

*COASTAL VIRGINIA COMMUNITY RATING SYSTEM WORKGROUP*



*WORKING TOGETHER FOR A STRONGER VIRGINIA*

# CFM POLL

**Please fill out each poll to receive  
the full 1.5 (or more!) CECs**



# UPDATES/ANNOUNCEMENTS

## Workgroup Meeting Introductions

## Future Meeting Dates (James Room & Zoom)

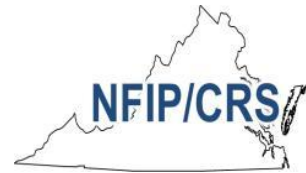
### 2023

Wednesday, May 31, 10AM-Noon

Wednesday, July 26, 10AM-Noon

Wednesday, September 27, 10AM-Noon

Wednesday, November 29, 10AM-Noon



# UPDATES/ANNOUNCEMENTS

## **Confirmed CFM CECs (expect 1.5 most meetings)**

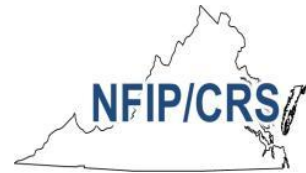
May 2022 – 1.5 credits

July 2022 - 1 credit

September 2022 - 1 credit

November 2022 - 2 credits

January 2023 - TBA





# VA FLOODPLAIN MANAGEMENT ASSOCIATION



## **Individual Memberships (\$25.00)**

- Networking Opportunities
- Training and Workshops
- Membership Directory
- Quarterly Newsletters

## **Corporate Memberships (\$150.00)**

- Same access as Individual Members
- Includes 7 members (1 membership free – \$25 discount)
- Company logo on the VFMA website



# ISO VIRGINIA REPRESENTATIVE

**Emily Schmidt**

ISO/CRS Specialist

[emily.schmidt@verisk.com](mailto:emily.schmidt@verisk.com)



Coastal VA CRS Workgroup  
April 5, 2023

# VIRGINIA BEACH BACK BAY MARSH RESTORATION PROJECT



CJ Bodnar, Technical Services Program Manager  
Public Works, City of Virginia Beach





# Marsh Restoration in Back Bay Project Overview

C.J. Bodnar, P.E. – Public Works Stormwater Engineering Center  
5 April 2023



# Today's Agenda



- Project Site
- Project Need
- Project Benefits
- Data Collection and Design
- Project Implementation



# Project Team



CITY OF  
**VIRGINIA  
BEACH**



**Dewberry**<sup>®</sup>



**GEOENGINEERS**



**MAP ENVIRONMENTAL INC.**

**OLD DOMINION  
UNIVERSITY**<sup>®</sup>

**THE MILES** AGENCY  
NICHE MARKETING AND PUBLIC RELATIONS

*Waterway*  
Surveys & Engineering, Ltd.



**KOONTZ BRYANT  
JOHNSON WILLIAMS**

**VB** |  **theRippleEffect**  
VIRGINIA BEACH FLOOD PROTECTION PROGRAM

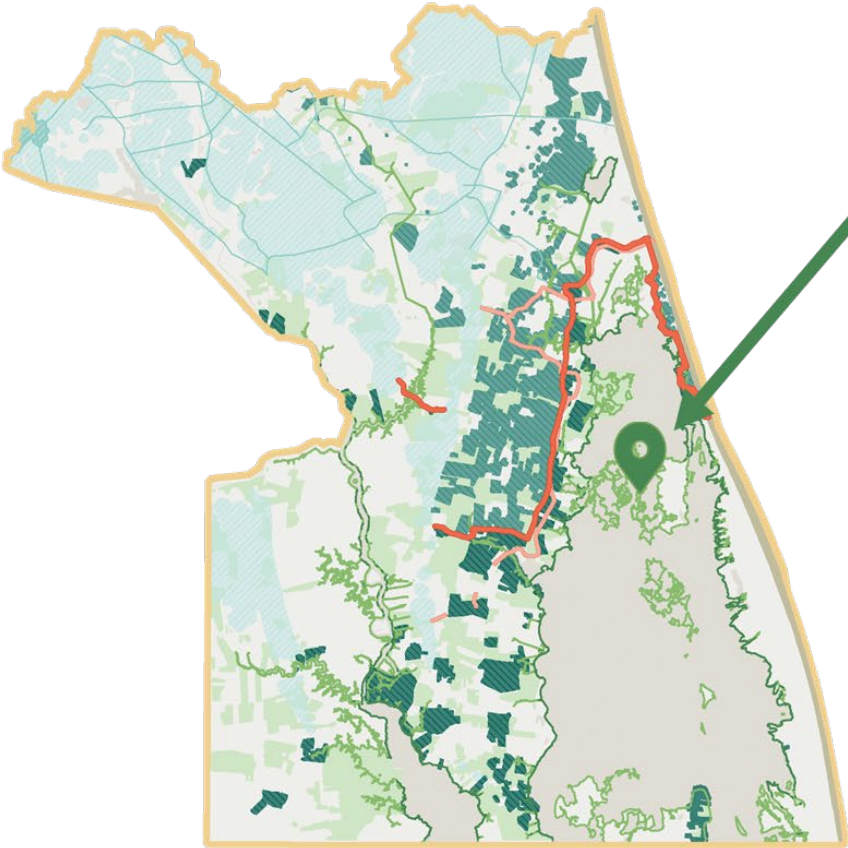
# Supporting Stakeholders



Restoration Foundation  
IT'S WORTH SAVING



# Southern Rivers Watershed Adaptation Vision



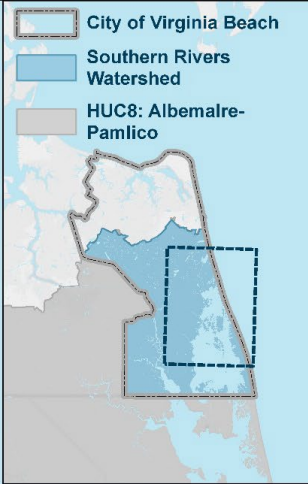
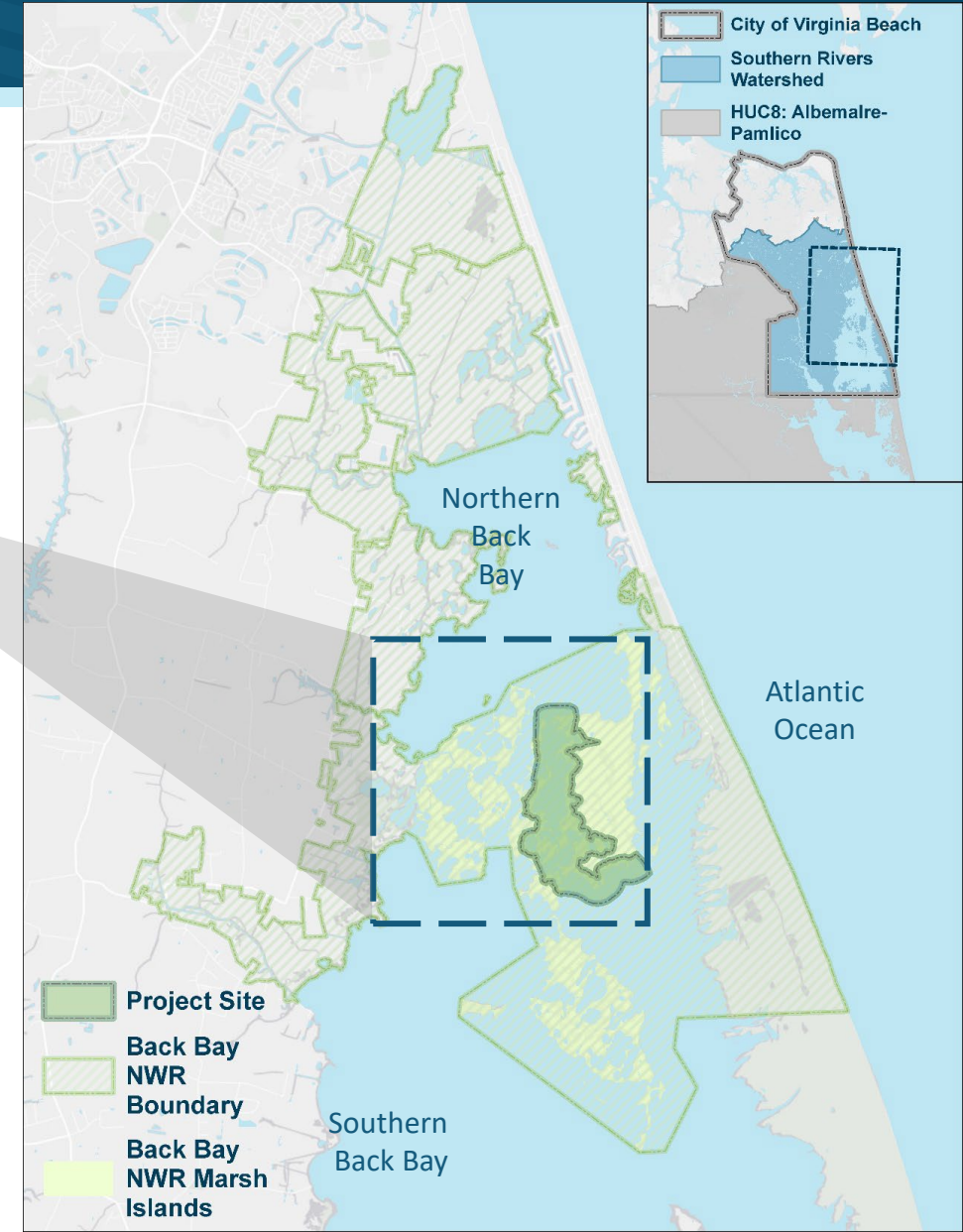
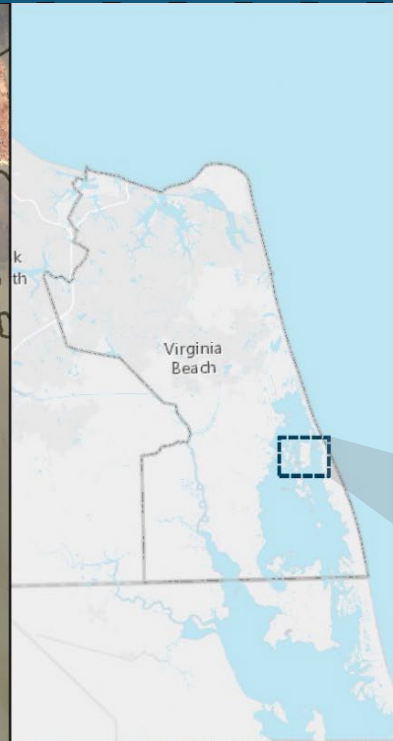
PROJECTS	TIMELINE
<b>Natural Infrastructure</b> <ul style="list-style-type: none"> <li>• Beach and Dune Nourishment</li> <li>• Marsh Restoration</li> <li>• Living Shorelines</li> </ul>	
<b>Adapted Structures</b> <ul style="list-style-type: none"> <li>• Building Elevation</li> <li>• Floodplain Regulation</li> <li>• Infrastructure Resilience</li> </ul>	
<b>Engineered Defenses</b> <ul style="list-style-type: none"> <li>• West and East Lesner Bridge Neighborhood Alternatives</li> <li>• Chesapeake Bay City-Wide Alignment</li> </ul>	
<b>Prepared Communities</b> <ul style="list-style-type: none"> <li>• Community and Business Education</li> <li>• Flood Insurance Expansion</li> </ul>	



