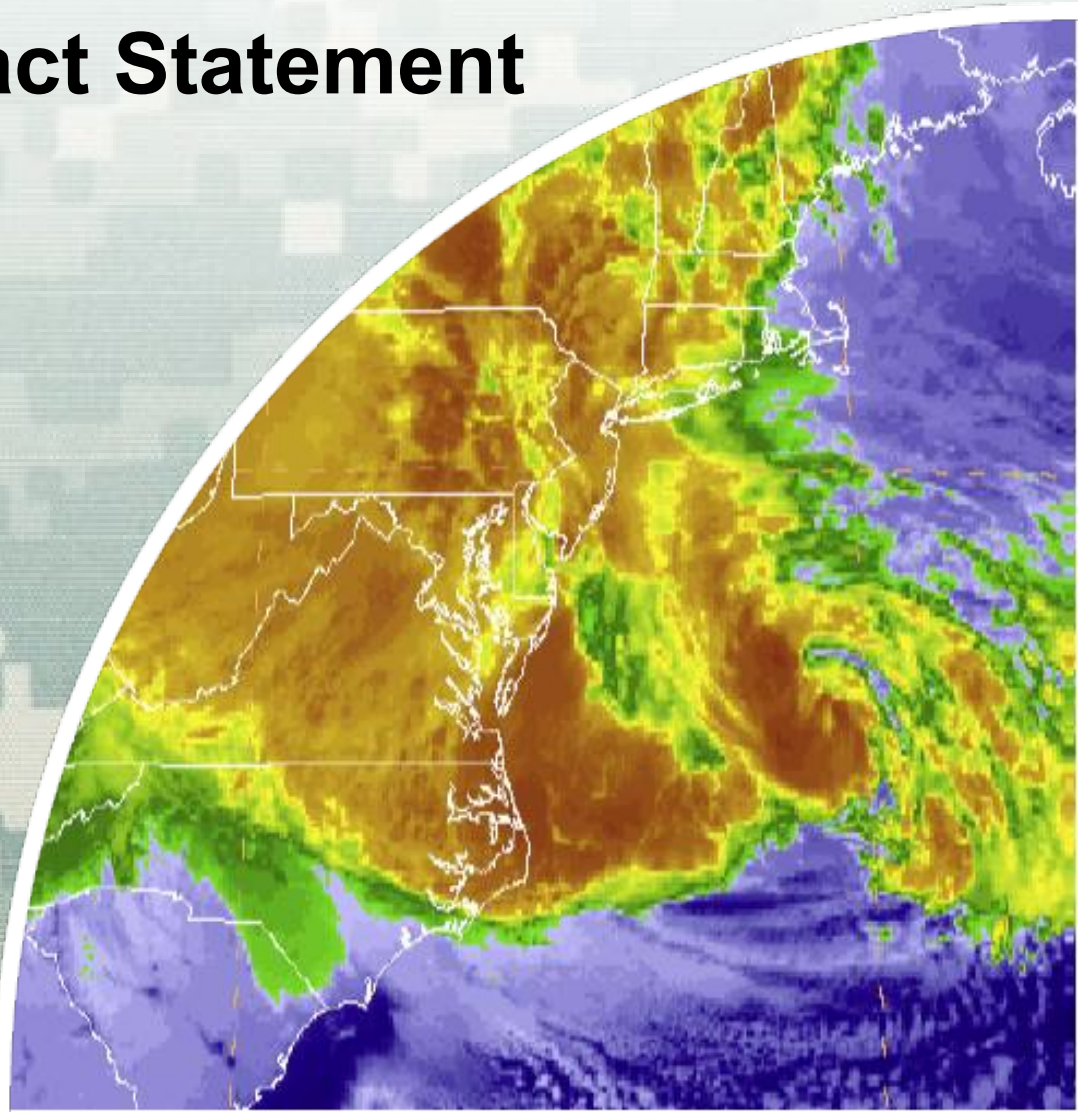
New Jersey Back Bays Coastal Storm Risk Management Study Draft Feasibility Report and Environmental Impact Statement

Elected Officials Virtual Meeting
Atlantic & Cape May Counties
19 May 2021
U.S. Army Corps of Engineers
Philadelphia District



US Army Corps of Engineers
BUILDING STRONG®

AGENDA

- NJDEP Shore Protection Role
- Study Overview and Tentatively Selected Plan
- Tiered NEPA Approach and Review Schedule
- Questions and Discussion

State of New Jersey
Shore Protection Program

State of New Jersey
Philip Murphy, Governor

Department of Environmental Protection
Shawn M. LaTourette, Acting Commissioner

Climate & Flood Resilience
David Rosenblatt, NJ Chief Resilience Officer

Division of Coastal Engineering
William Dixon, Director

Division of Coastal Engineering

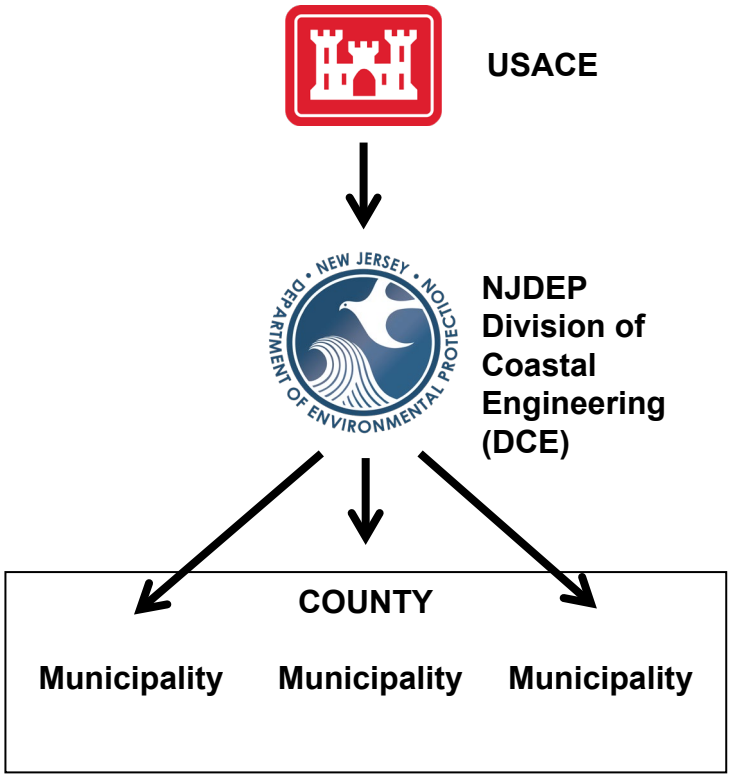
Purpose

To administer beach nourishment and coastal storm risk management projects throughout the State to:

…Provide for protection of life and property along the coast
…Preserve New Jersey's vital coastal resources
…Maintain safe and navigable waterways

Division of Coastal Engineering's Role w/ USACE

- All USACE projects and studies require a non-federal sponsor
- DCE is non-fed sponsor on all major USACE Coastal Storm Risk Management (CSRM) construction projects and feasibility studies in NJ, along with respective partners at the county and municipal level.
- Most USACE projects and studies span multiple municipalities; DCE serves as the liaison between USACE and the municipalities



Division of Coastal Engineering's Role w/ USACE

FEASIBILITY STUDIES

- **50/50 Fed/Non-Fed Cost Share**
- **DCE funds 100% of non-fed share; no cost to municipalities**

INITIAL CONSTRUCTION PROJECTS

- **Typically 65/35 Fed/Non-Fed Cost Share**
- **DCE contributes 75% of non-fed share; municipalities contribute 25% (8.75 cents for ever dollar)**

DCE's non-federal cost share is funded using the state Shore Protection Fund.

Shore Protection Fund is Dedicated…

"To protect existing development and infrastructure from storm surges, sea-level rise, and shoreline migration, through dune creation and maintenance, beach nourishment projects and construction and repair of shore protection structures."

$25 million dedicated annually
Realty Transfer Tax (N.J.S.A. C. 13:19-16.1)

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http://www.nap.usace.army.mil/Missions/Civil-Works/New-Jersey-Back-Bays-Study/

New Jersey Back Bays Coastal Storm Risk Management Study

STUDY BACKGROUND
INTERIM REPORT (MARCH 2019)
STUDY STATUS
ENVIRONMENTAL COORDINATION

Historic storms, including Hurricane Sandy, have severely impacted the back bay communities of coastal New Jersey. The New Jersey Back Bay Study developed out of the larger North Atlantic Coast Comprehensive Study which identified nine high-risk areas on the Atlantic Coast for further in-depth analysis. The study area is located behind the New Jersey barrier islands of Monmouth, Ocean, Burlington, Atlantic and Cape May Counties and includes the set of interconnected water bodies and coastal lakes that are separated from the Atlantic Ocean. The purpose of the study is to investigate Coastal Storm Risk Management strategies and solutions to reduce damages from coastal flooding affecting population, critical infrastructure, critical facilities, property, and ecosystems. The Study will consider the full array of structural, non-structural, and natural and nature-based measures. Examples are highlighted in the below chart.

The study will consider past, current, and future coastal storm risk management and resilience planning initiatives and projects underway by the USACE and other Federal, State, and local agencies. Three overarching efforts will be performed:

- Assess the study area's problems, opportunities and future without project conditions;
- Assess the feasibility of implementing system-wide coastal storm risk management solutions such as policy/programmatic strategies, storm surge barriers at selected inlet entrances, or tidal gates at selected lagoon entrances;
- Assess the feasibility of implementing site-specific perimeter solutions such as a combination of structural, non-structural, and natural and nature-based features;
- Assess the impacts of back bay strategies and solutions on the Atlantic Coast Coastal Storm Risk Management Program towards developing recommendations within a systems context given likely future scenarios.

Submit Comments

Comments are accepted on an ongoing basis throughout the study process. Comments may be submitted via email or in writing:

By email: PDPA-NAP@usace.army.mil

In writing:

USACE Philadelphia District
Planning Division
100 Penn Square E.
Philadelphia, PA 19107

