), KIRK BOSMA (WHG), MAURA FLIGHT (IEC)

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Overview

- Consultant team overview
- Study objective and scope
- Timeline
- Research questions
- Analysis framework
- Status and next steps
- Potential topics for input

Consultant Team

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Industrial Economics, Incorporated
Objective analysis. Exceptional service.

- Assessment and economic valuation of benefits from beach nourishment projects
- Regional economic impact modeling
- Cost analysis

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- Coastal modeling performance of beach nourishment projects

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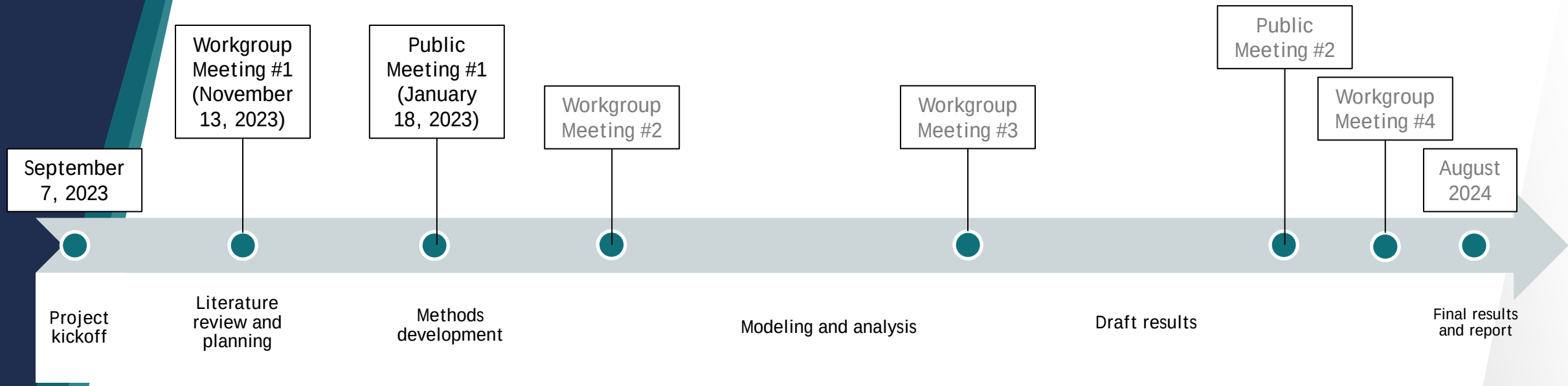
Study Objective and Scope

Provide data and analysis to support recommendations regarding equitable State and local cost-share ratios for nourishment projects at bay and ocean beaches that have public access and residential development.

Scope overview:

- Analysis of 11 beach nourishment project sites.
- Assess all significant benefits over 30-year time frame.
- Important coastal resiliency issues NOT considered in this study include: back bay flooding and saltwater intrusion on agricultural land.

Project Timeline



Research Questions

- How well do beach nourishment projects perform across the sites?
- Who benefits from investments in beach nourishment?
- By how much do different groups benefit?
- How do the relative benefits vary across sites?
- How do regional economies depend upon intact beaches?
- What influences the relative social vulnerability of communities affected by these projects?

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Eleven Project Sites

BAY SHORE

1. Pickering
2. Kitts Hummock
3. Bowers
4. South Bowers
5. Slaughter
6. Broadkill
7. Lewes
8. Cape Shores

ATLANTIC COAST

9. Rehoboth & Dewey
10. Bethany & South Bethany
11. Fenwick Island

How well do beach nourishment projects perform?

Beach Nourishment Design Alternatives

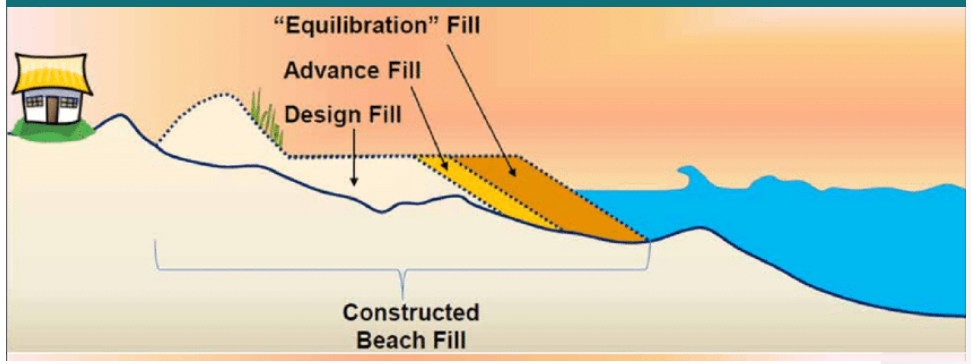
ALTERNATIVES

No Action Alternative

Beach Nourishment Alternatives

1. Previously constructed nourishment template
2. Permitted nourishment template
3. Potential alternative nourishment templates