NEAR MID LONG



# Project Site - Bonney Cove





# Project Need – Frequent Flooding in Low-Lying Areas in the Southern Rivers Watershed

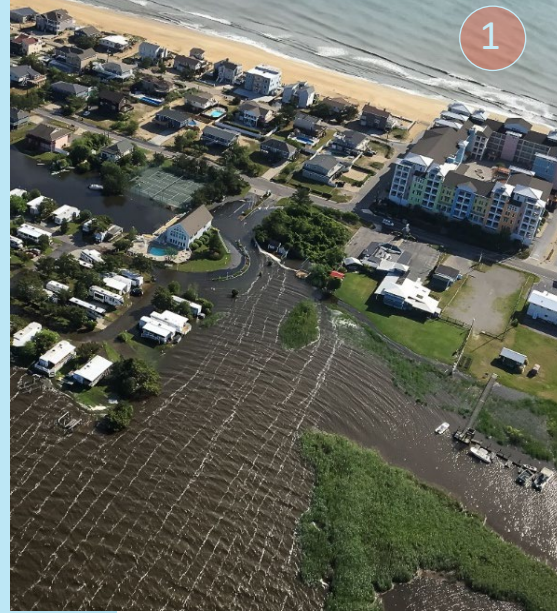
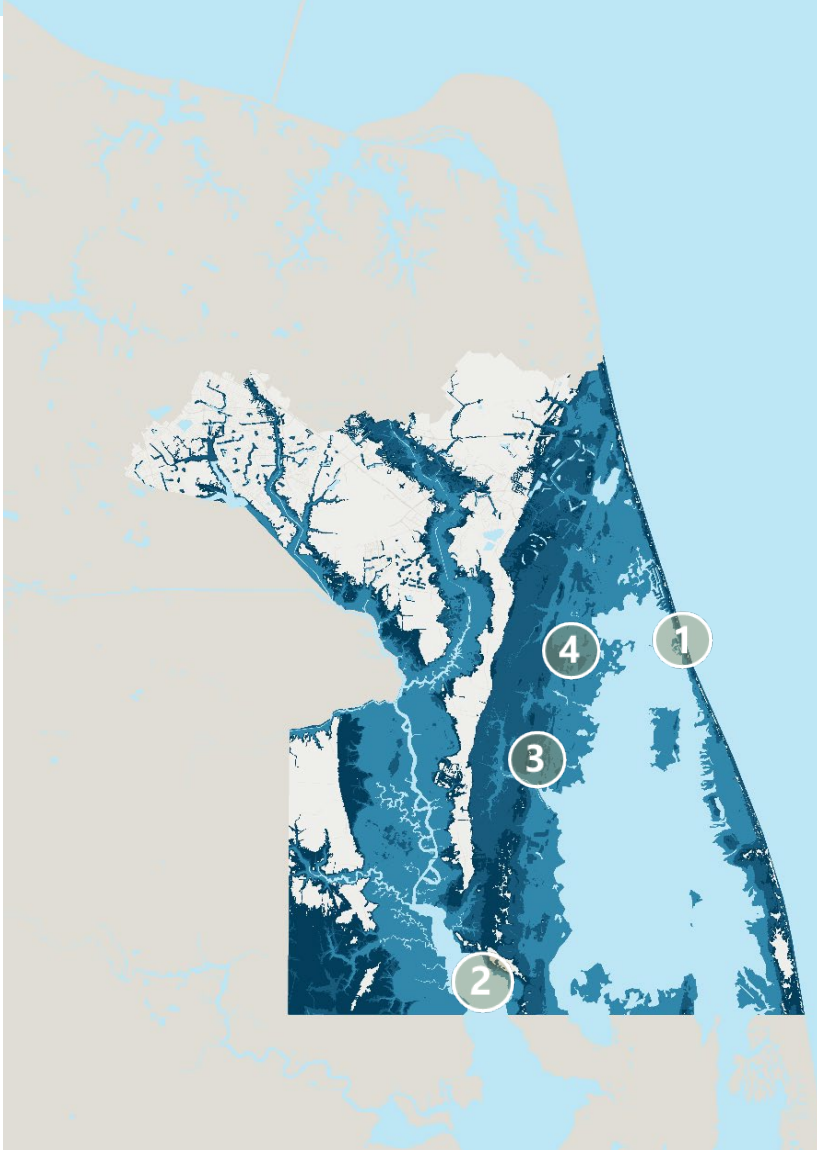