Links

Study Area Map
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Public Comment Form (Sept. 2018)
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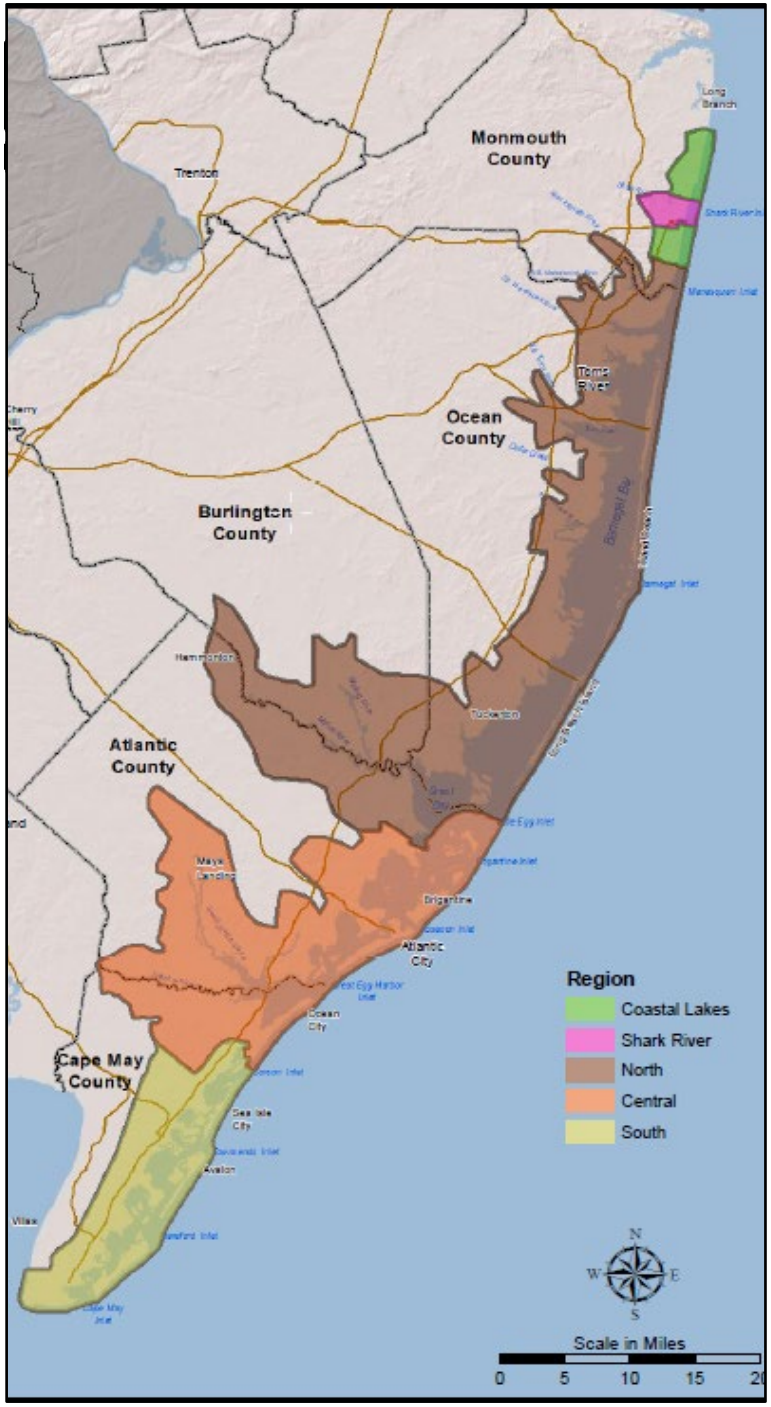
Study Fact Card
Study Overview Factsheet

Study Documents

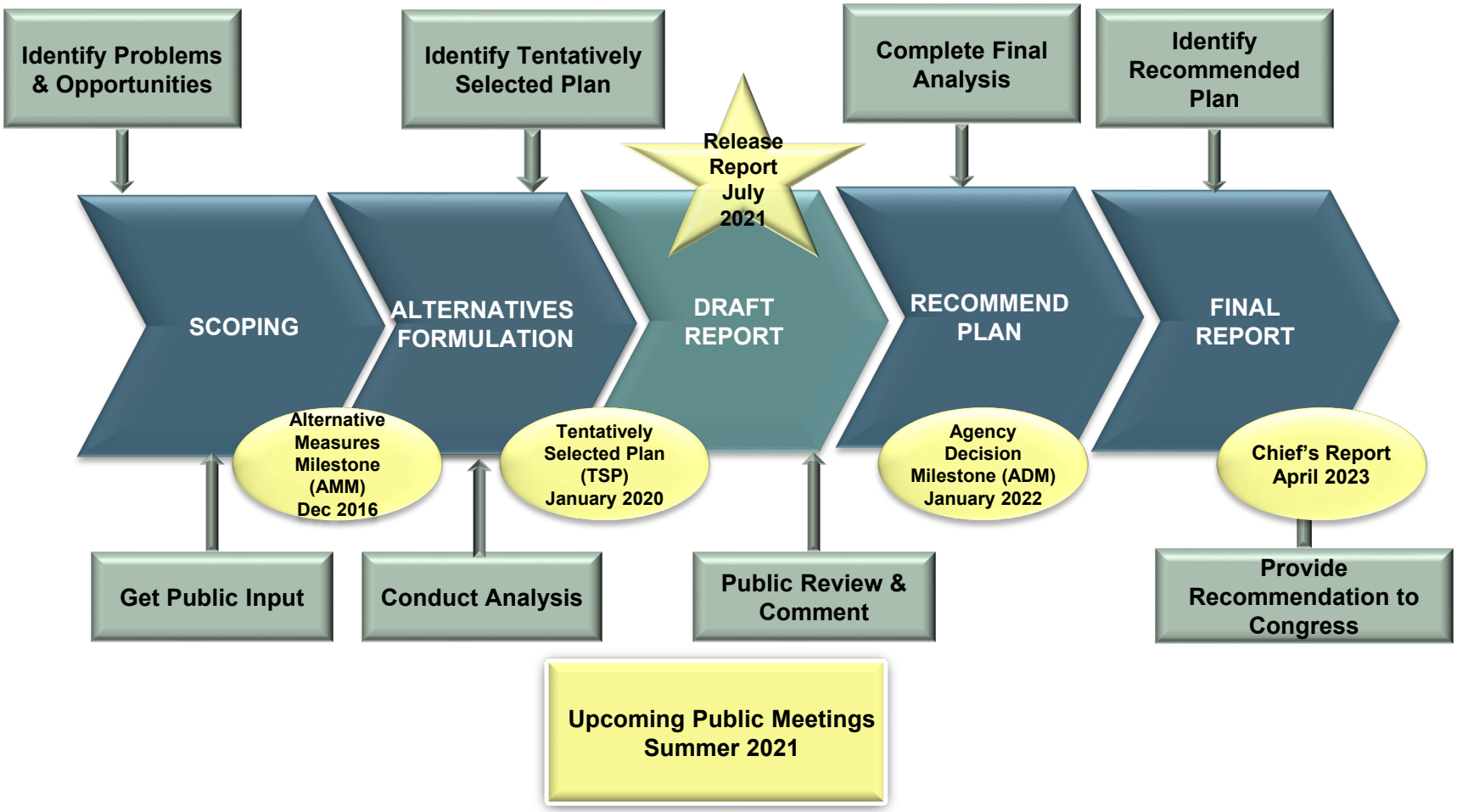
⊞ Presentations
⊞ Sept 2018 Public Meeting Posters
⊞ Study Documents

NJBB STUDY STATUS

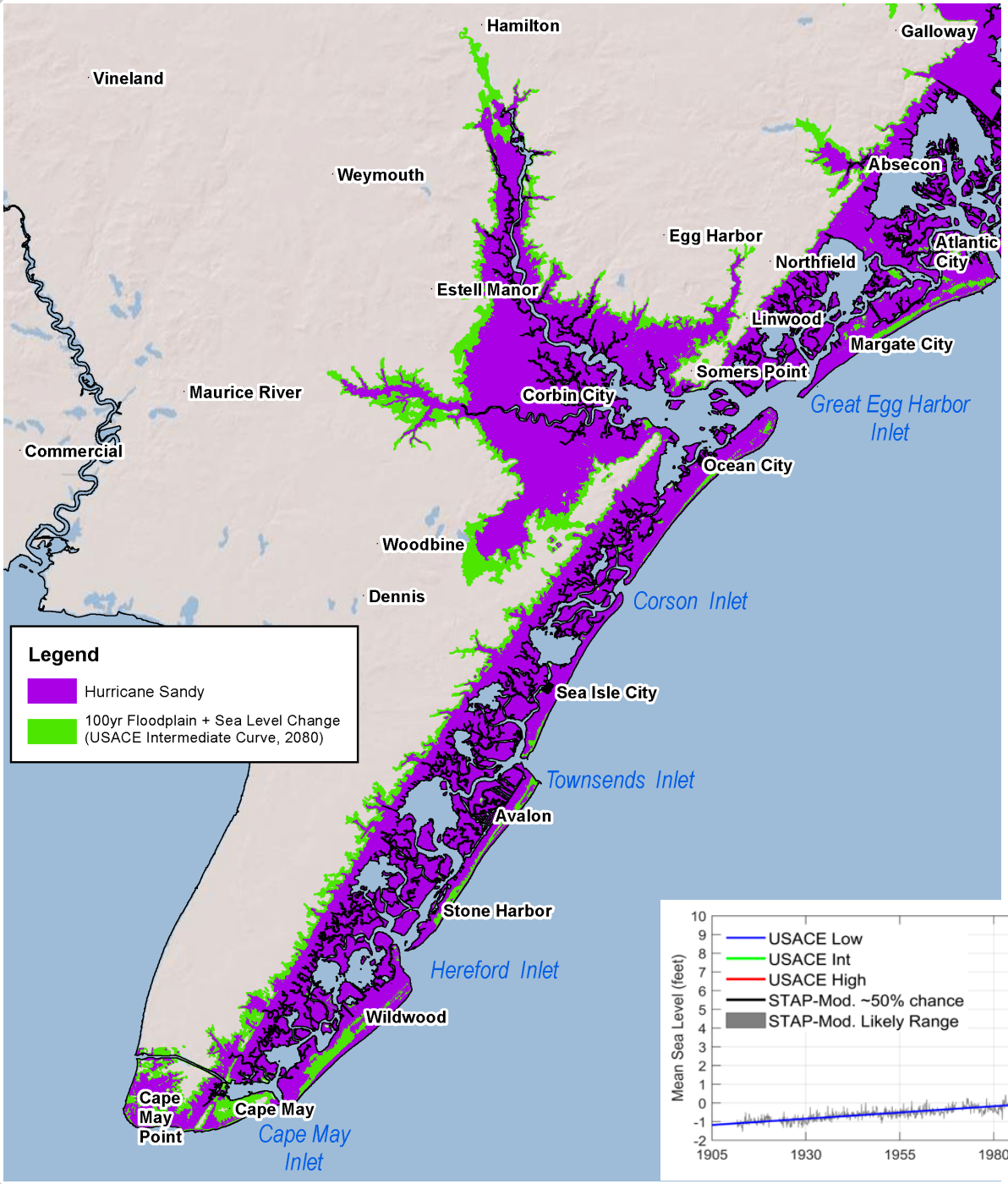


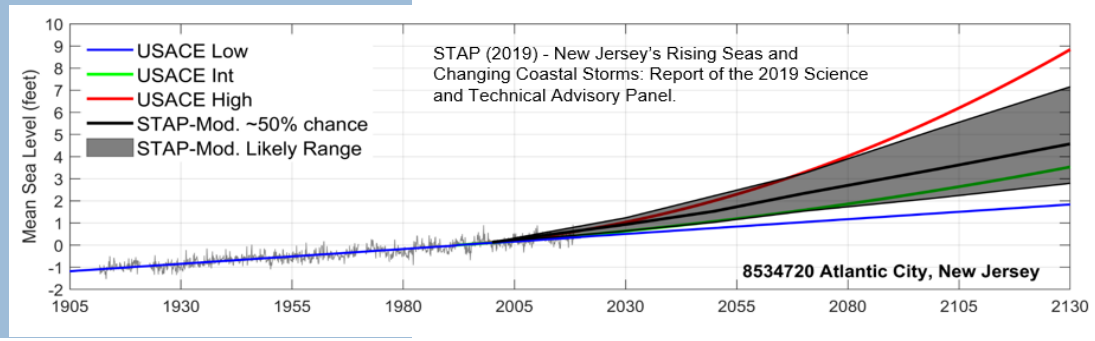
- Extensive area
- Coastal flooding and sea level rise risk management
- Reduce damages that affect population, critical infrastructure and facilities, property and ecosystems
- Reduce risk to human life from coastal flooding and storms
- Funding uncertainty and study extension approval since January 2020 Tentatively Selected Plan