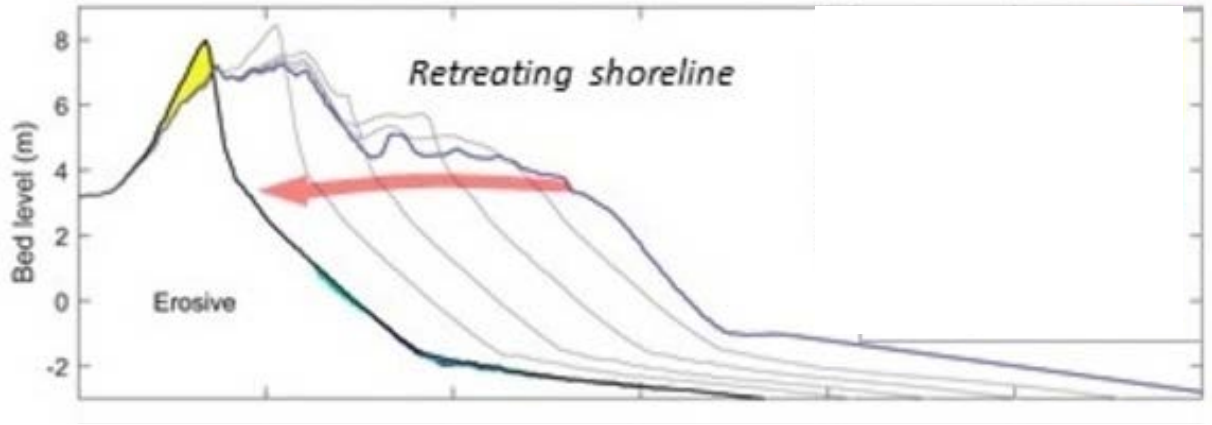
NOURISHMENT TEMPLATE



Physical Scenarios

- Ongoing coastal erosion and nourishment performance

Longer-term