Low-lying land  
+  
Southerly winds  
=  
“wind-tides” and  
flooding





# Project Need – Observed Flood Impacts





# Project Need – Ecological Decline in Back Bay



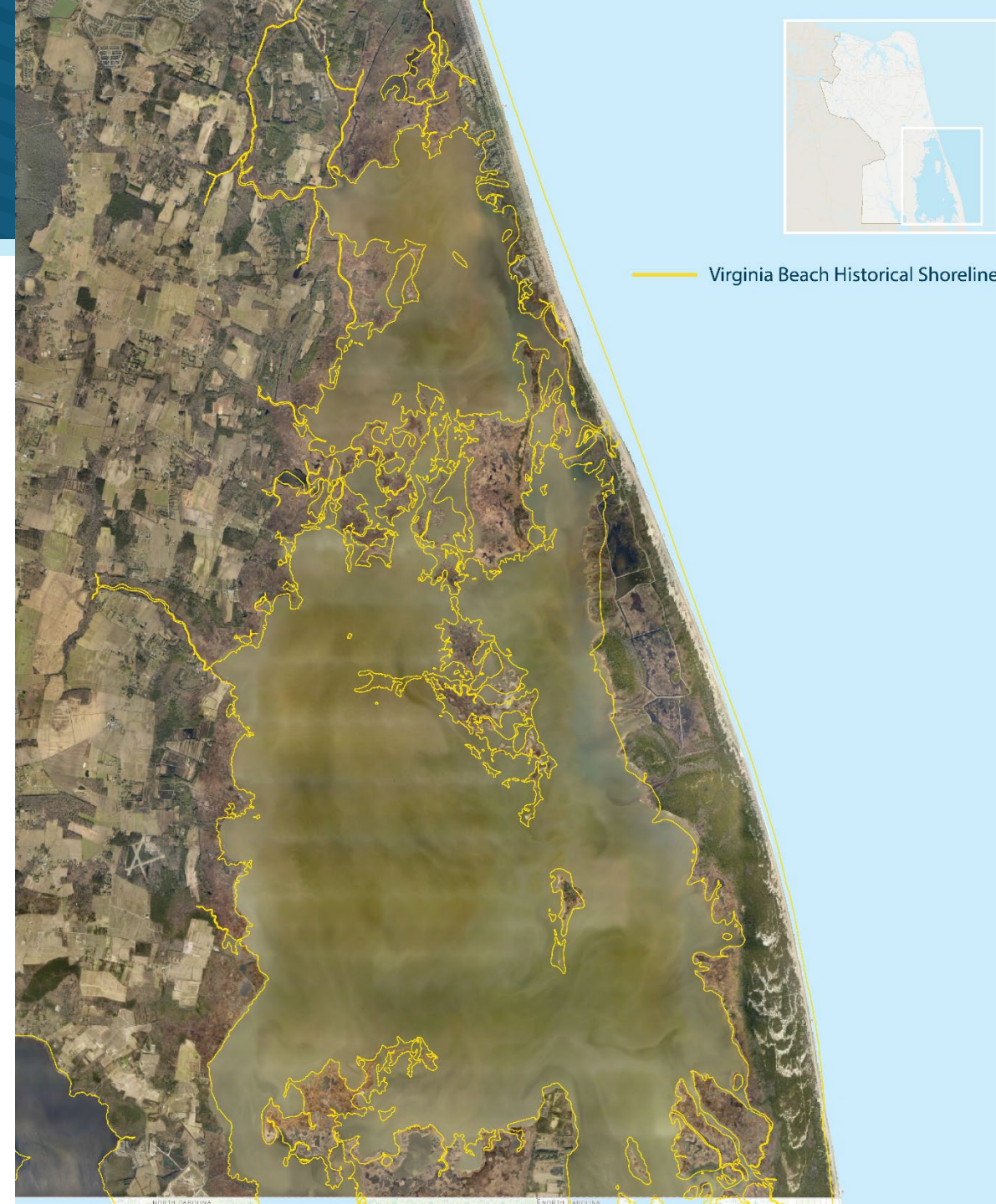
Loss of > 2,000 acres of marsh habitat

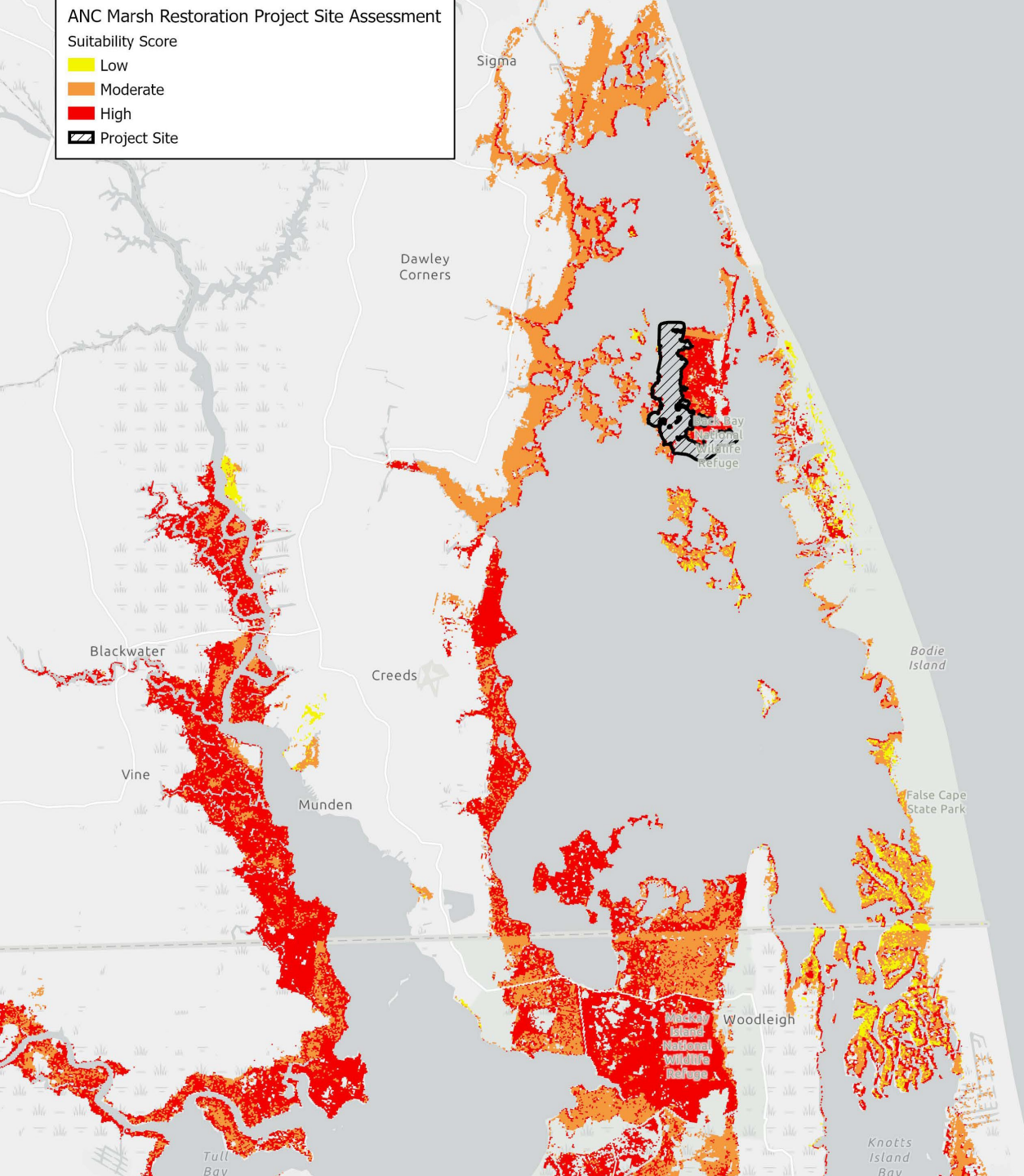


Loss of 70% of aquatic vegetation habitat



Loss of top waterfowl resting grounds and Largemouth Bass fisheries





# Audubon North Carolina Marsh Restoration Project Site Assessment



In coordination with Audubon North Carolina, the Currituck Sound Coalition identified the area around the project site as highly suitable for marsh restoration. This assessment designated the project site as a High Priority area for restoring and enhancing vulnerable or degraded marshes with “high flood risk reduction benefits and habitat value”.





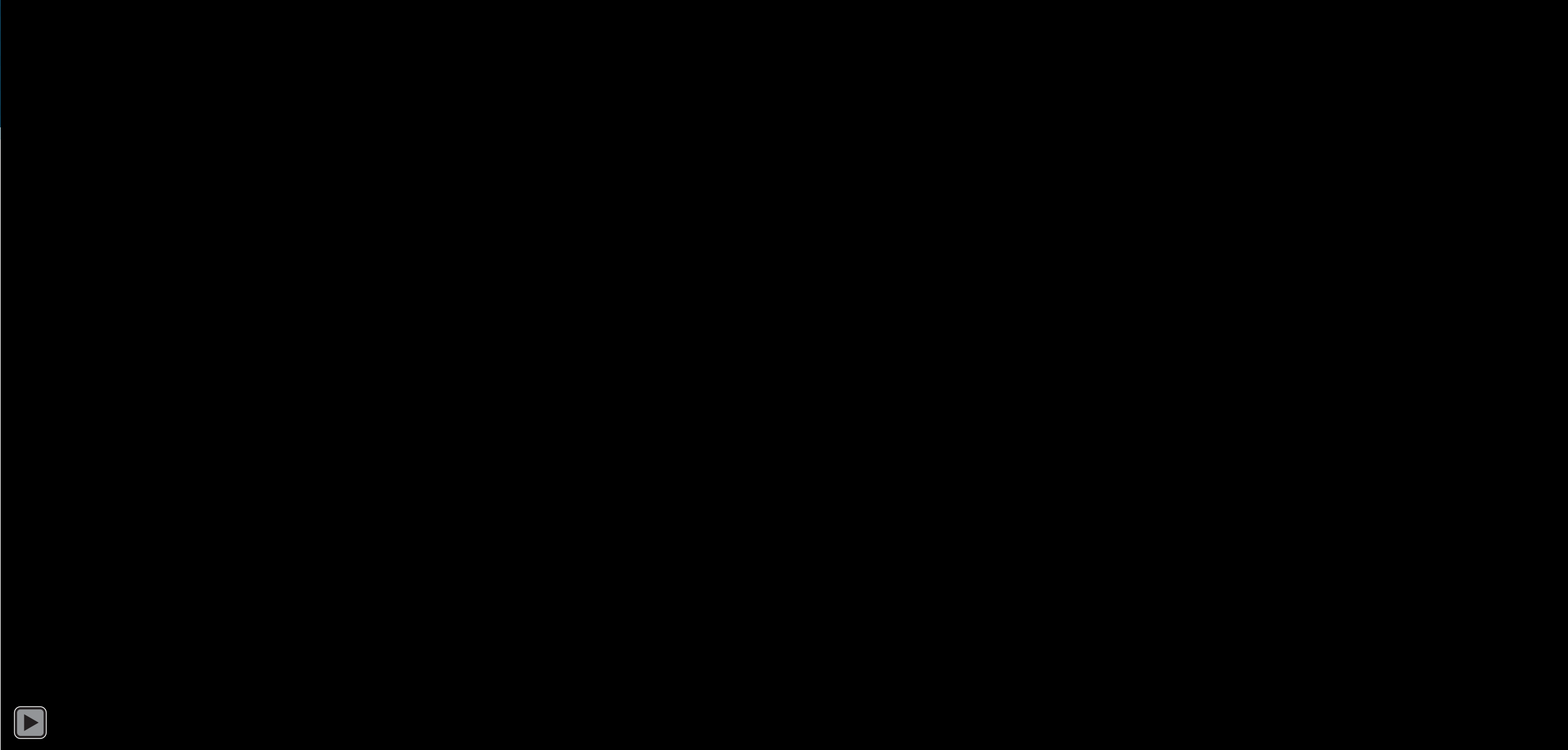
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Figure: MAP Environmental drone photograph from December 2020