STUDY MILESTONES



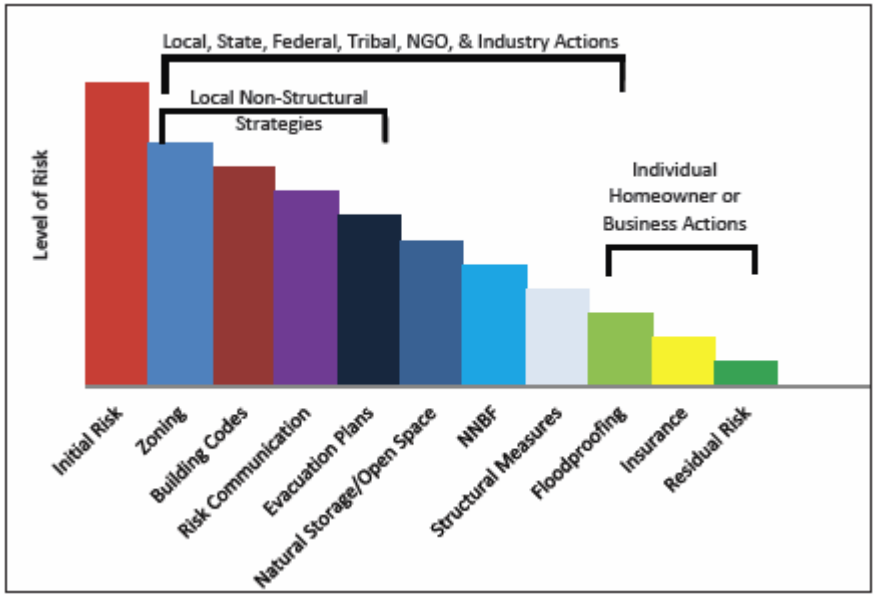
Southern Study Area Inundation Map with Sea Level Rise

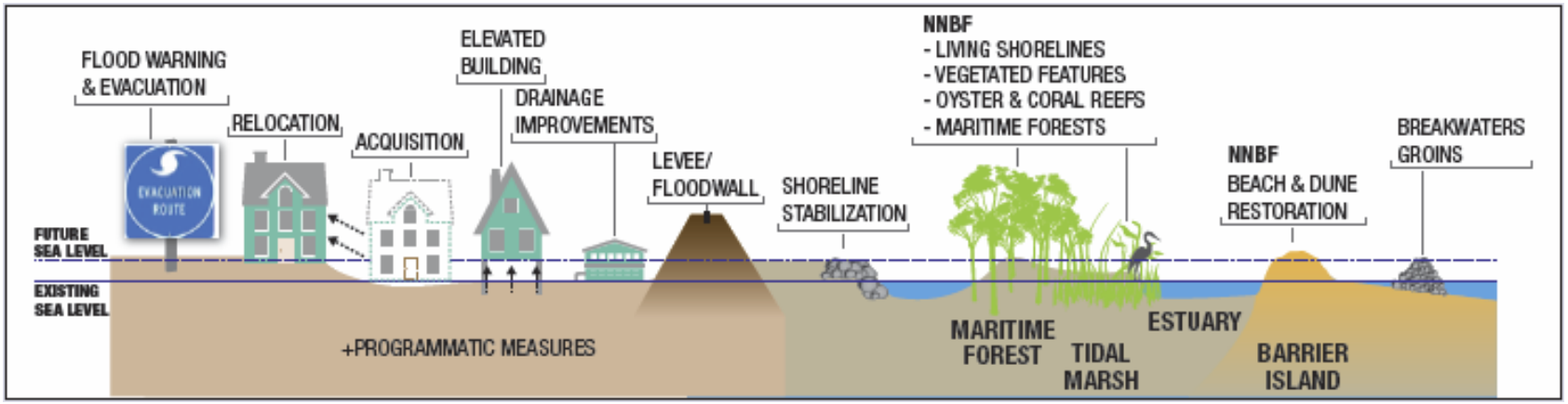




SETTING REALISTIC EXPECTATIONS:
ADAPTATION PLANNING CATEGORIES

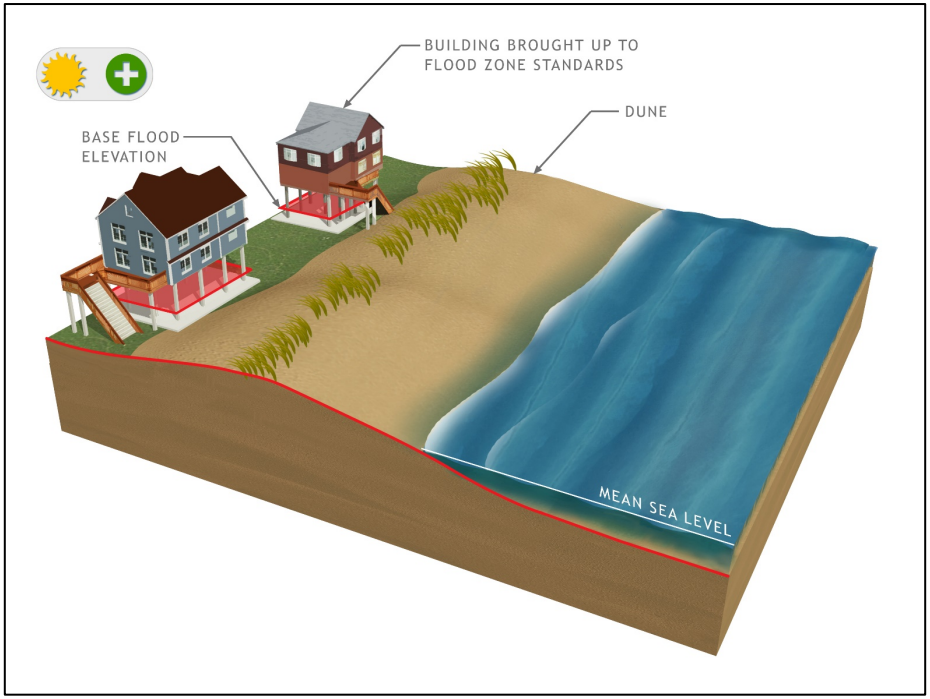
- **Preserve**
  - Includes low regret measures to address current and future vulnerability
- **Accommodate**
  - Adaptive capacity of the system
- **Avoid**
  - Strategic retreat

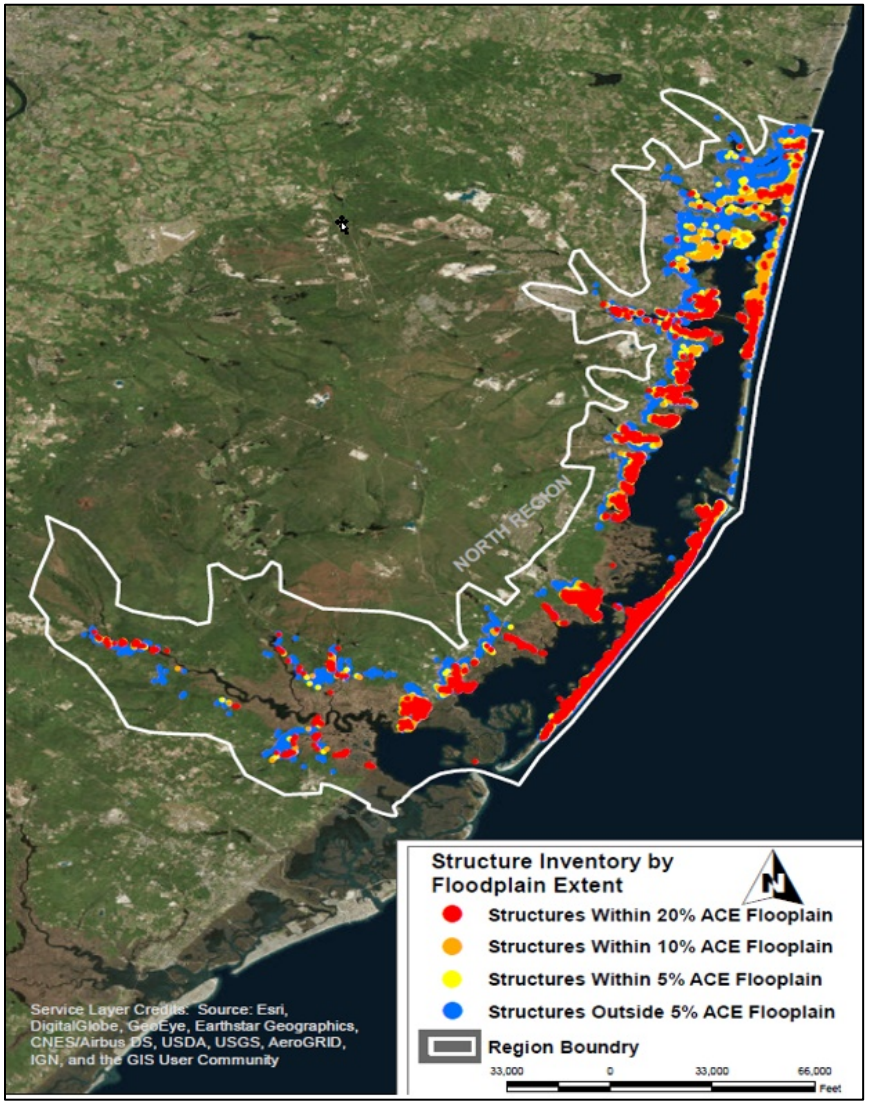


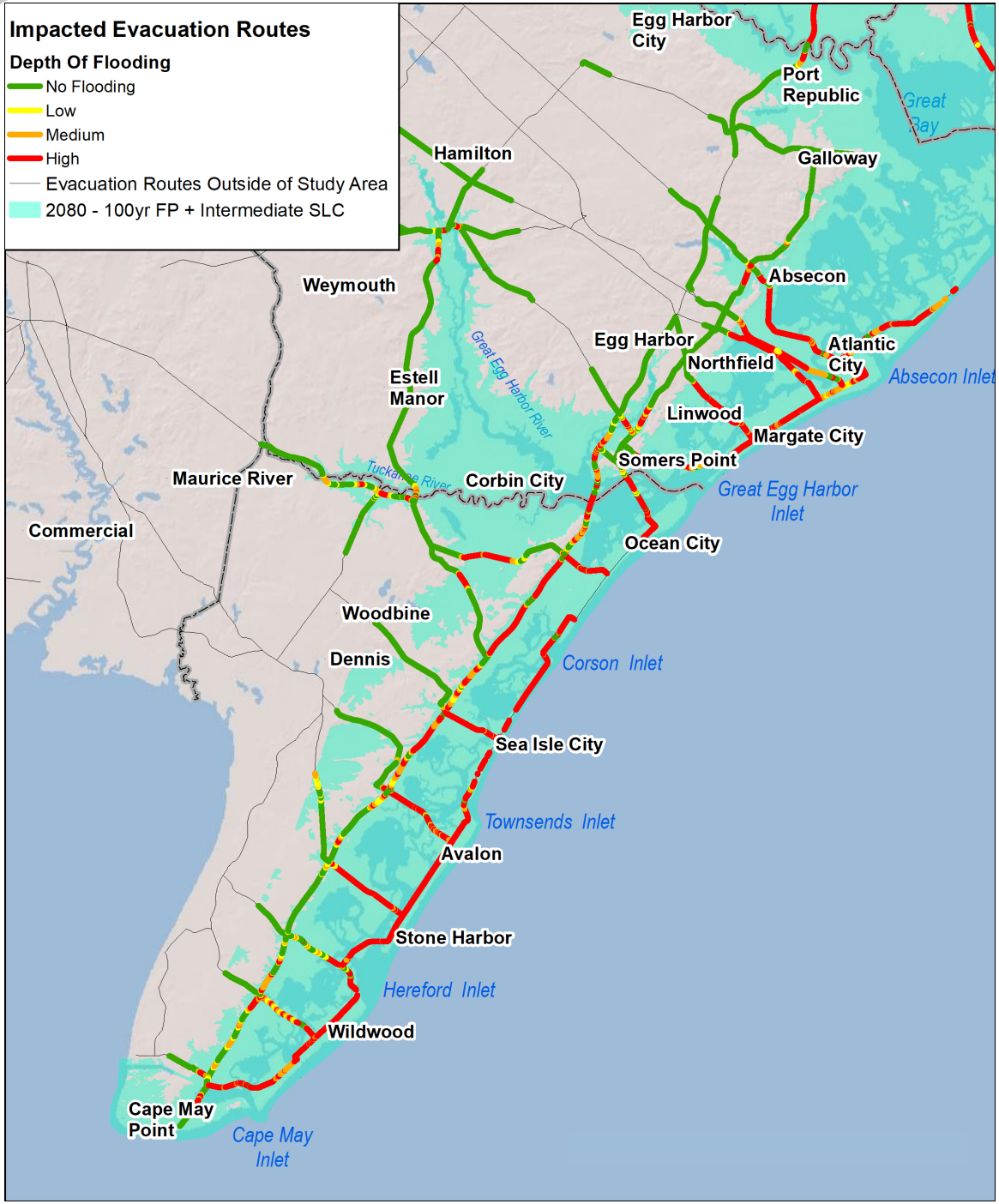


NONSTRUCTURAL MEASURES – BUILDING ELEVATION

- **Primary Nonstructural measures**
  - **Building elevation**
  - **Acquisition and relocation later**
- **Recommended in combination with structural measures to formulate economically justified hybrid plans**