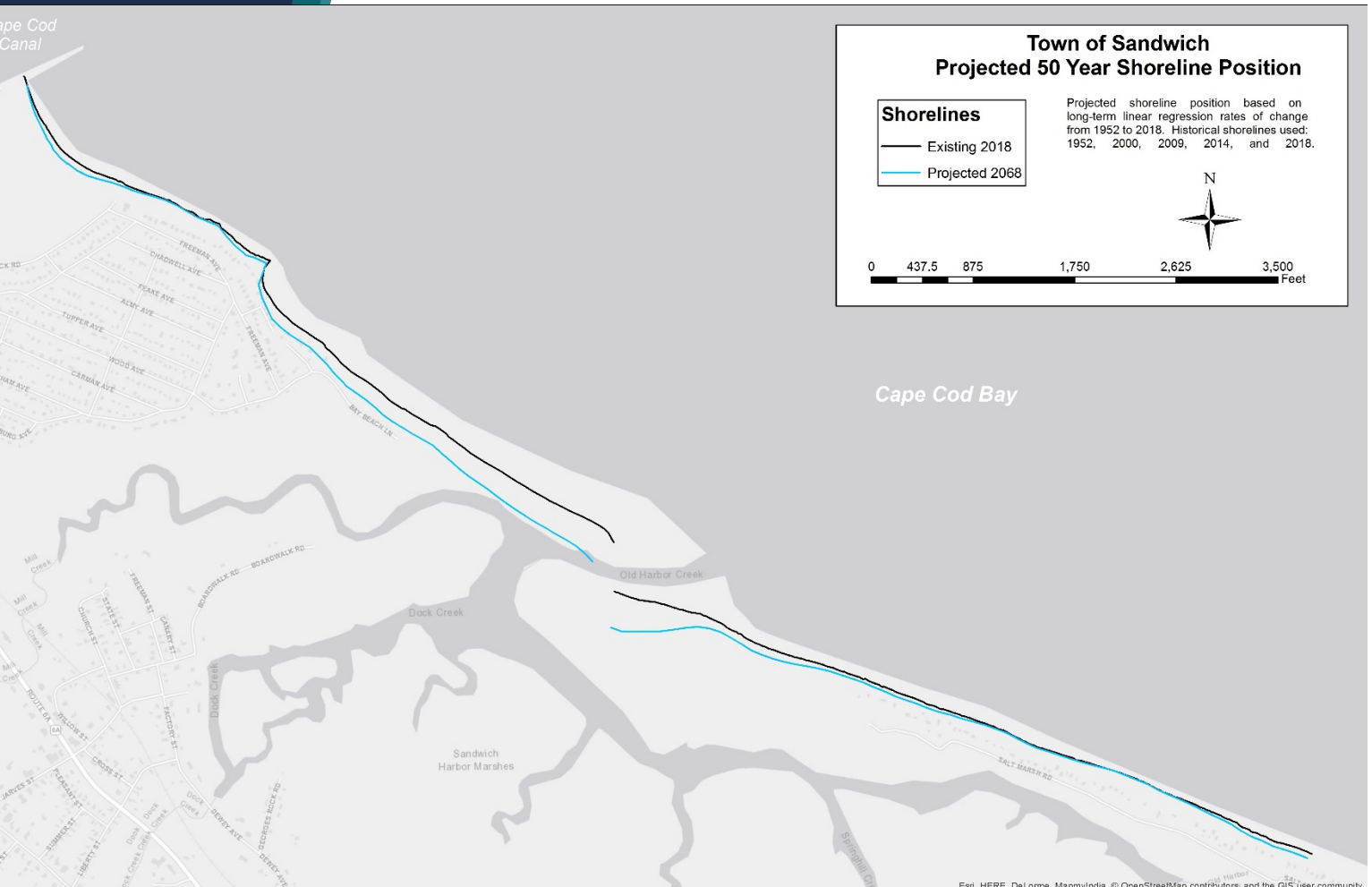


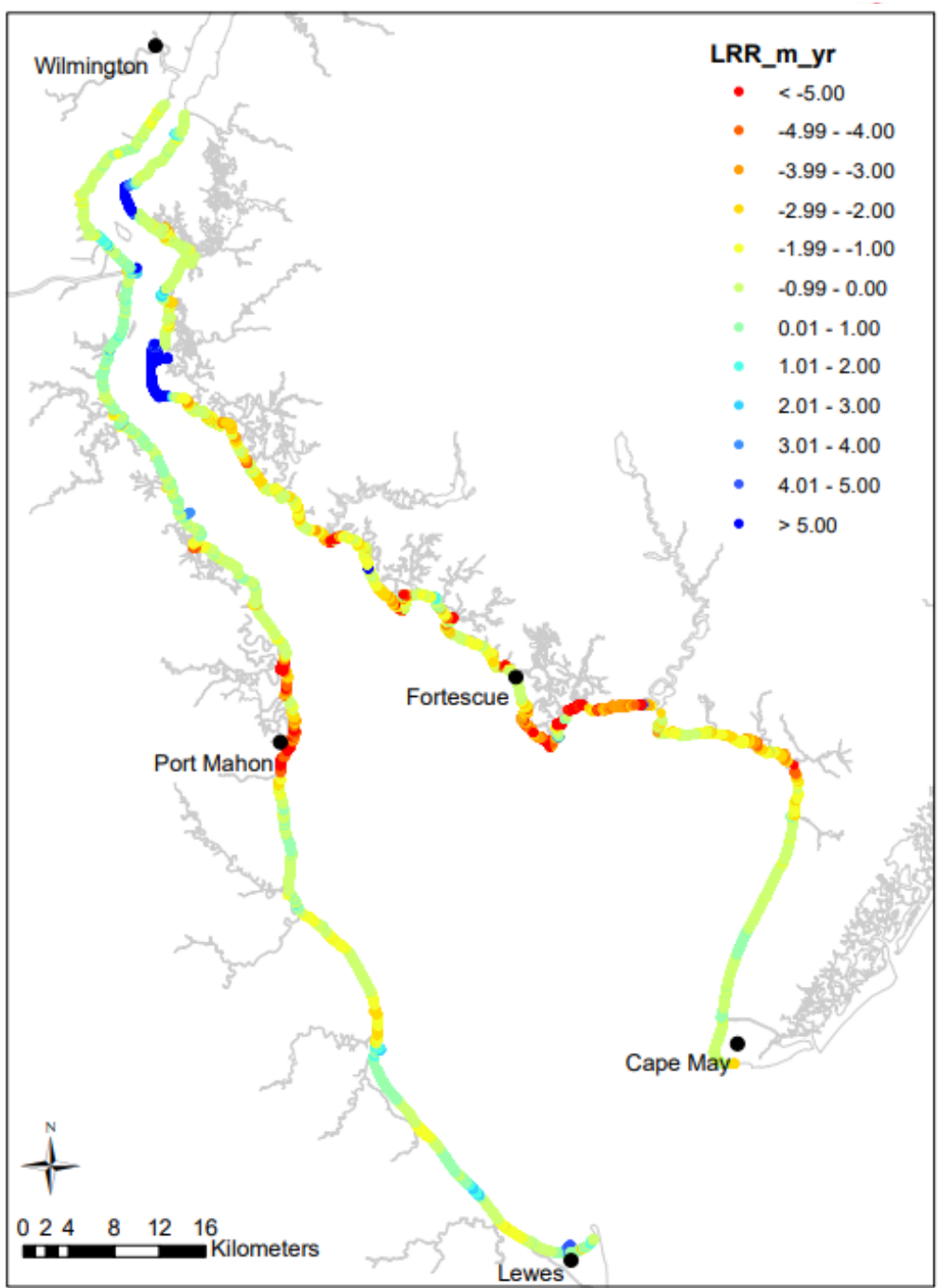
30-year time horizon

- Impacts of various storm events (e.g., 5-year to 100-year)