Figure: City of Virginia Beach drone photograph from November 2021





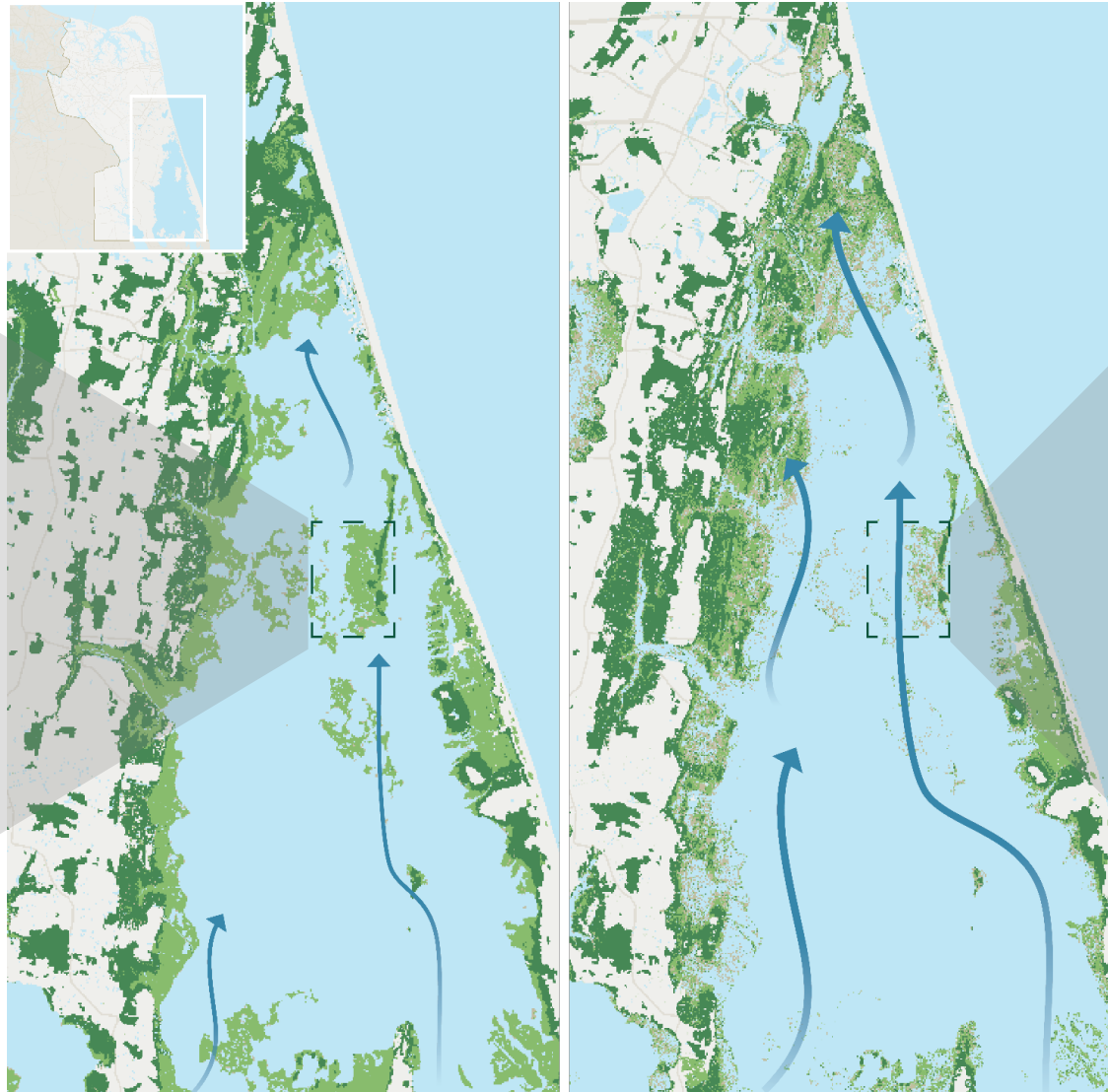
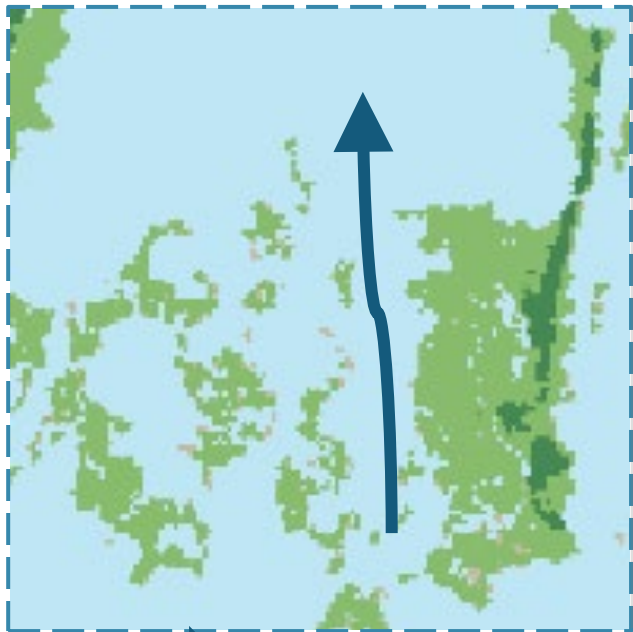


# No Action Alternative

- Grassy Wetland
- Woody Wetland
- Mud Flat
- Open Water

TODAY

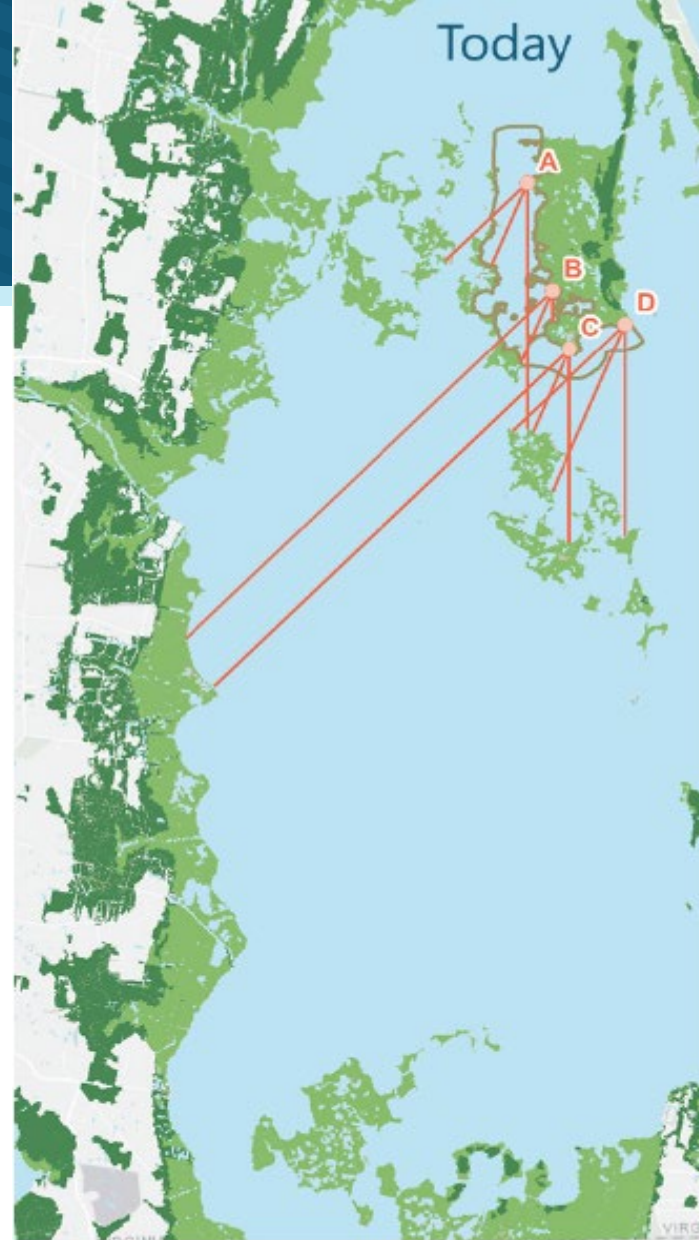
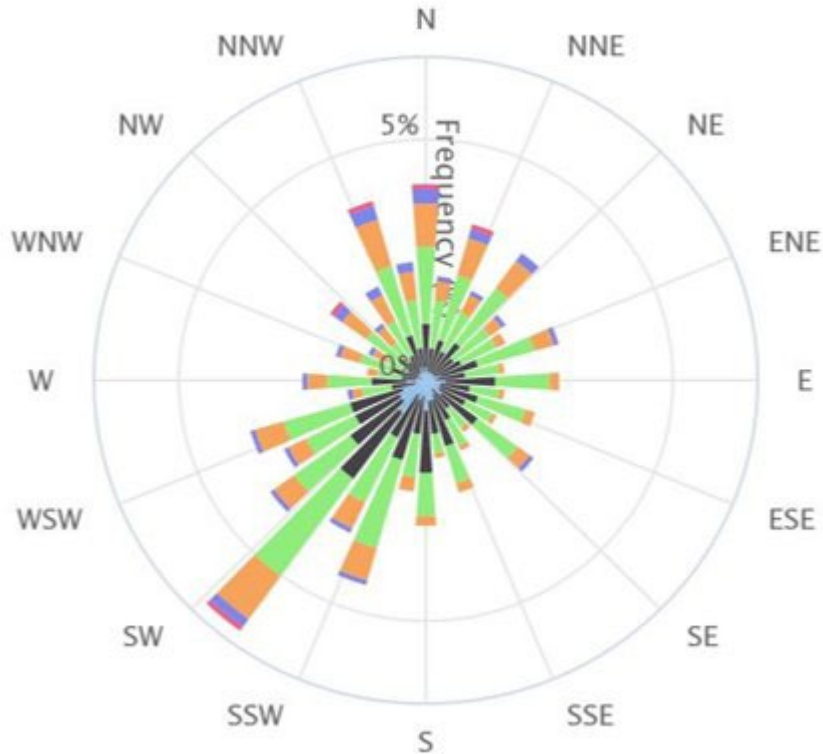
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Flood Pathway