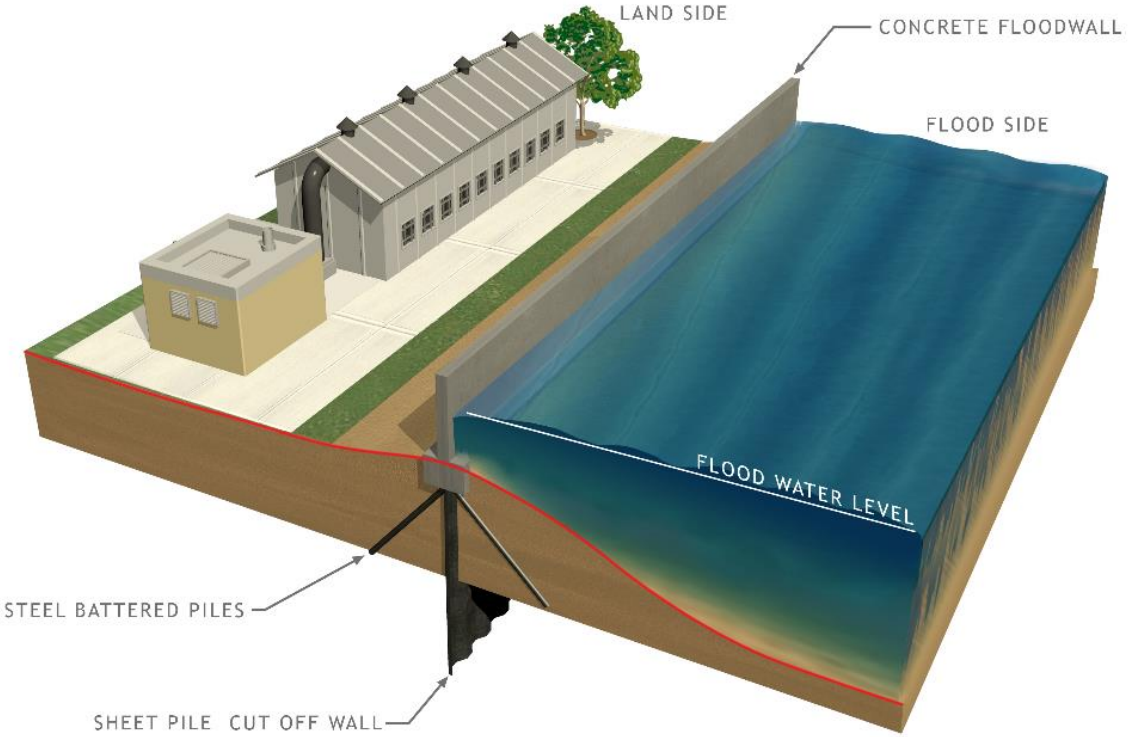


SOUTHERN STUDY AREA

NONSTRUCTURAL MEASURES – EVACUATION ROUTES

2080 – 100-YEAR FLOODPLAIN + INTERMEDIATE SLR

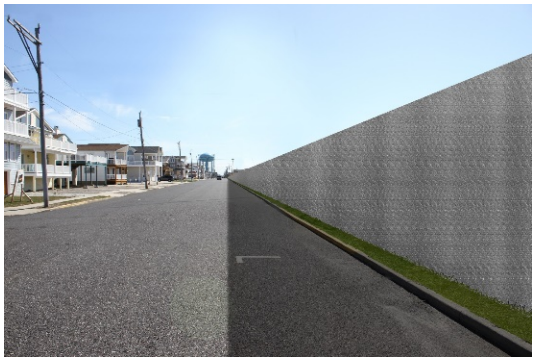
STRUCTURAL MEASURE – FLOODWALLS & LEVEES