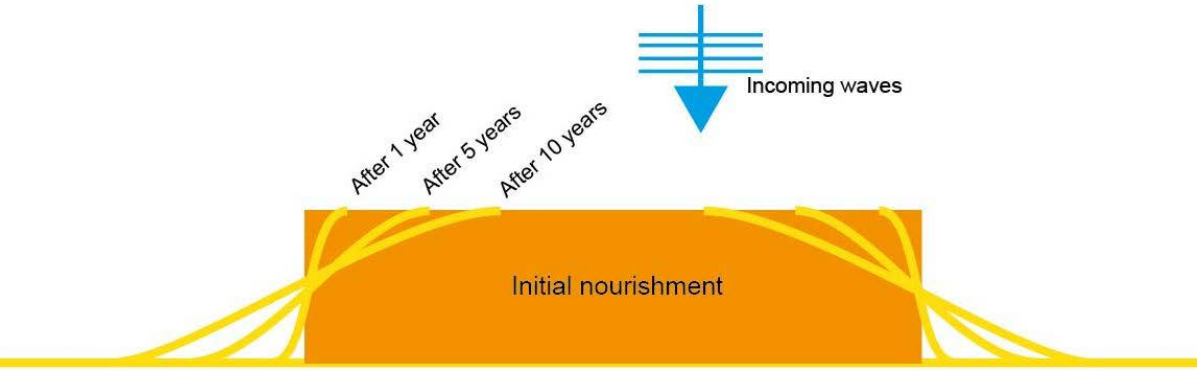
Episodic

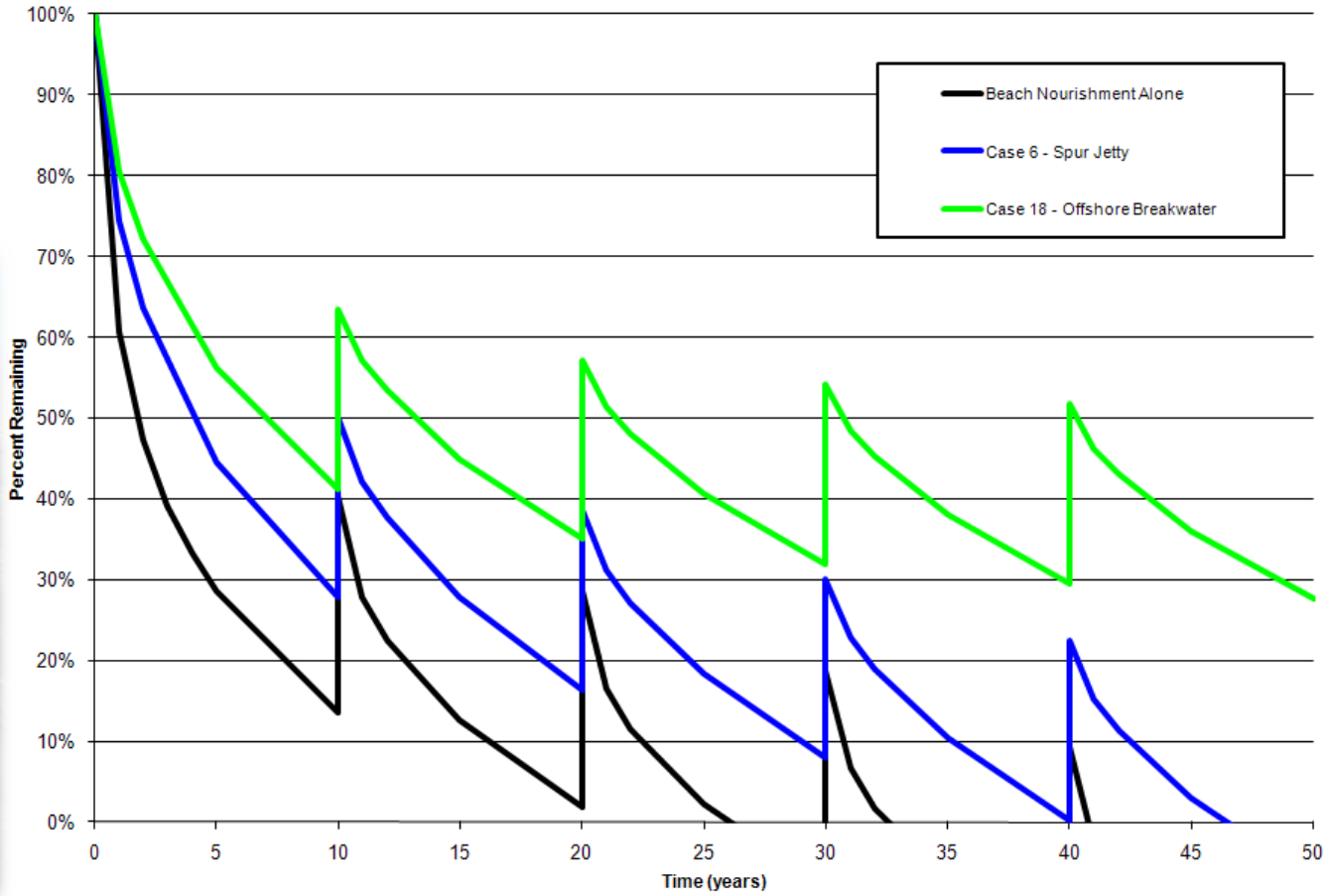
Shoreline Position