# Wind Exposure

Dominant Wind Direction-  
South to Southwest

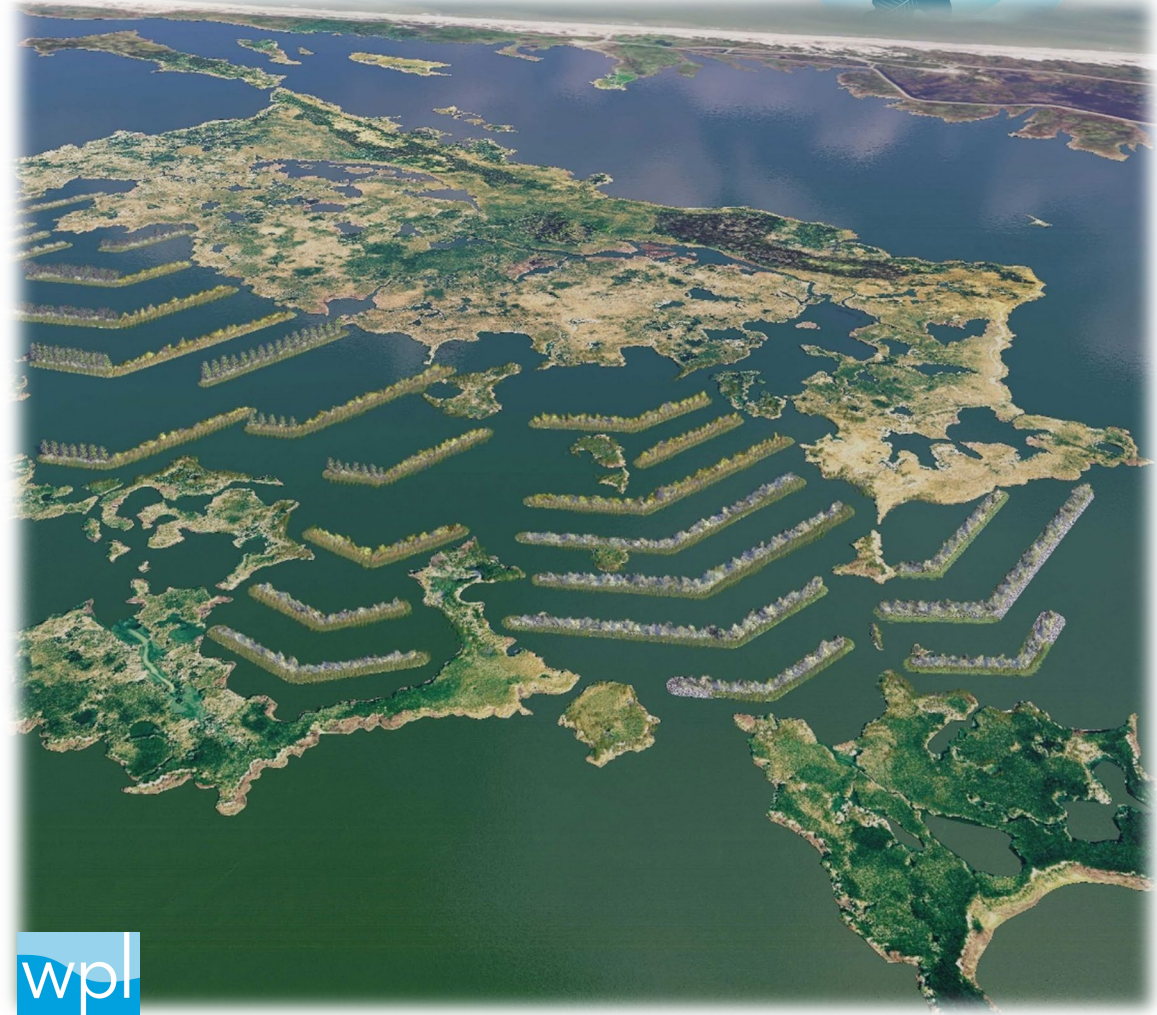




# Restoration Activities



- Create 41 individual marsh terraces totaling approximately 27,000 linear feet (51-acre footprint)
  - 15-foot-wide terraces throughout the site
  - 30-foot-wide terraces in the middle of the site
- 33 acres of estuarine wetlands created with over 130,000 native plants
- Create approximately 310 acres of suitable submerged aquatic vegetation habitat between the terraces



# Why Marsh Terraces?



## TERRACES PROVIDE HABITAT FOR A VARIETY OF SPECIES

1

Along terrace edges, fish and crustaceans find food and nursery habitat and attract the larger fish that feed on them.



2

Marsh grasses on terrace slopes provide nesting cover for waterfowl, while woody vegetation atop terraces offers resting perches for migratory birds.



3

Ducks feed on the submerged aquatic vegetation that often grows along terrace edges.



# Project Benefits



## Primary Benefits



### Marsh Creation

Strategically restore and create new marsh island habitat



### Erosion Reduction

Protect the edge of the new marsh from erosion

## Co-Benefits



### Seagrass Habitat Restoration

Promote establishment of aquatic vegetation habitat



### Flood Reduction

Reduce wave height and water velocities



### Recreation

Recruit signature fish & wildlife species and provide recreational opportunities





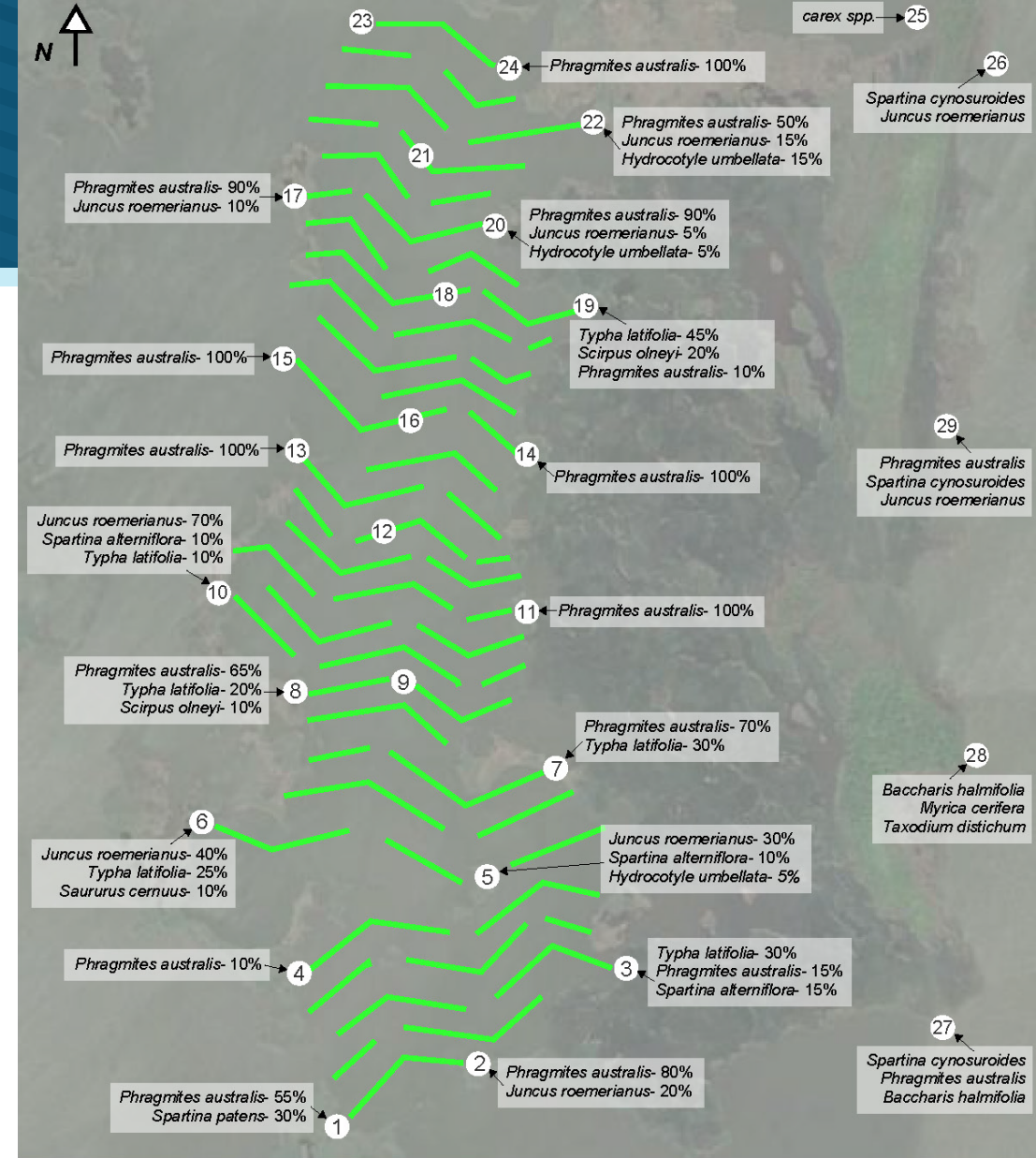
# Data Collection and Design





# Vegetation Survey Results

- Low marsh predominantly overtaken by *Phragmites*
- Some diversity of native species



**LEGEND:**  
 PROPOSED MARSH TERRACE  
 SAMPLING LOCATION

**NOTES:**  
 1. IDENTIFIED SPECIES INCLUDE ONLY THE THREE MOST DOMINANT MARSH SPECIES AT EACH SAMPLING LOCATION, WHERE APPLICABLE. DOMINANCE WAS DETERMINED BASED ON GREATEST PERCENT COVERAGE.