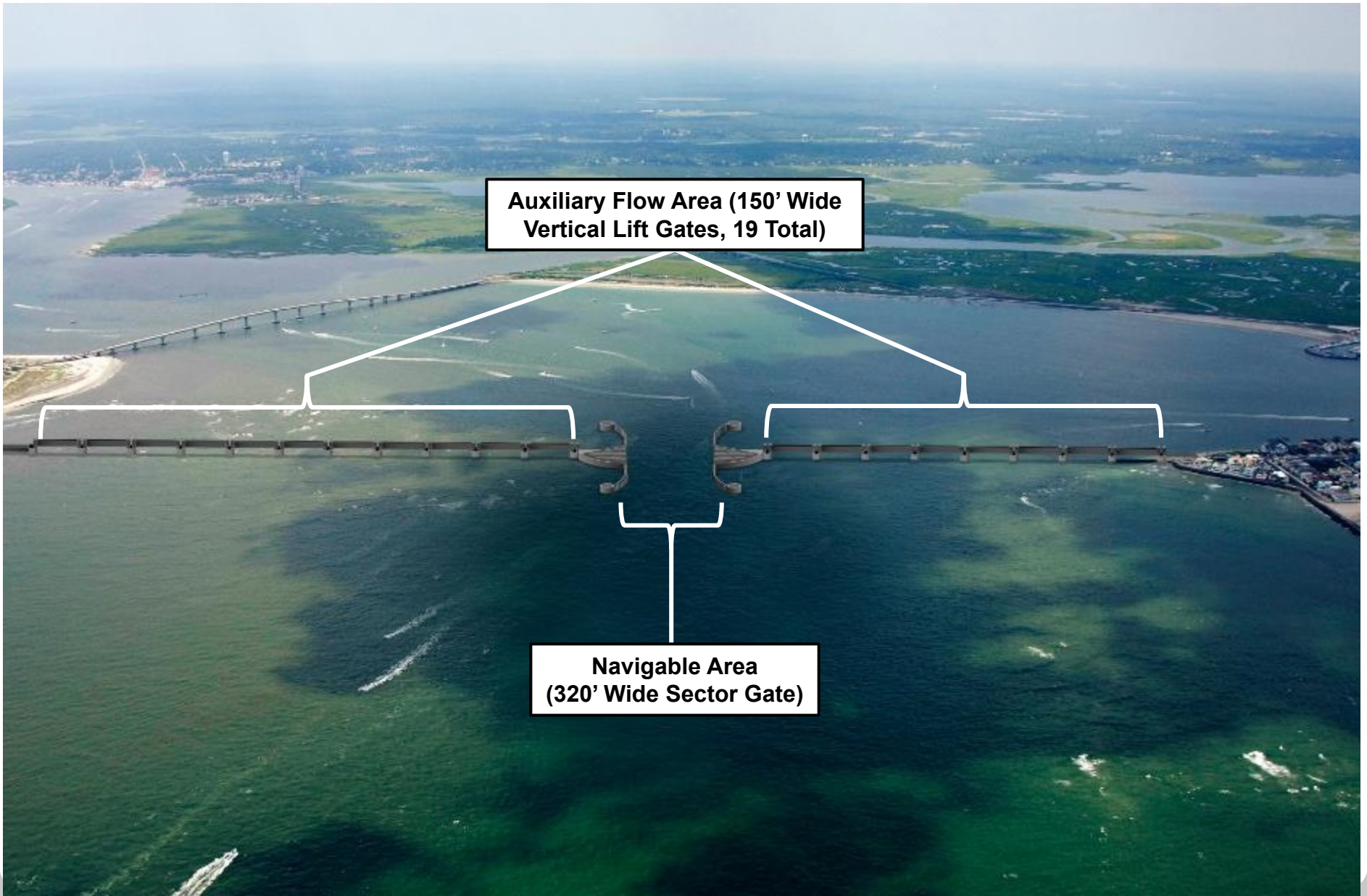
Visual Impacts

Existing

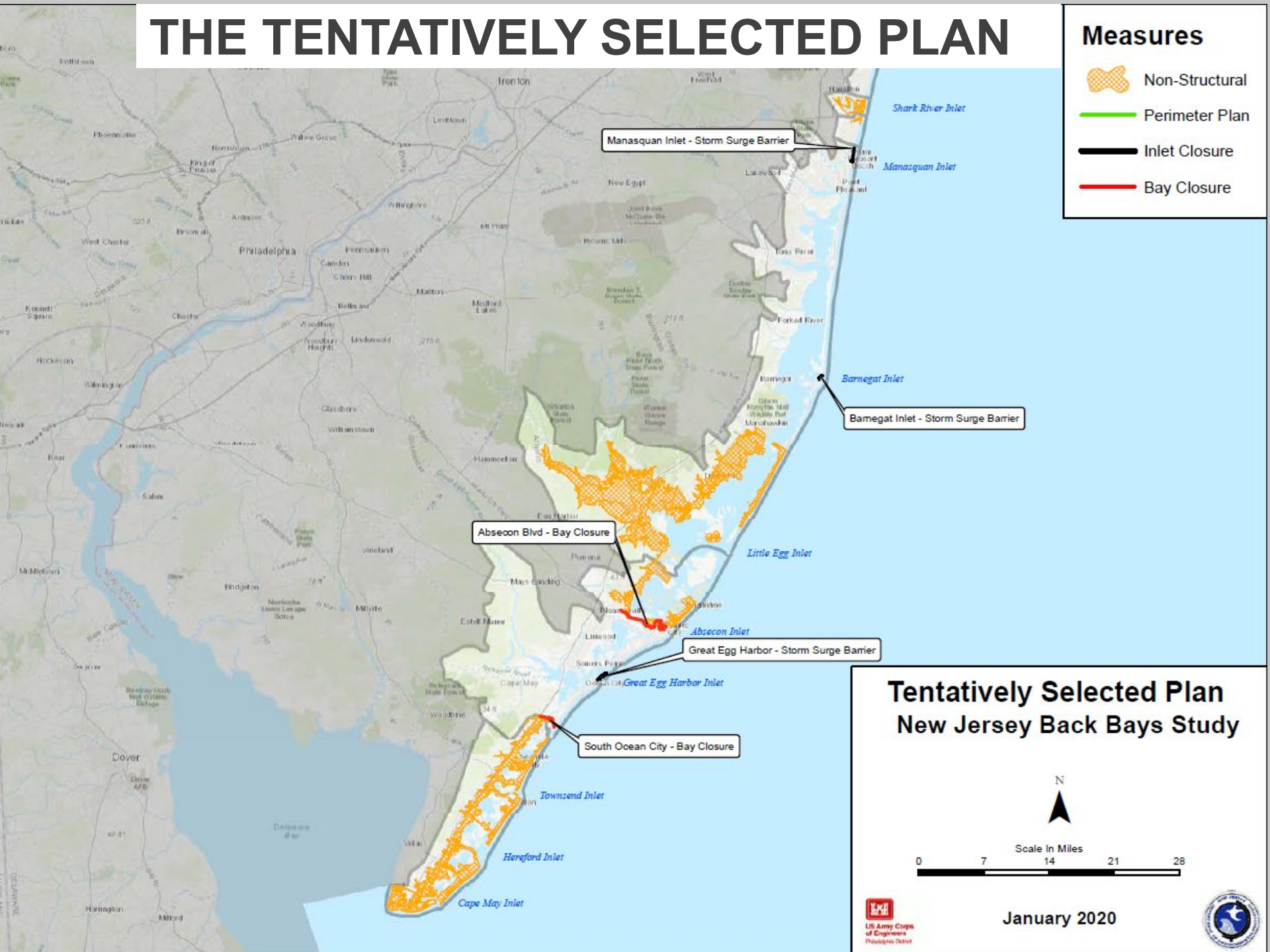
With Floodwall

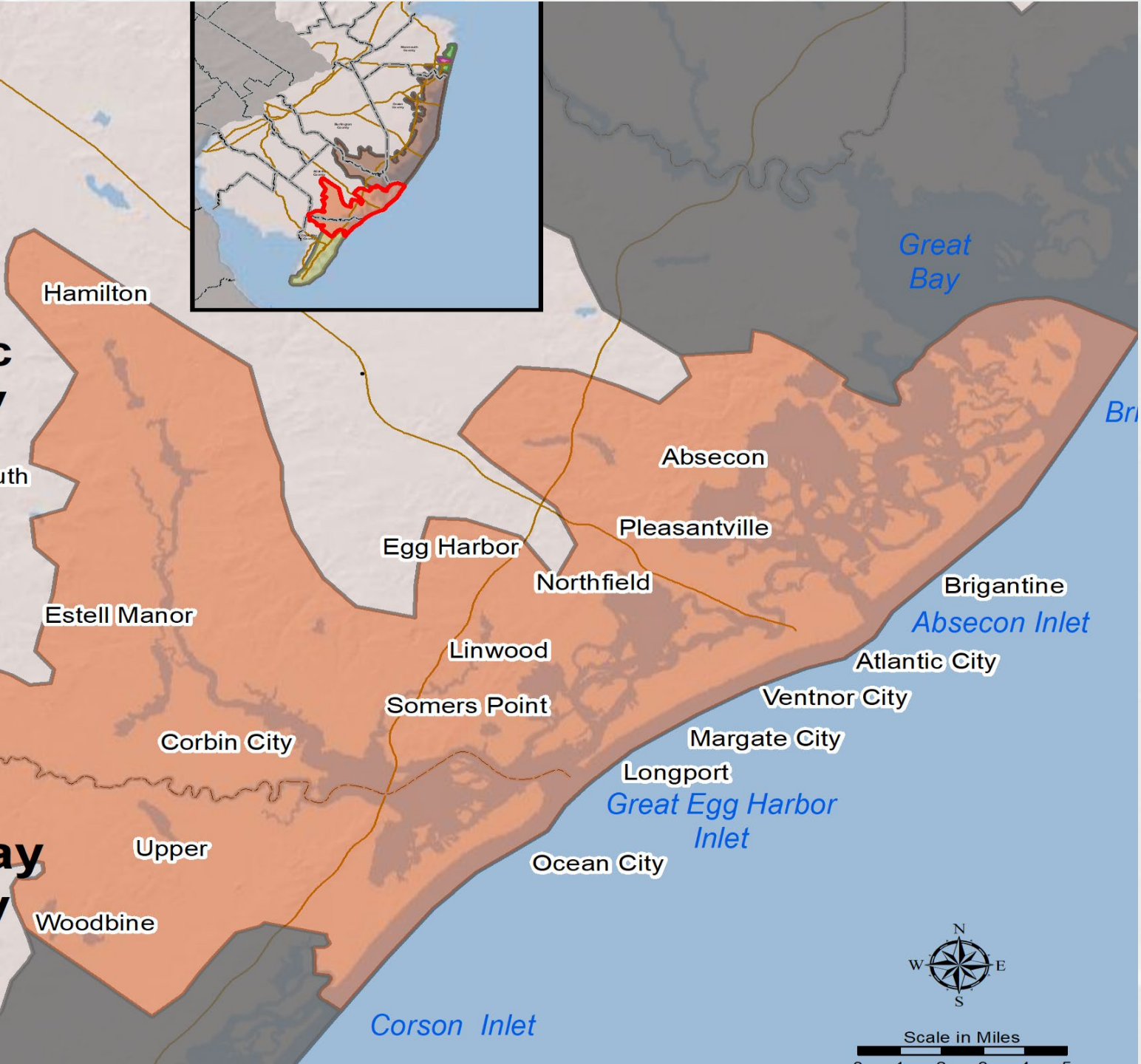


GREAT EGG HARBOR INLET – PRELIMINARY STORM SURGE BARRIER DESIGN



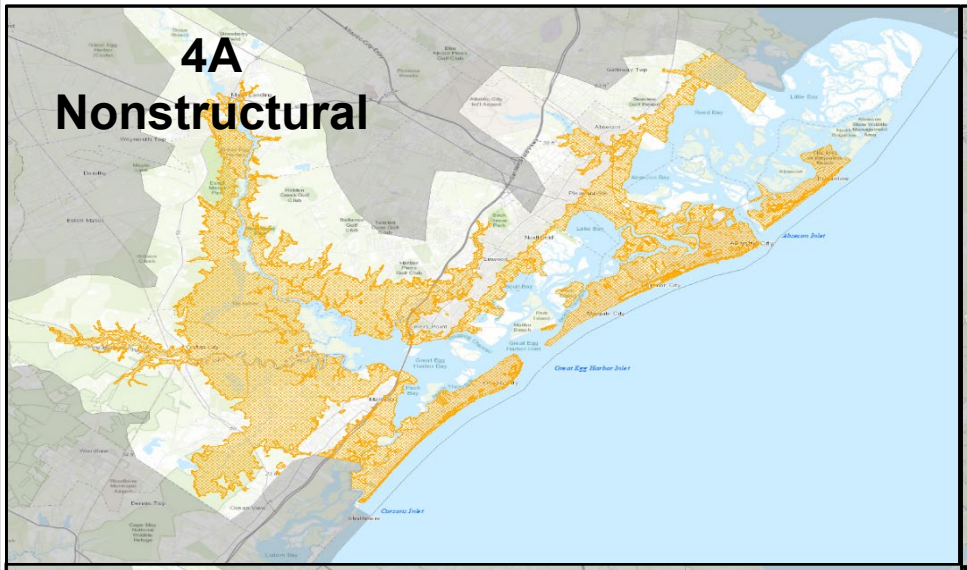
THE TENTATIVELY SELECTED PLAN

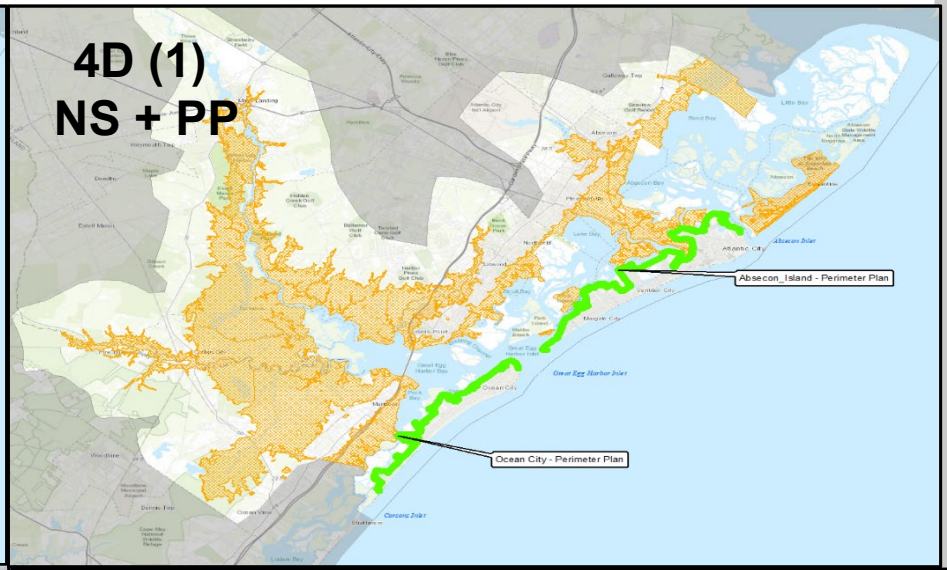


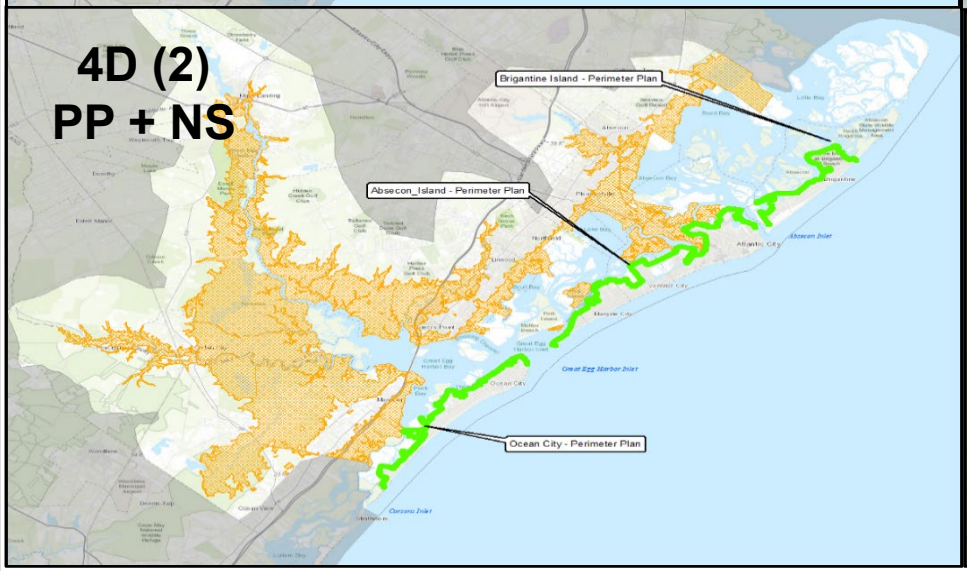


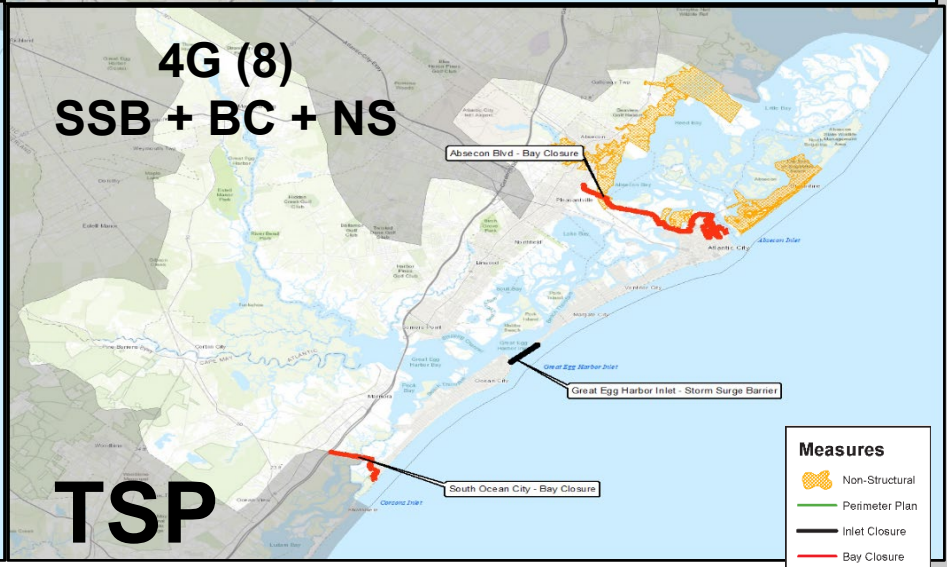
Central Region

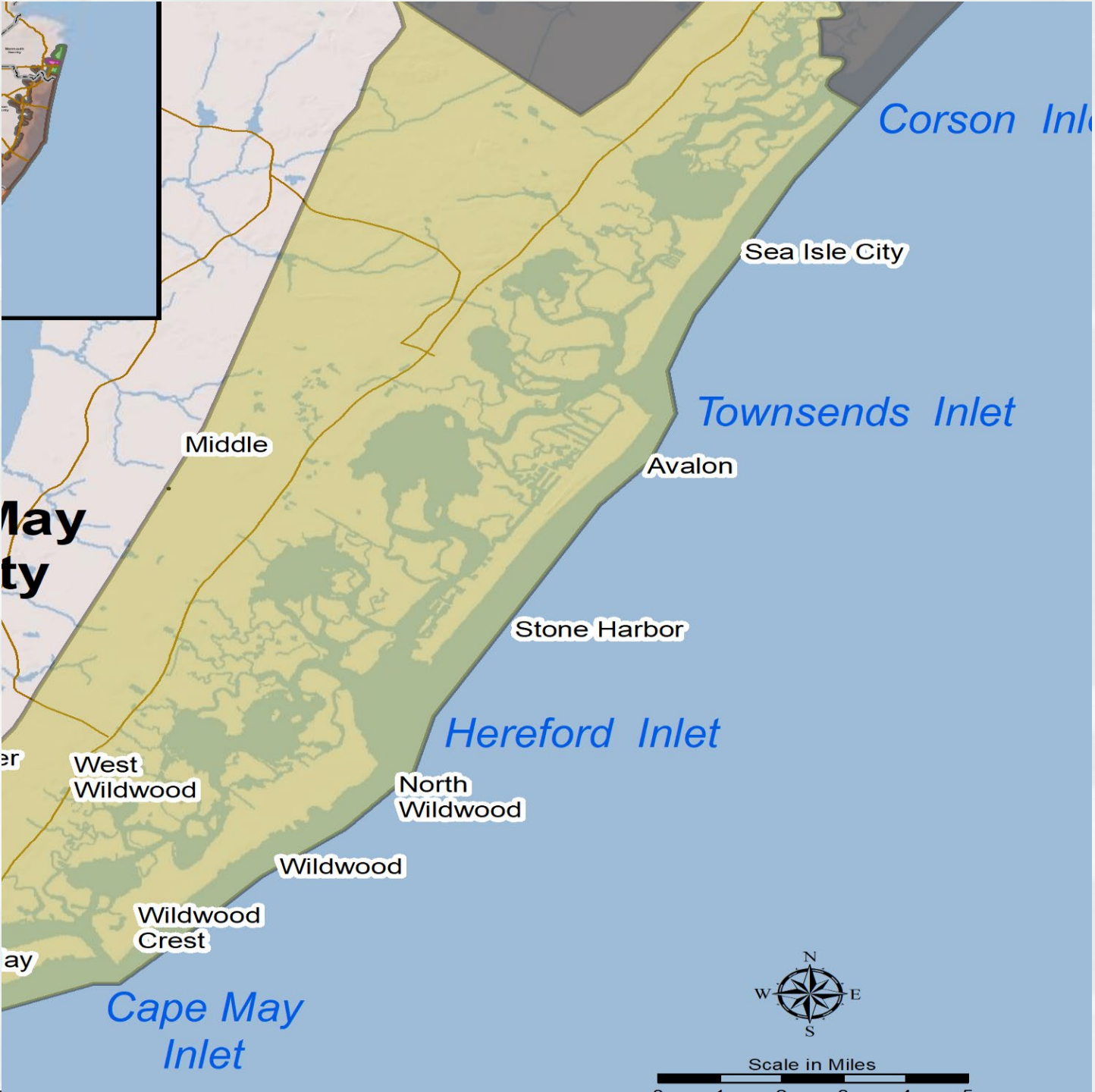
CENTRAL REGION







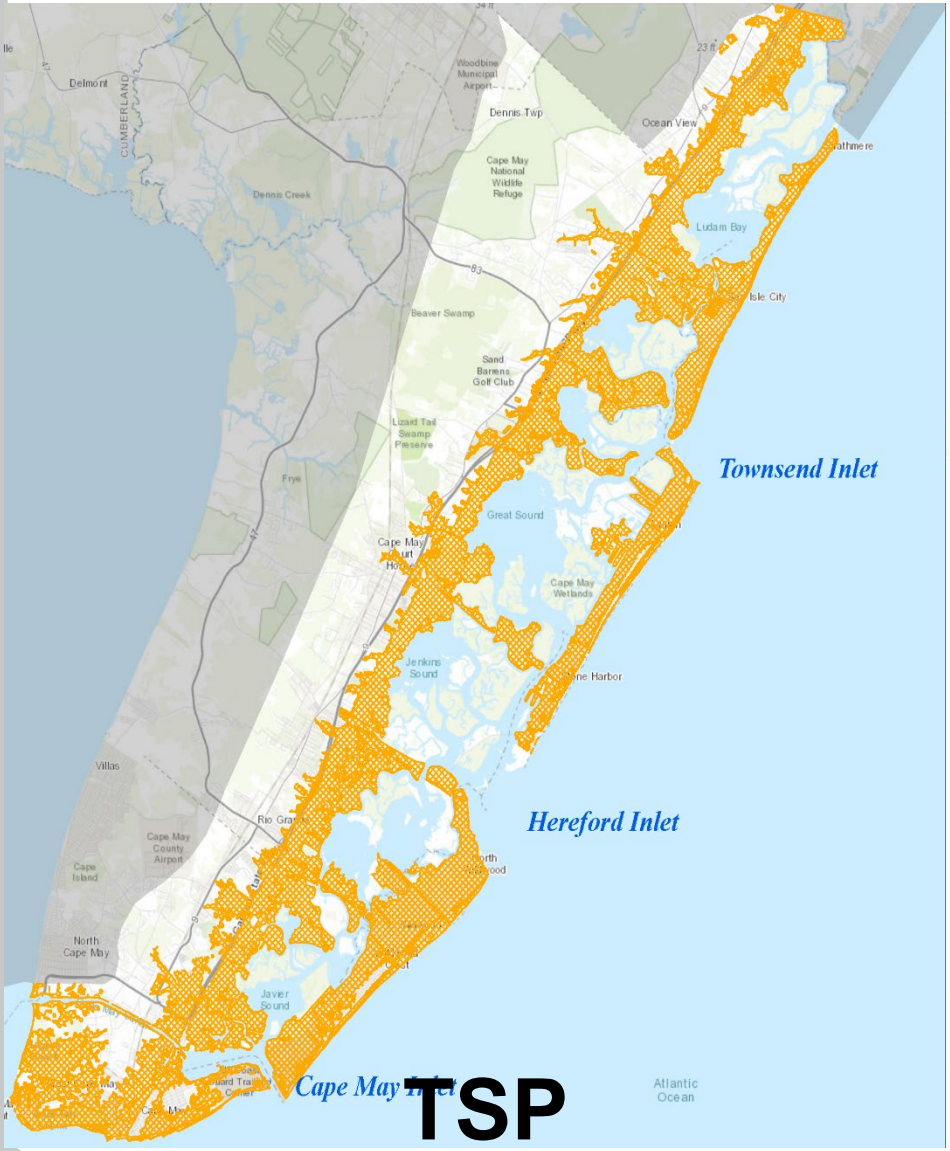




South Region

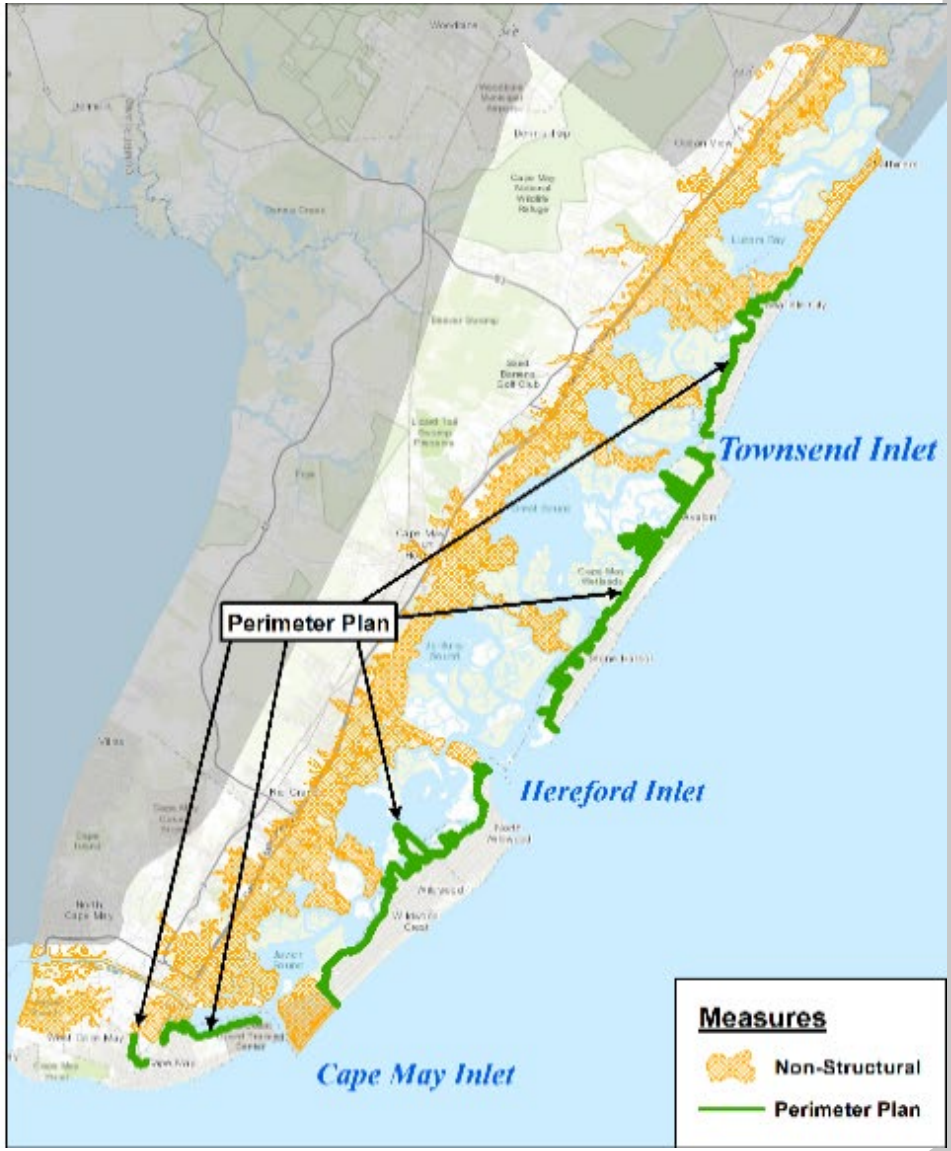
SOUTH REGION

5A
Nonstructural



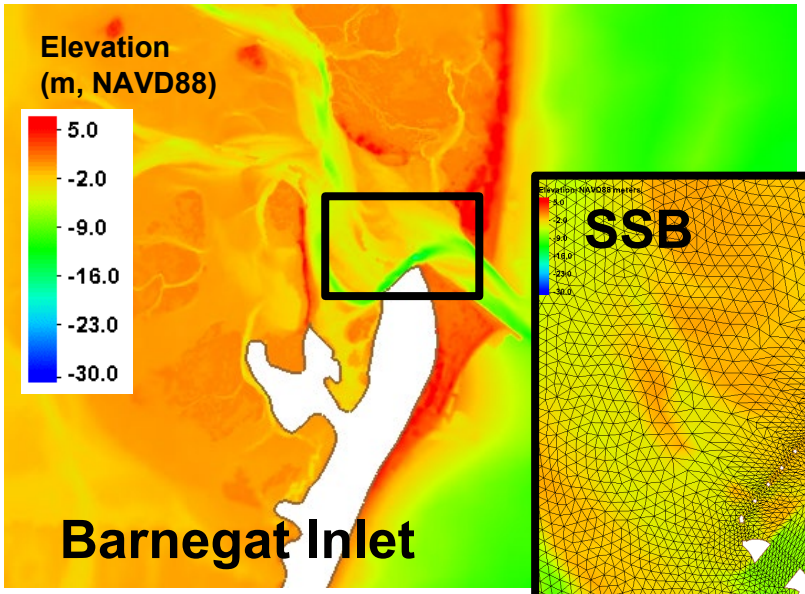
TSP

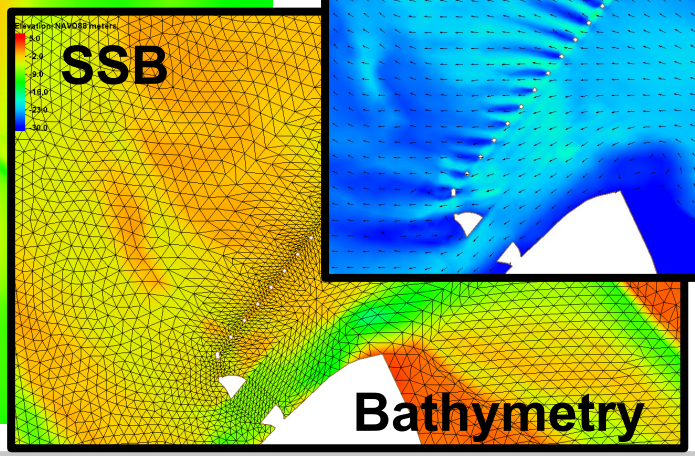
5D
Perimeter Plan + NS

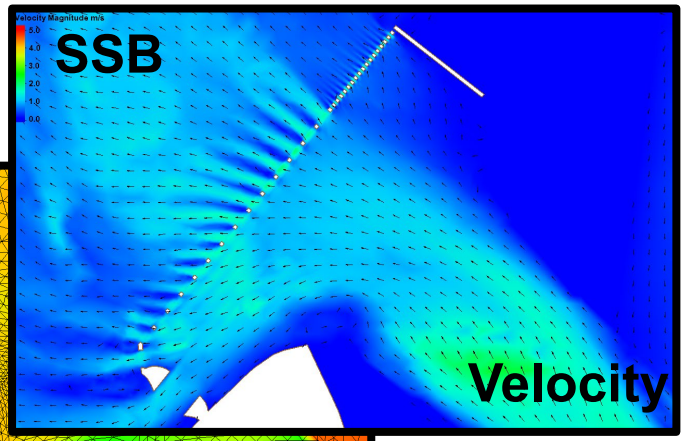


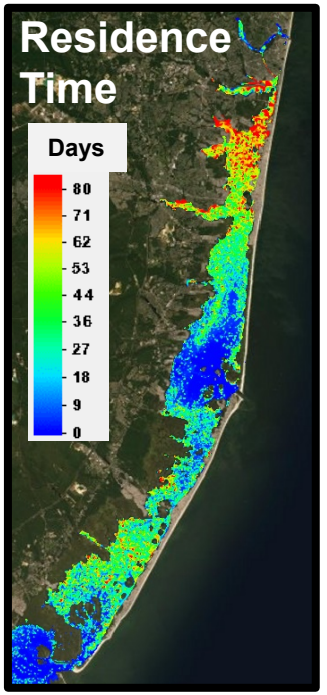
ADH MODELING – STORM SURGE BARRIER INDIRECT IMPACTS

- USACE Engineering Research & Development Center Coastal Hydraulics Lab developed AdH model to evaluate indirect impacts of storm surge barriers:
  - TSP - tides, velocities, salinity, and residence time
  - Final Report – navigation, sediment transport, water quality.
- Calibrated to 2019 ADCP field data collected at 3 inlets and long-term tide/salinity stations.
- Investigate sensitivity to storm surge barrier design: alignment, sill elevation, sector gate size, number of vertical lift gates.
- **Preliminary Model Results:**
  - Tidal Prism - decreases 2% to 6% in Barnegat Bay, 3% to 9% in Great Egg Harbor
  - Velocities – far-field changes < 0.02 ft/s, larger changes at inlets
  - Salinity - reductions in mean salinity < 0.5 ppt
  - Residence Time - increases 2% to 10% in Barnegat Bay and Great Egg Harbor









SYSTEM OF ECONOMIC ACCOUNTS

National Economic Development (NED)	• The National Economic Development criteria examines the return per dollar spent and optimizes the balance between construction and implementation cost and coastal storm damages reduced.
Regional Economic Development (RED)	• Regional Economic Development considers the changes in regional economic activity that result from each alternative plan. • Regional income and regional employment are two factors that are included in regional economic development
Environmental Quality (EQ)	• Environmental Quality criteria includes both beneficial and adverse changes in the ecological, aesthetic, and cultural attributes of natural and cultural resources
Other Social Effects	• Other social effects include urban and community impacts; life, heath, and safety factors; displacement; long-term productivity; and energy requirements and energy conservation. • Other criteria can be added to this category based on feedback from stakeholders.

US Army Corps of Engineers

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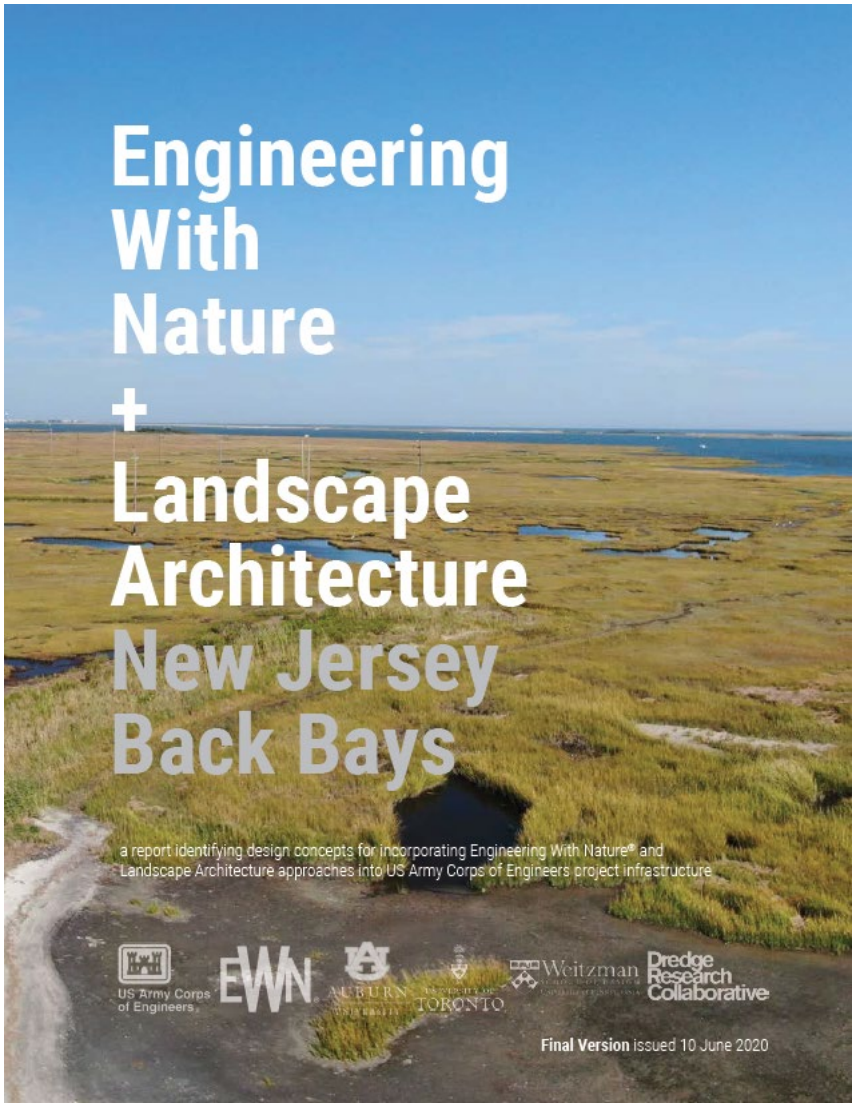
USACE ENGINEERING WITH NATURE REPORTING



Enhanced Modeling in Support of Recommended EWN/NNBF Measures and Efficacy in Providing Flood/Storm Risk Reduction

C.D. Piercy, J.K. King, M.A. Bryant, C.C. Carrillo, M.A. Cialone, S.C. Dillon, and G. Slusarczyk