Beach Nourishment Performance





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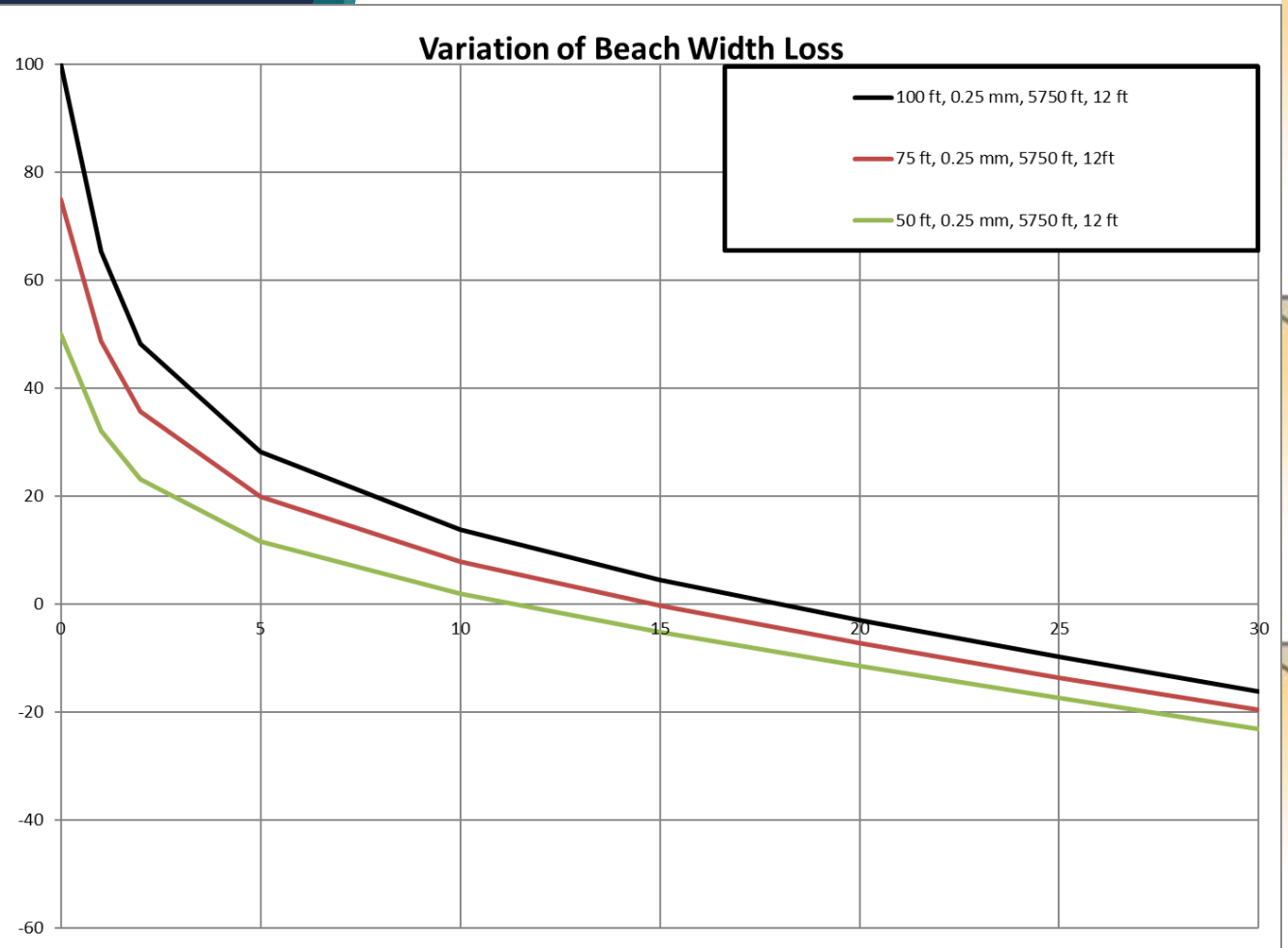