**PROJECT:**  
 BACK BAY MARSH TERRACE  
 VIRGINIA BEACH, VA

**TITLE:** DOMINANT SPECIES DISTRIBUTION MAP

**DATE:** FEB 12, 2021  
**PROJ NO:** 20122  
**FIGURE 3**



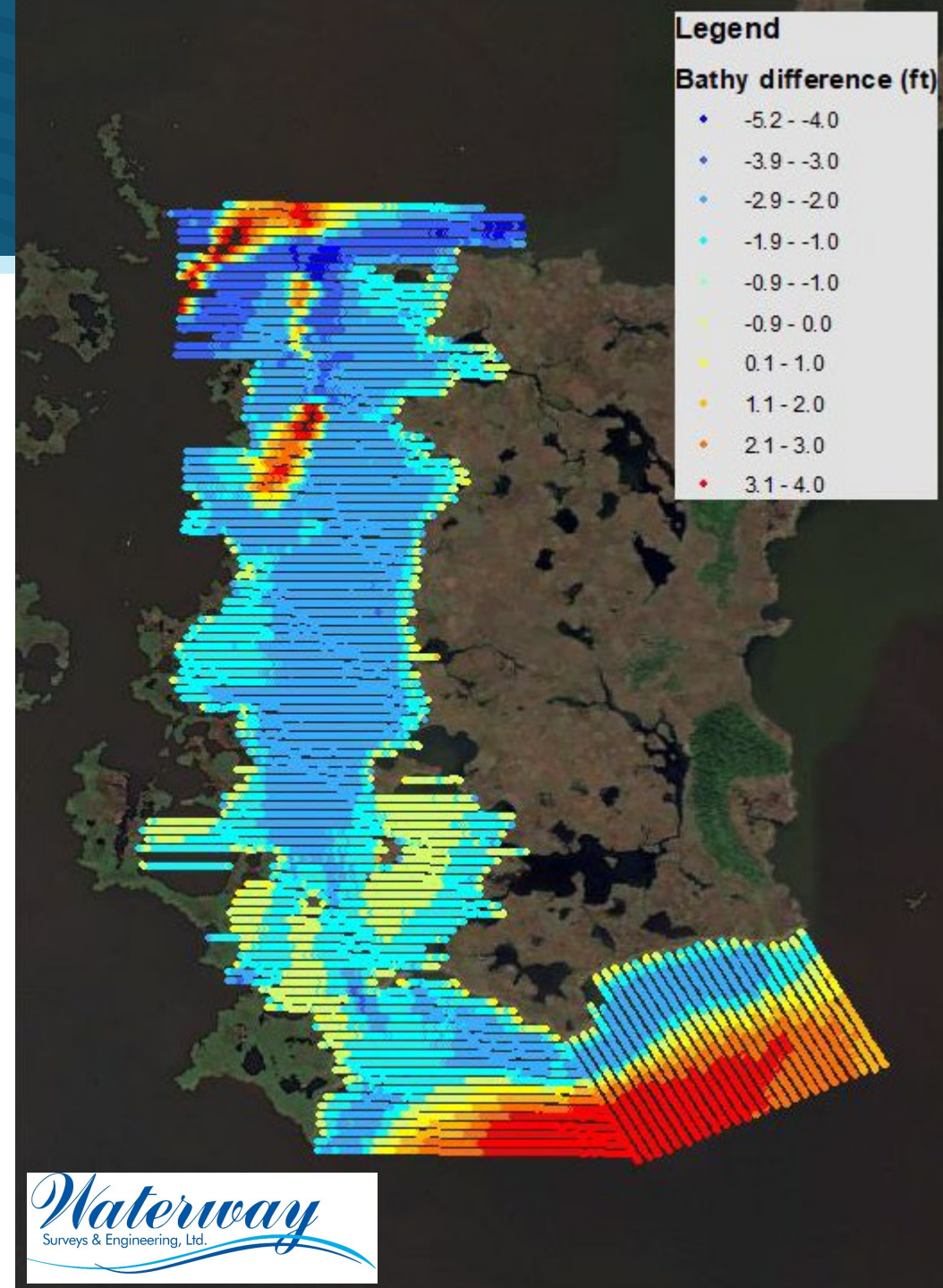
# Vegetation Survey Results Bonney Cove SAV

- Overall low SAV abundance
- Existing SAV almost entirely composed of Eurasian Watermilfoil
- Marginal populations of Widgeongrass and Eelgrass present in shallower areas of Bonney Cove



# Bathymetric Survey Results

- Integrated bathy survey data into existing topobathy model for Back Bay (1885)
- Observations:
  - Overall, transition to deeper water
  - Some shallower areas



# Xbeach Modeling – Metrics & Results

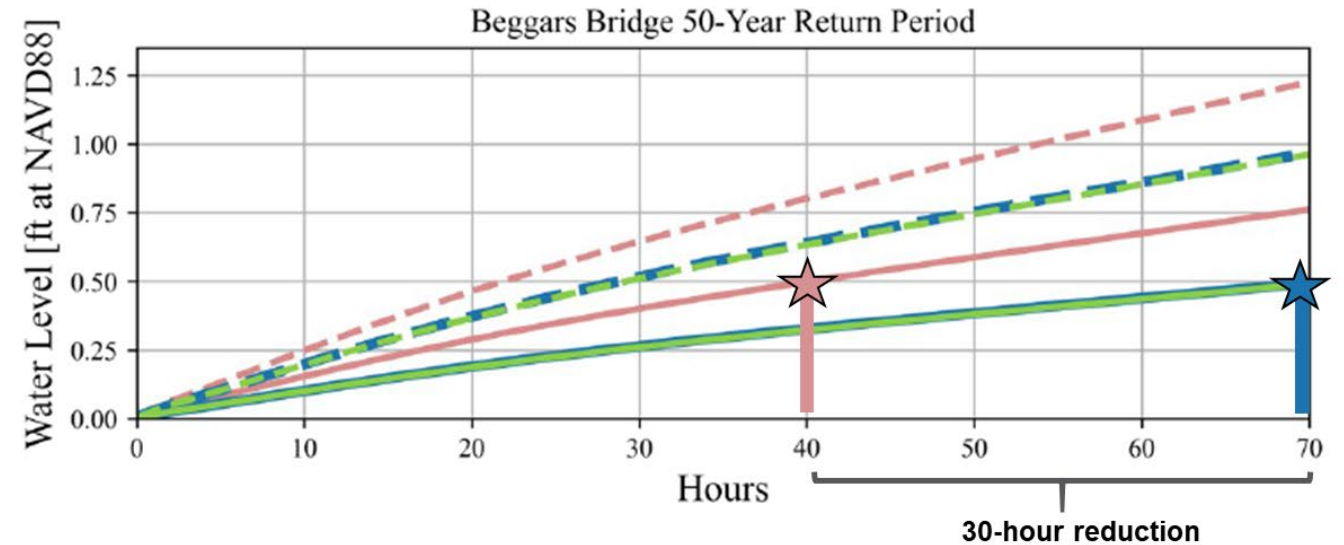


## Metrics

- Water Levels
- Wave Heights
- Flow Velocity
- A qualitative analysis of water quality based on model outputs.

## Results

- Water Level Reduction
- Flow Reduction
- Wave Height Reduction
- Flow Velocity Reduction
- Wind Shear Reduction
- Wind Shear Stress Reduction
- Delay of Peak Flooding



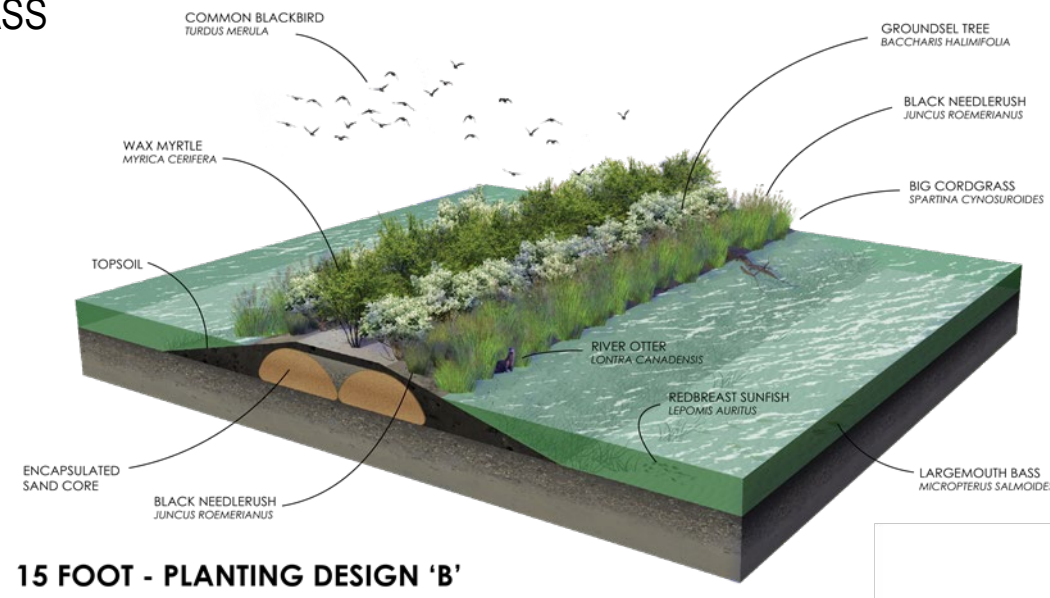
- Base
- Base with Sea Level Rise
- Design 1
- Design 1 with Sea Level Rise
- Design 2
- Design 2 with Sea Level Rise
- ★ Time at which water elevation reaches 0.5 feet without project in place
- ★ Time at which water elevation reaches 0.5 feet (peak flood elevation) with project in place