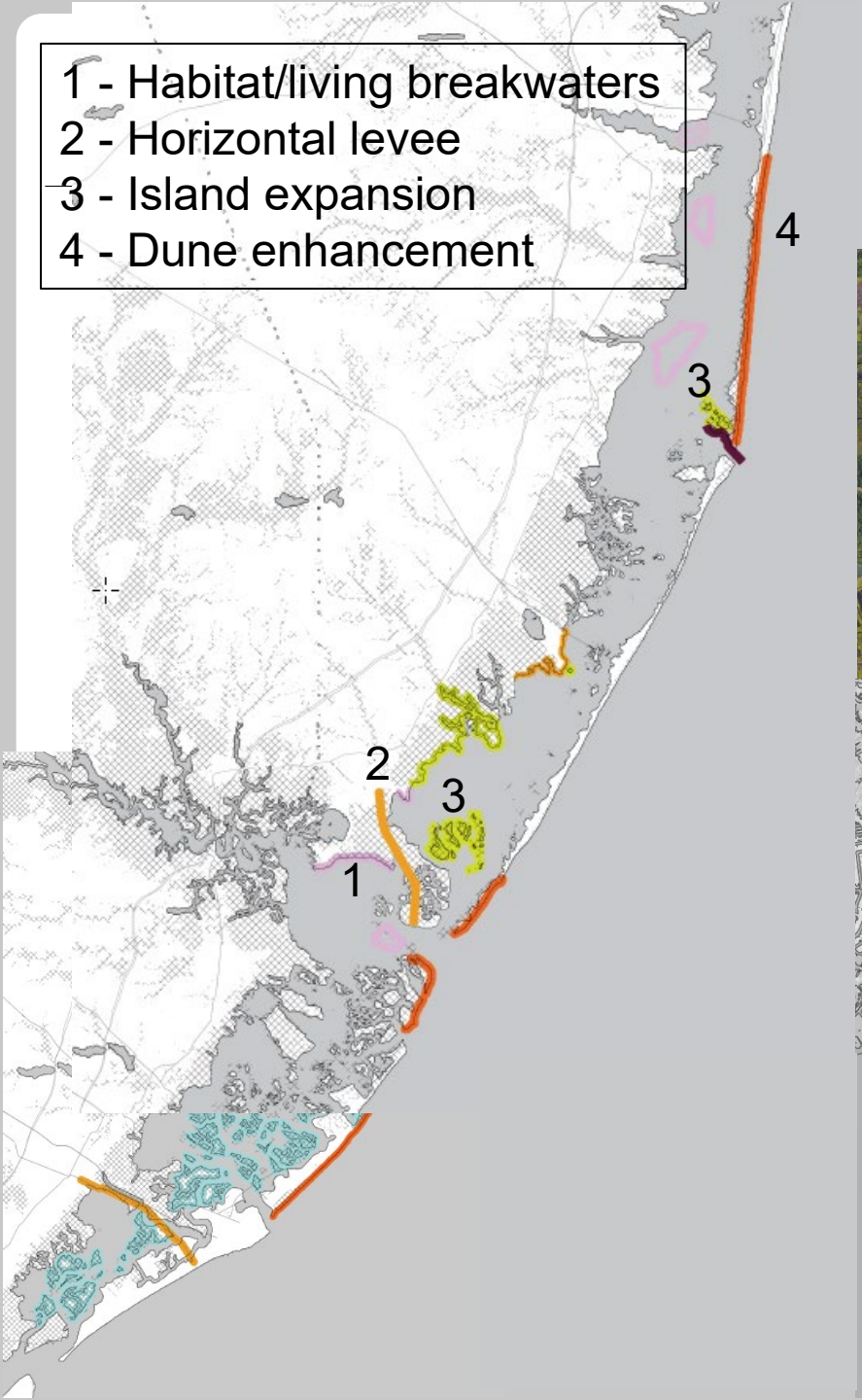
U.S. Army Engineer Research and Development Center
3909 Halls Ferry Road
Vicksburg, MS 39180

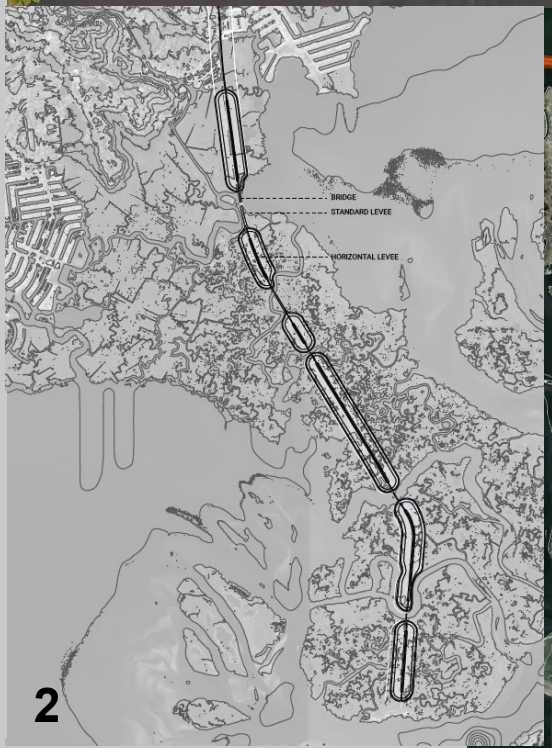
June 2020

Prepared for USACE Philadelphia District
100 E Penn Square East
Philadelphia, PA 19107

NNBF – NORTH & CENTRAL REGIONS

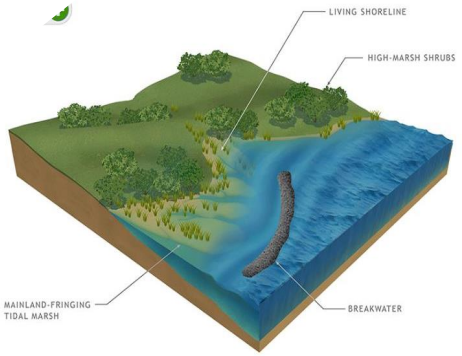
1 - Habitat/living breakwaters
2 - Horizontal levee
3 - Island expansion
4 - Dune enhancement



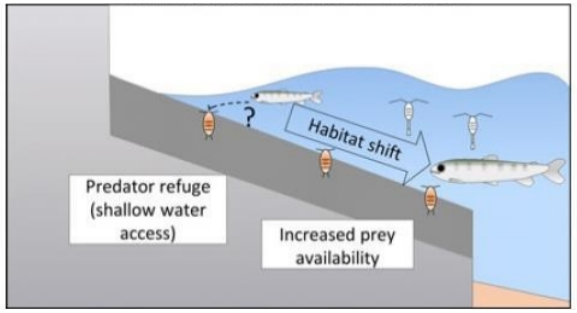


COMPLEMENTARY/HYBRID NNBFS

- **Primary NNBF measure under consideration is living shorelines. Current criteria for this measure include:**
  - **Unarmored shorelines adjacent to infrastructure**
  - **Complementary to structural measures such as floodwalls and levees**
- **NJBB study is also considering modifications that can be made to structural measures that can increase their habitat value:**
  - **Habitat benches to restore more natural slope along shorelines**
  - **Textured concrete to support colonization of algae and invertebrates**



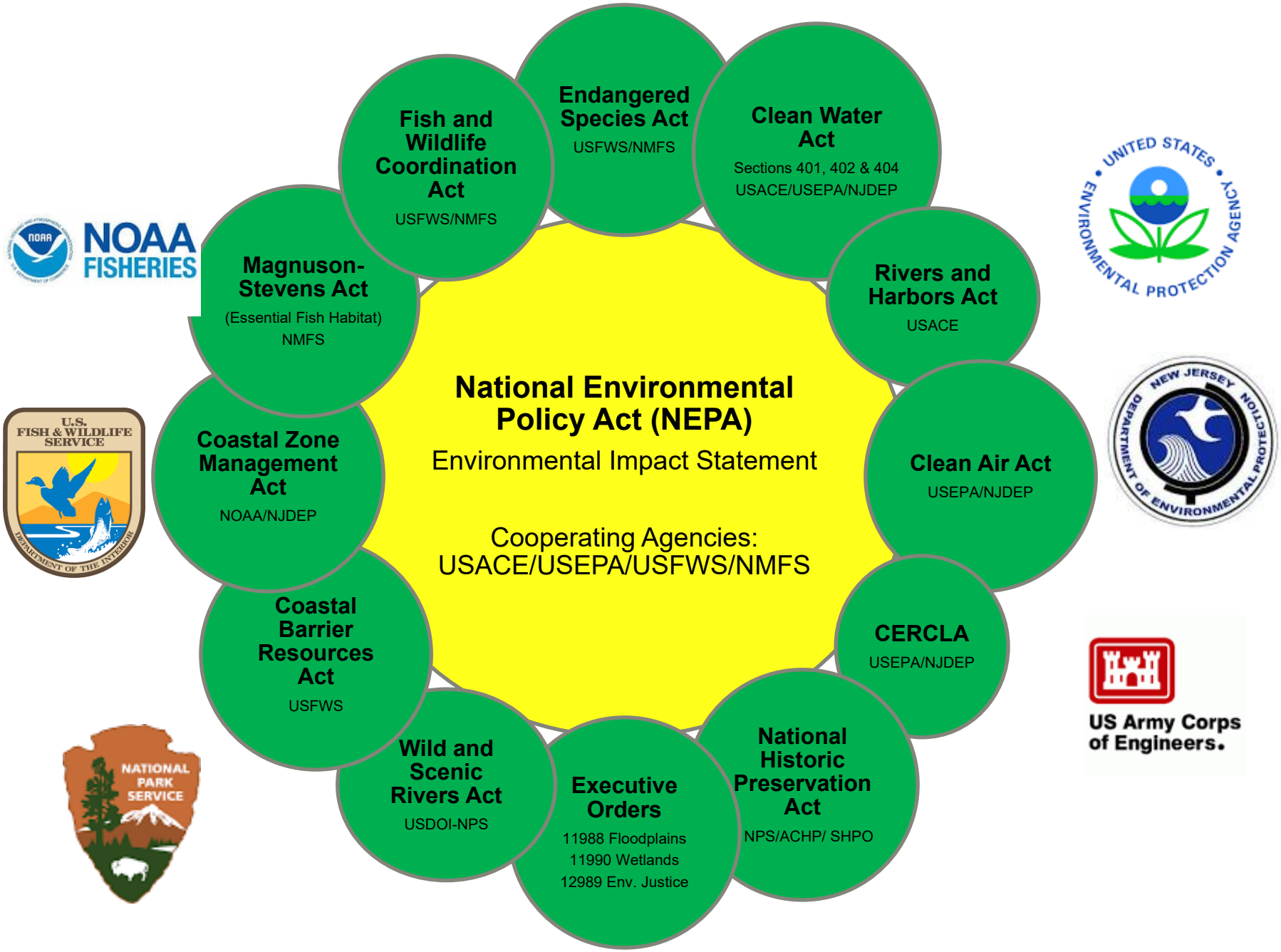
Construction of living shoreline in Camp Pecometh, MD



Conceptual diagram of habitat bench

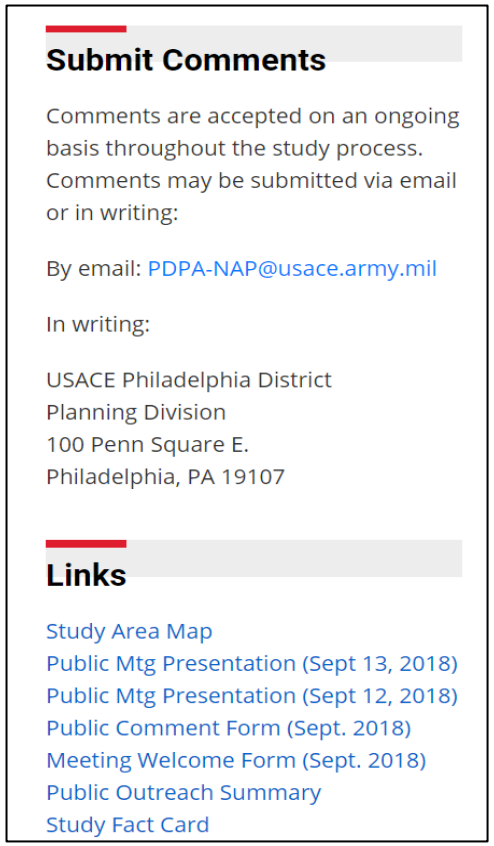
Textured concrete

AGENCY COORDINATION AND COMPLIANCE



COMMENTS & QUESTIONS

- **USACE NJBB Web Portal: http://www.nap.usace.army.mil/**
- **Reporting, videos of meetings, regular updates**
- **Detailed comments can be submitted by comment form, email or in writing**
  - **PDPA-NAP@usace.army.mil**
  - **U.S. Army Corps of Engineers, Planning Division, 100 Penn Square East, Philadelphia, PA 19107**



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Questions & Answers