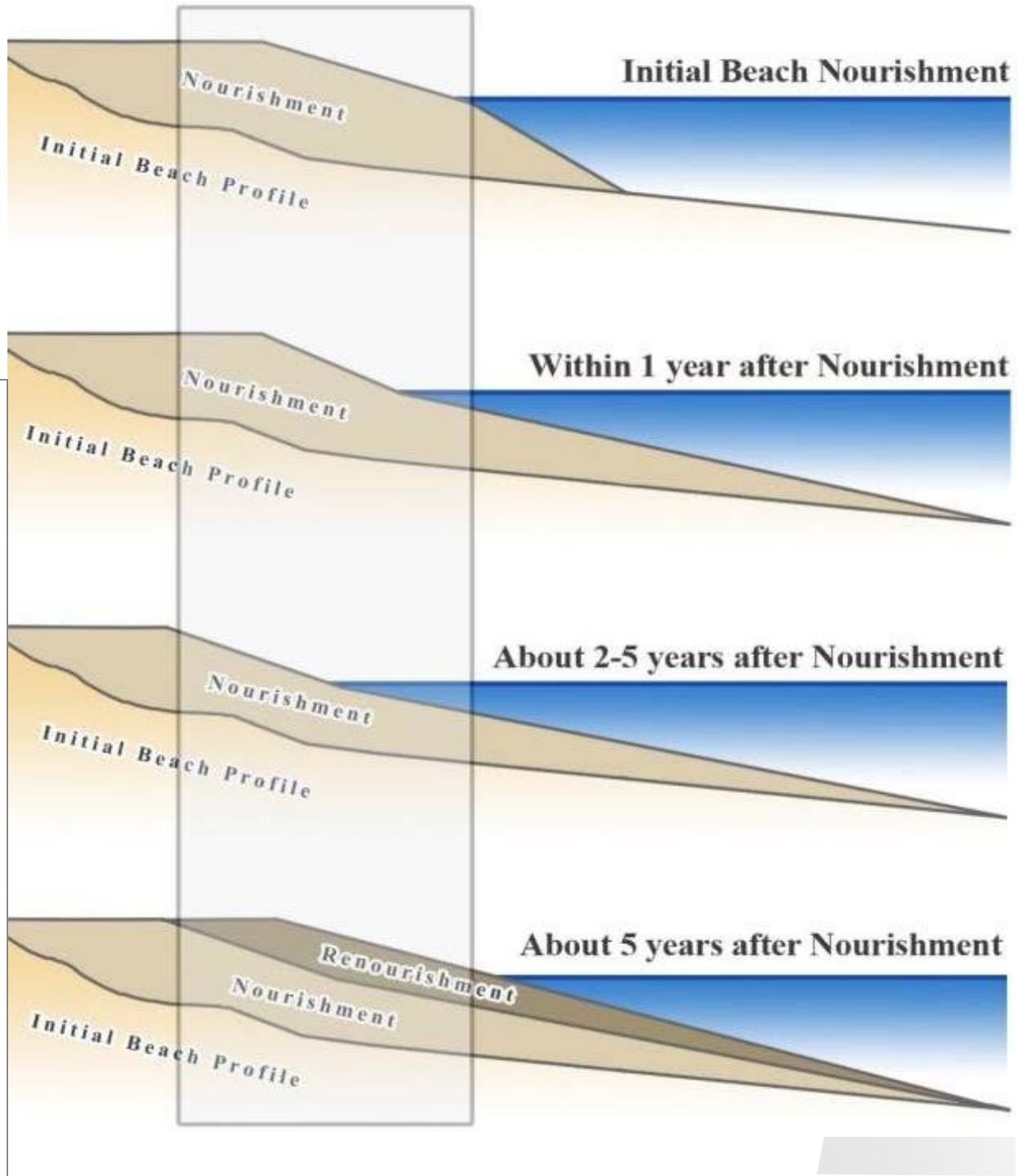
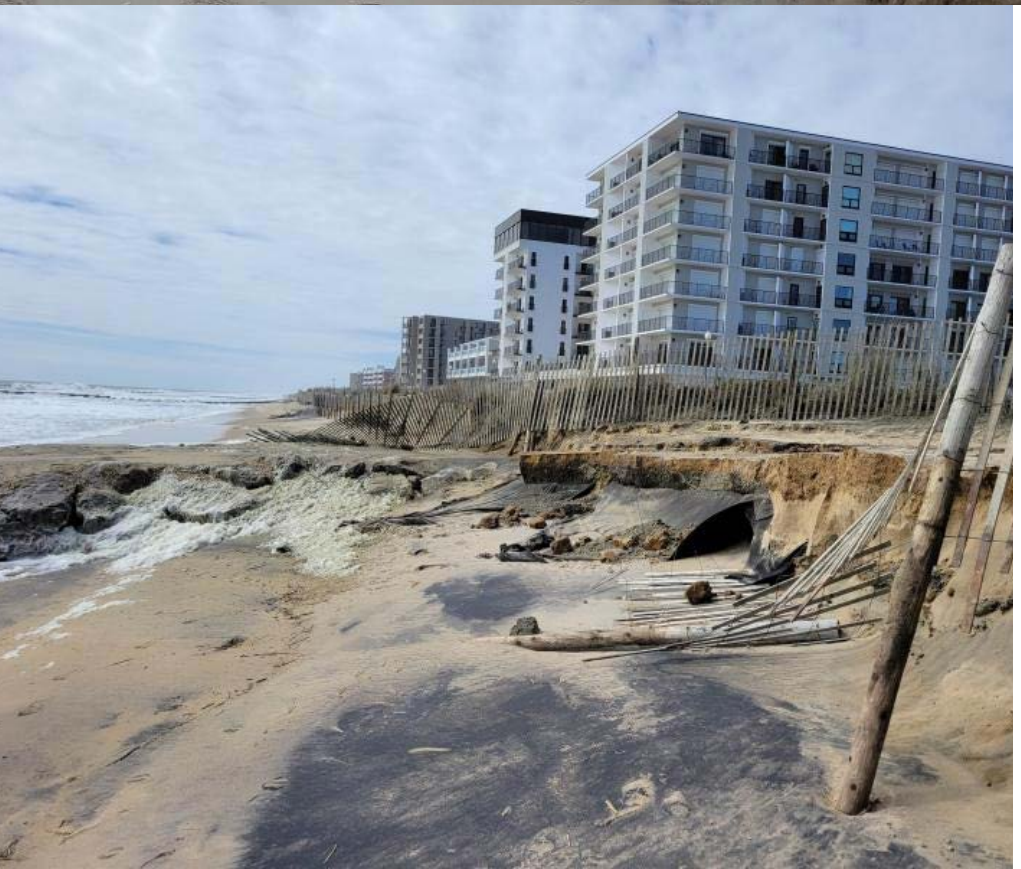
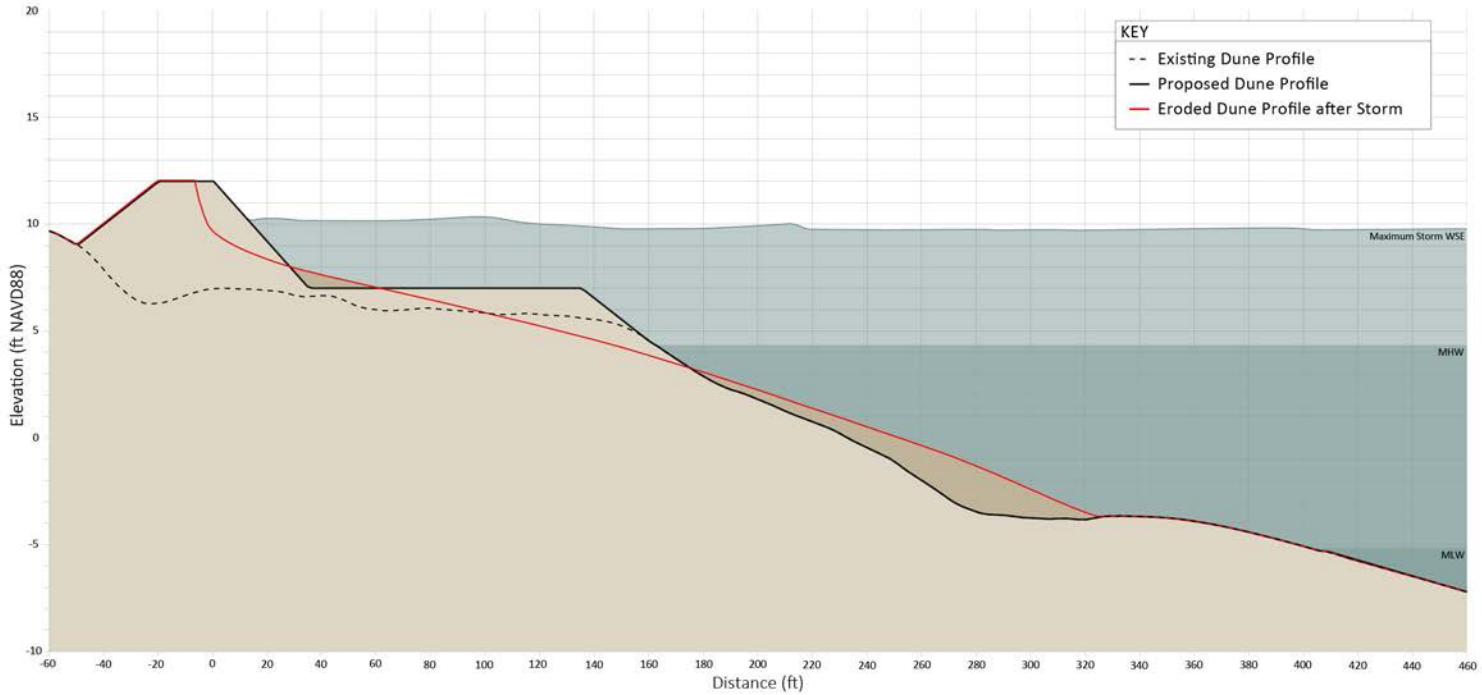
Beach Width