# Geotechnical Survey

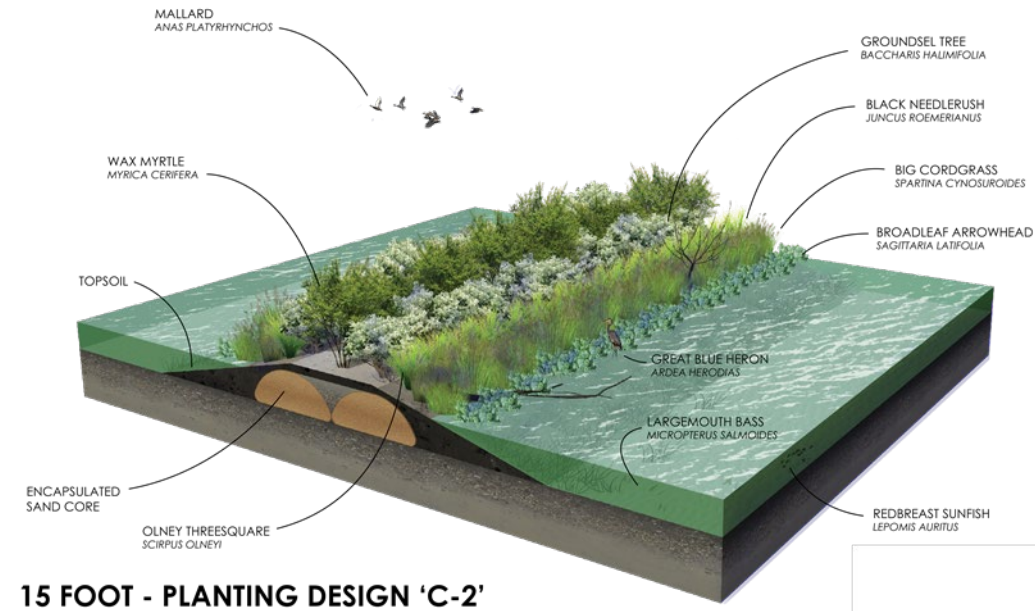
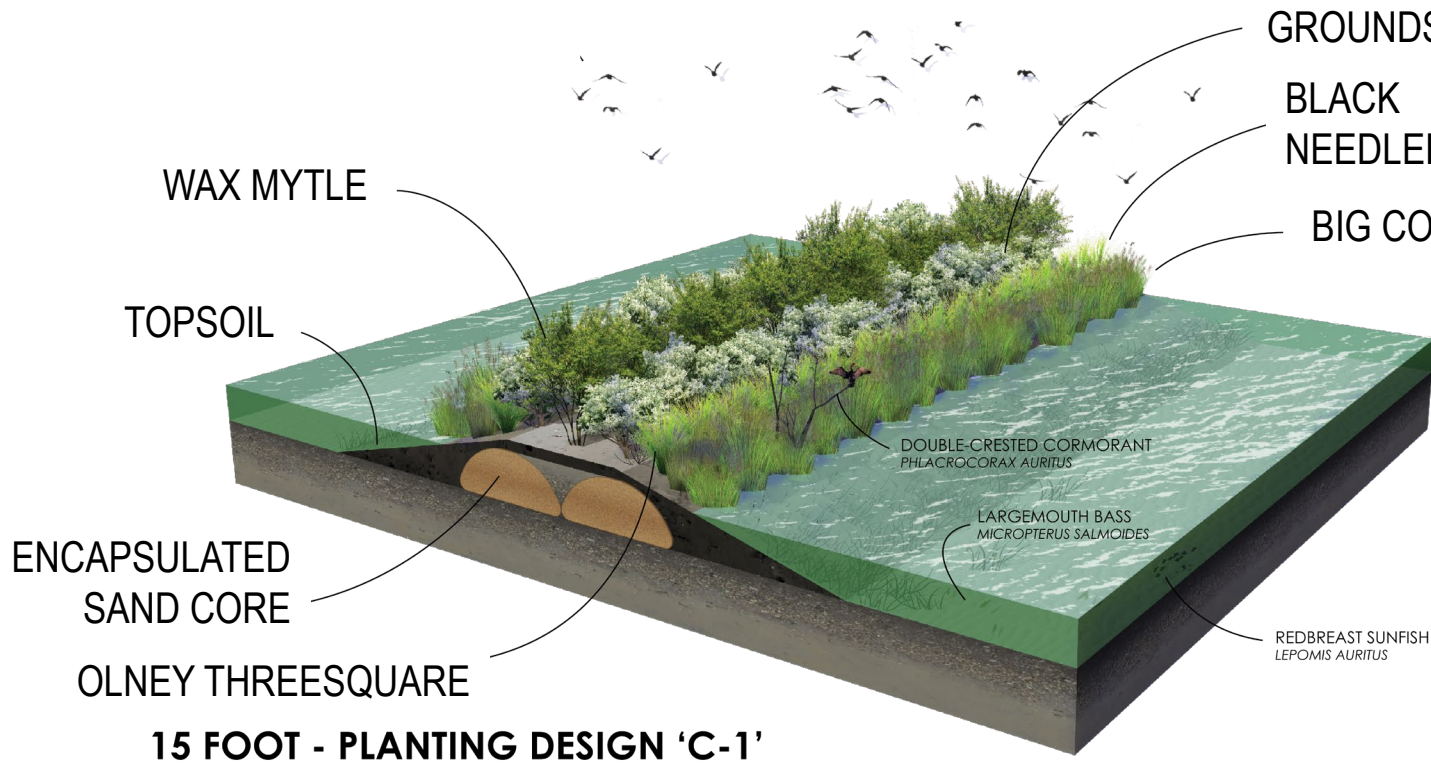