Storm Erosion





Erosion of Proposed Dune in a 100-year Recurrence Interval Storm

Tenean Beach, Dorchester

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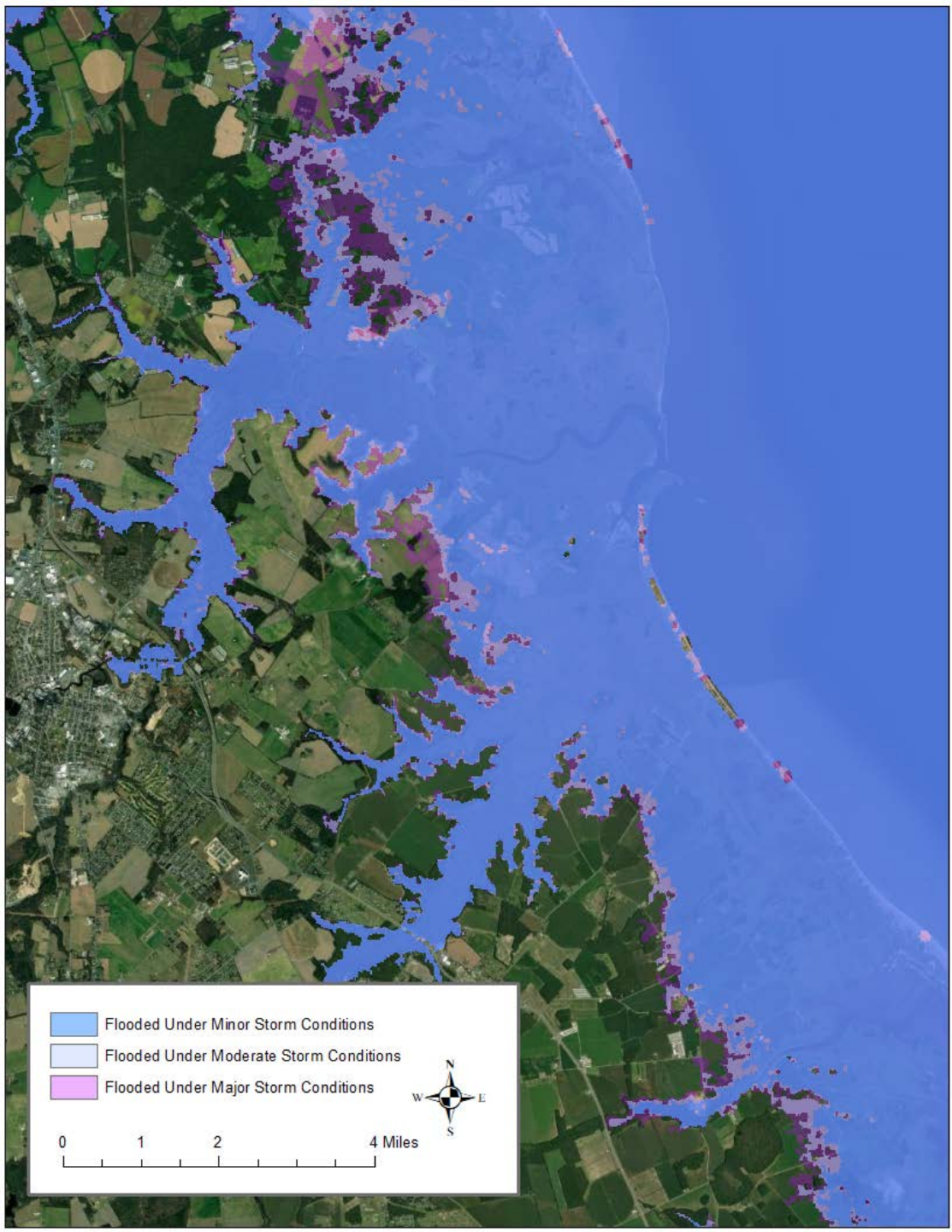
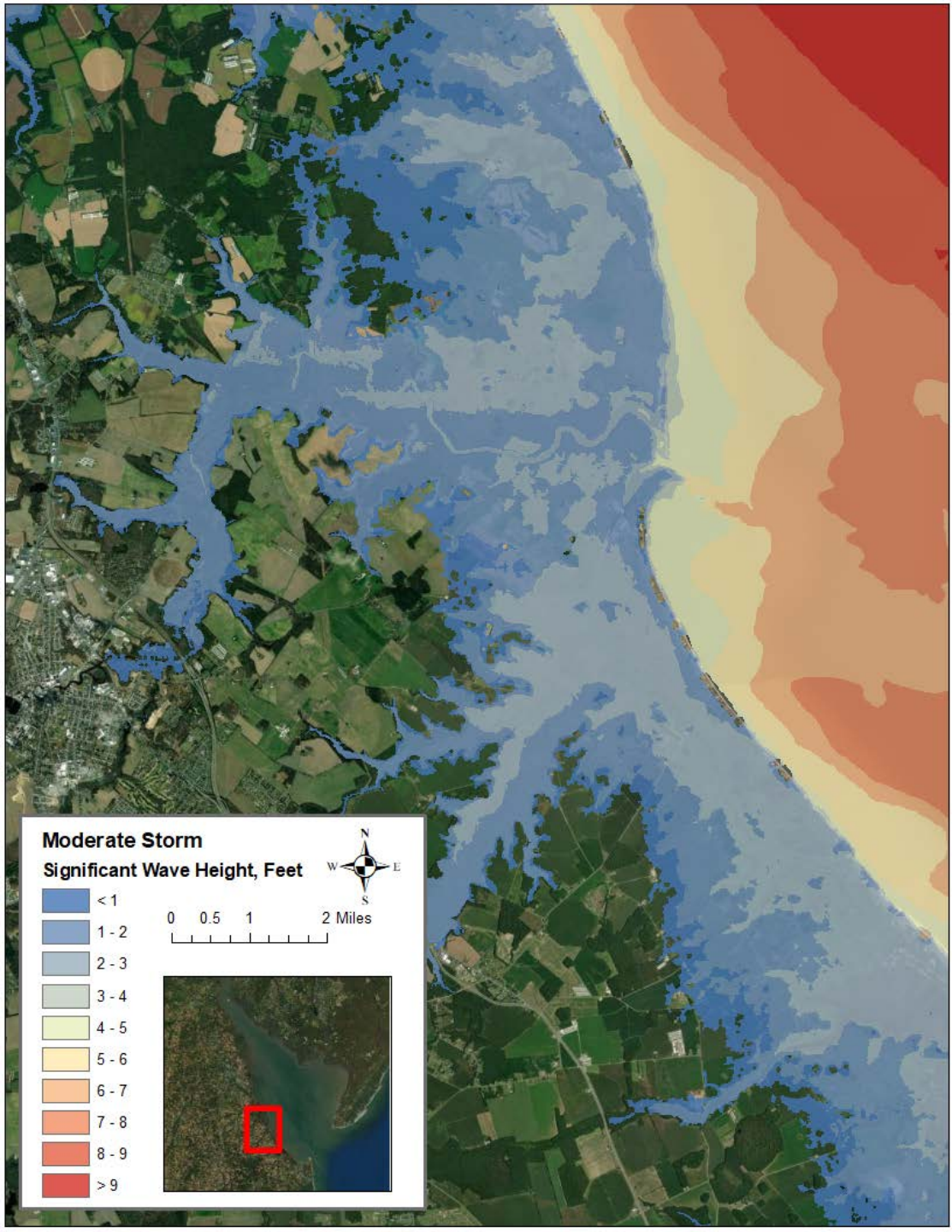
Flood Extent and Depths

Slaughter Beach storm damage – 1962



Wave Heights and Energy



Who benefits from investments in beach nourishment?

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BENEFIT OF BEACH NOURISHMENT	GROUP THAT RECEIVES BENEFIT
Avoided damage to infrastructure from storms and coastal erosion	Private property owners: local Public property and infrastructure owners: State, local
More beach trips, more enjoyment from each trip	Recreators: State, local, out of state
Economic impacts from beach recreation/tourism	Business owners: State, local, out of state Governments: State, local
Cultural value (for example, sense of place)	Delaware residents: State, local
Ecological effects	

"Local" here means anything that is smaller than the State. For example: counties, municipalities, and communities.

By how much do different groups benefit?

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How much do property and infrastructure owners benefit from beach nourishment?

Using outputs from coastal modeling:

1) Which structures and other infrastructure would be lost to coastal erosion over the next 30 years absent nourishment?
   - What is their value?
   - When is the loss expected to occur?
2) How much damage from flooding is expected with and without nourishment?

Image credit: Coastal Point, Mike Smith

Image credit: WRDE.com

How much do recreators benefit from nourishment?

Wider beaches potentially benefit recreators in two ways:

1) increased number of trips, and
2) relative enjoyment associated with a trip, expressed as dollar value

Rehoboth Beach before and after nourishment (same date, one year apart)

Image credit: Delaware News Journal

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How much do local and regional economies benefit from beach nourishment?

- Recreators spend money in the local economy (for example, restaurants, hotels, shops)
- That spending ripples through the broader economy
  - IMPLAN modeling to understand these multiplier effects
- Potential for reduced closures and losses from storm damage

Image credit: Boardwalk Plaza Hotel

Image credit: Daily Times File Photo

How much cultural and ecological benefit does beach nourishment provide?

- Sense of place, other cultural values, and ecological effects are difficult to quantify.
- Instead, consider available information about cultural and ecological significance or importance of these sites to local communities and/or the broader public.

Image credit: WHYY

How do the relative benefits vary across project sites?

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How do the relative benefits vary across project sites?

- Infrastructure
  - Location relative to shoreline
  - Density
  - Individual structure characteristics
- Recreational activity
  - Capacity
  - Accessibility
  - Proximity to other attractions
- Unique site characteristics that influence cultural values
- Ecological conditions

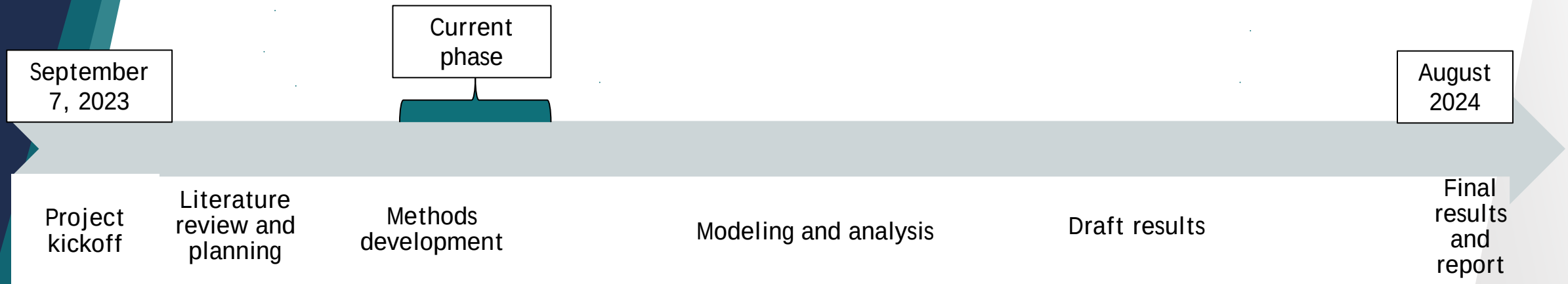
What influences the relative social vulnerability of communities affected by these projects?

What influences the relative social vulnerability of benefiting groups?

- Potentially important factors:
  - Age
  - Income
  - Cumulative effects of climate change
- Social vulnerability may affect ability to participate in cost-share and/or engage in adaptive behaviors (for example, relocation)

Status and Next Steps

- Continue to conduct coastal processes modeling to identify changes in flooding and erosion risk at each project site under the nourishment alternatives.
- Continue to collect information about the affected communities and population.



Potential Topics for Input

Information on experiences regarding the effects of past coastal storms at these sites.

Data on recreational activity/visitation at the various beaches.

Insights into cultural and historical importance of the beaches and surrounding communities.

Additional considerations related to the benefits of beach nourishment and/or the benefiting groups.

Please direct all information and inquiries to Sarah Bouboulis: sarah.bouboulis@delaware.gov

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A CLS COMPANY

Ben Blachly, IEc
Kirk Bosma, WHG
Maura Flight, IEc