# Typical Planting Design Details





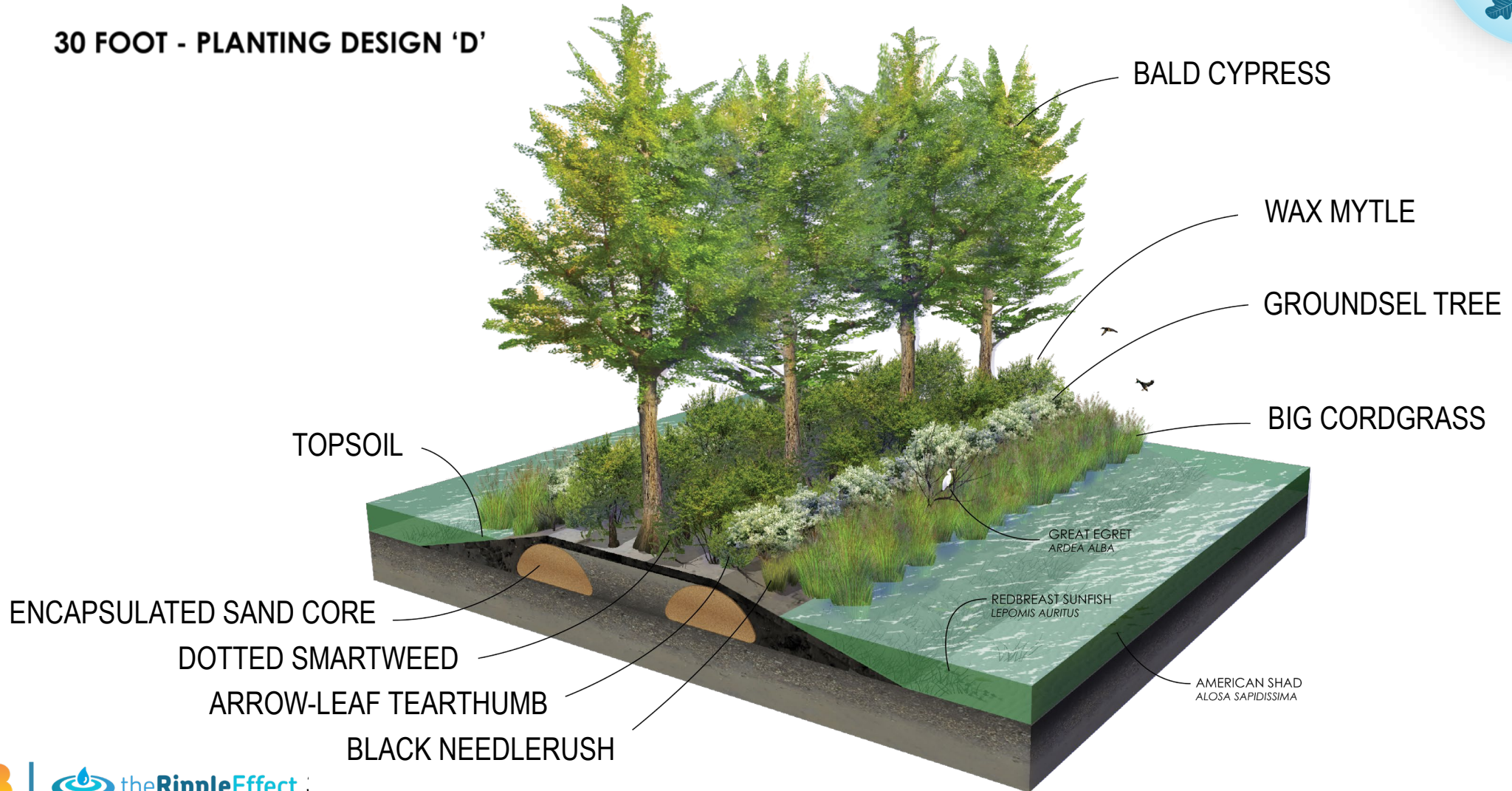
# Typical Planting Design Details



# Typical Planting Design Details



## 30 FOOT - PLANTING DESIGN 'D'



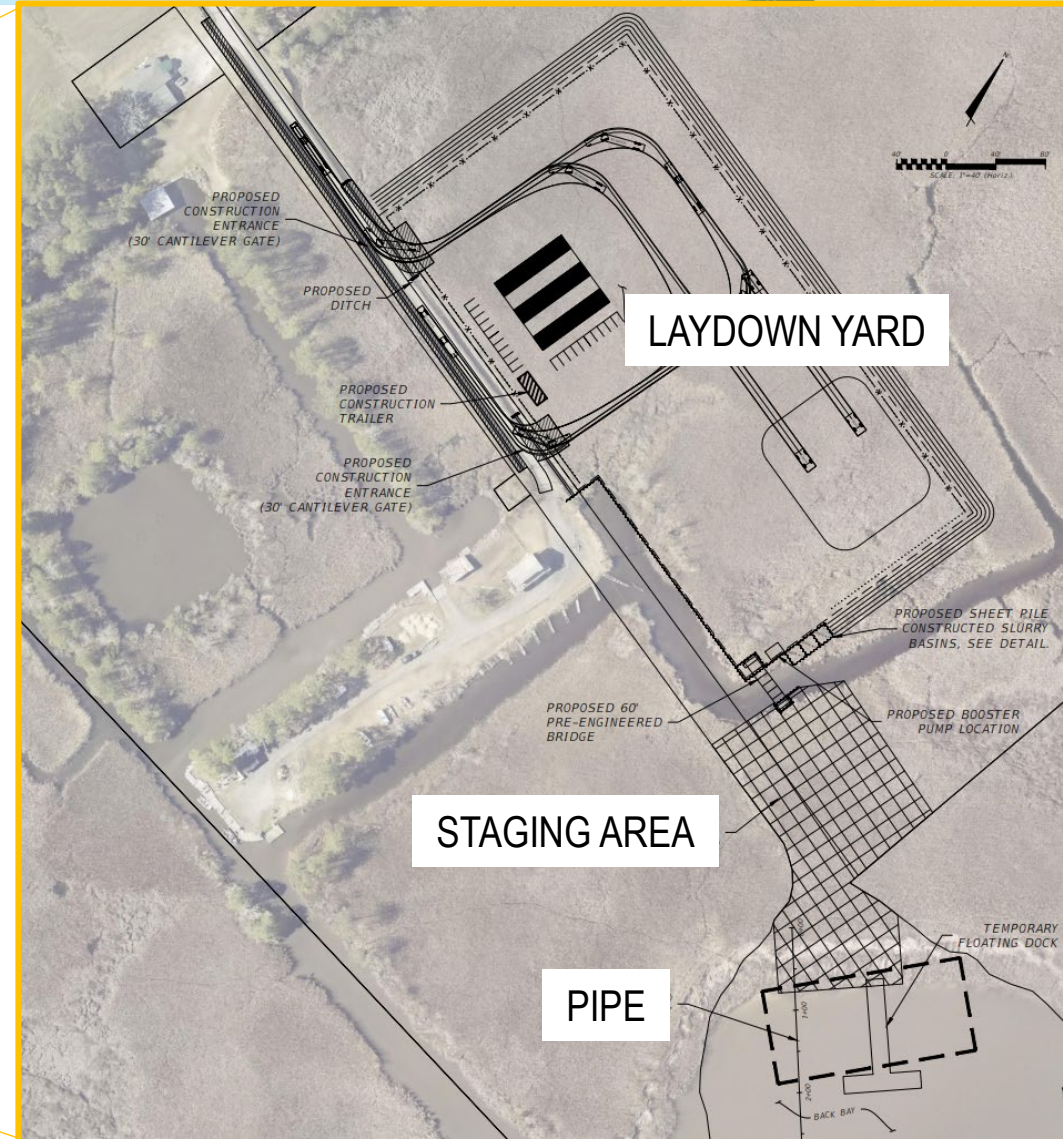


# Construction Staging





# Construction Staging







# Project Implementation



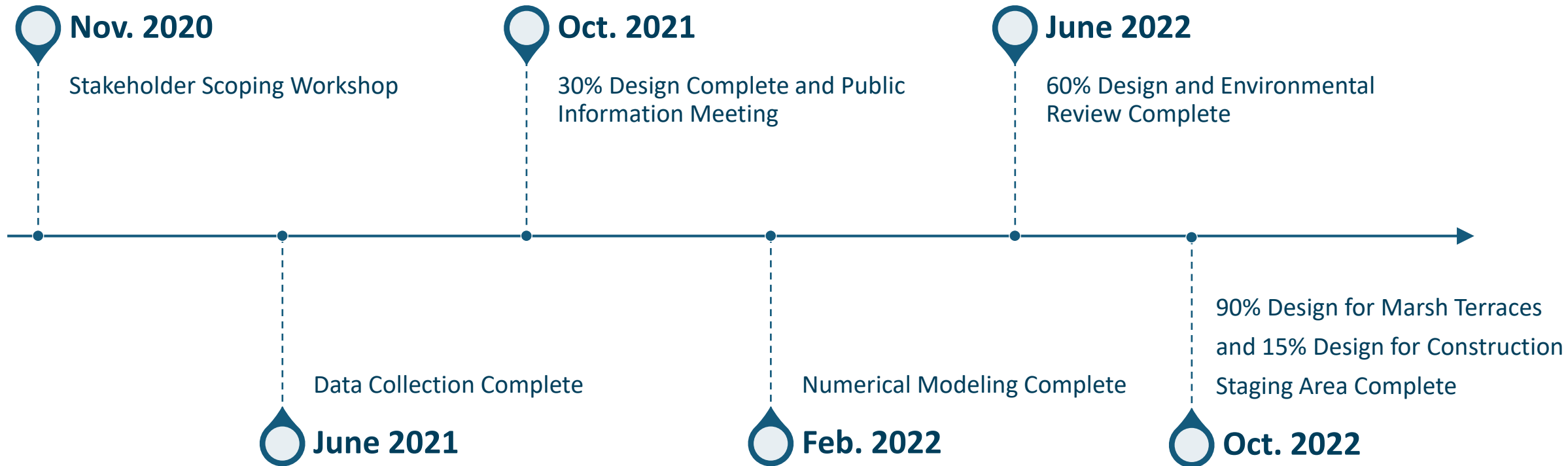


# Funding

- Bond Referendum
- NFWF Grants
  - Design - \$135k
  - Construction - \$9.88M

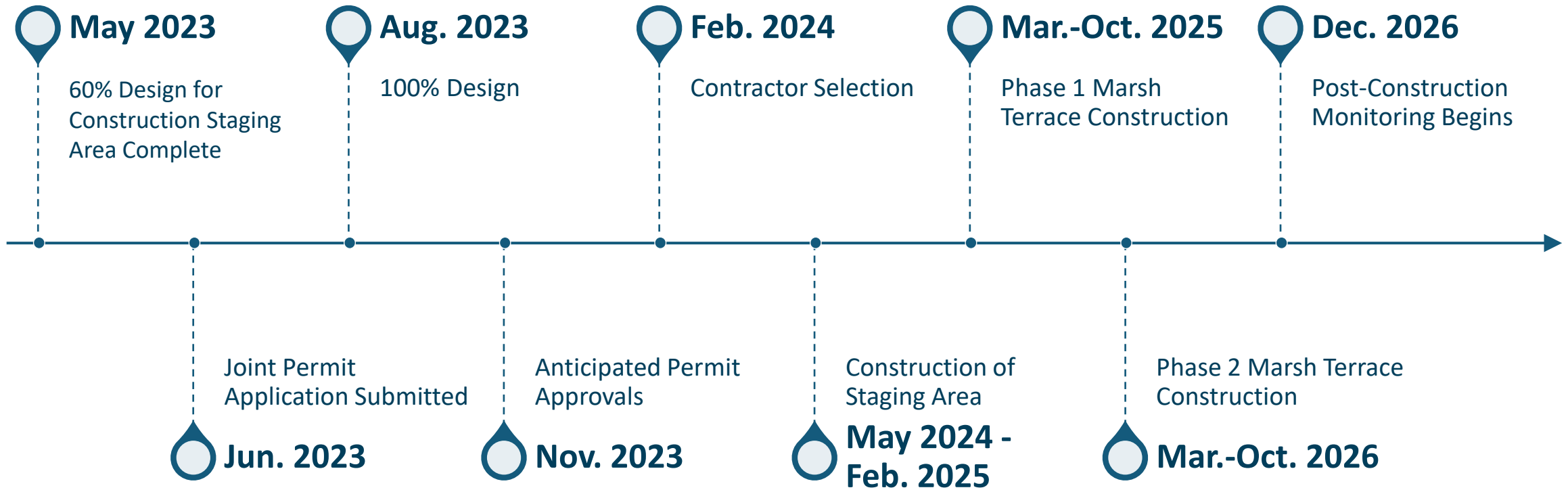


# Accomplishments





# Anticipated Schedule



# Points of Contact



## City of Virginia Beach Department of Public Works

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**C.J. Bodnar, P.E.**  
[cbodnar@vbgov.com](mailto:cbodnar@vbgov.com)

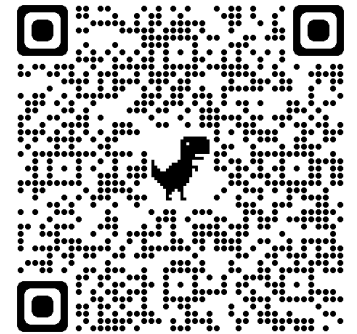
**Toni Utterback, P.E.**  
[tputterback@vbgov.com](mailto:tputterback@vbgov.com)

## Consultant Dewberry

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**David Tillar, P.E.**  
[dtillar@Dewberry.com](mailto:dtillar@Dewberry.com)

### More Information





# Questions?



*"The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions of the National Fish and Wildlife Foundation or its funding sources. Mention of trade names or commercial products does not constitute their endorsement by the National Fish and Wildlife Foundation or its funding sources."*



# CITY OF FRANKLIN'S CHECKLIST FOR REVIEWING DEVELOPMENT



DEPARTMENT OF COMMUNITY DEVELOPMENT  
PLANNING - BUILDING INSPECTIONS - ZONING



## Permit Process for Floodplain Development

### A Checklist for Review, Approval, and Oversight of Floodplain Development Projects

*A Floodplain Development Permit is required for any development activity in the regulated floodplain. This includes any man-made change to improved or unimproved real estate, including but not limited to the construction, reconstruction, renovation, repair, expansion, or alteration of buildings, accessory structures, or other structures; the placement of manufactured homes; mining; dredging; streets and other paving; docks; utilities; filling, grading, and excavation; drilling operations; storage of equipment or materials.*

*Each municipality in the Southampton County is responsible for enforcing floodplain development standards for all floodplain development within the jurisdiction. A floodplain development permit is required for projects undertaken by another municipality, county, school district, or public improvement district. Municipal projects must comply with floodplain development standards. Permits from other agencies do not preclude the need for a municipal floodplain permit.*

#### DONE or N/A

Check the Flood Insurance Rate Map (flood hazard map) to determine if the proposed project is in the Special Flood Hazard Area / 100-year floodplain. This is the **regulated floodplain** within which a floodplain development permit is required. Base flood elevation is the water surface elevations of the base flood, that is, the flood level that has a one percent or greater chance of occurrence in any given year. The water surface elevation of the base flood in relation to the datum specified on the community's Flood Insurance Rate Map. For the purposes of this ordinance, the base flood is the 1% annual chance flood.

**No.** If the project is not located in the regulated floodplain, evaluate the potential flood hazard. Projects located near the mapped floodplain boundary, in the 500-year floodplain, near streams, and in drainage areas do not require a floodplain development permit, but may warrant flood protection measures. Make appropriate recommendations.

**Yes.** If the project is in the regulated floodplain, a floodplain development permit is required. application. Floodplain administrator reviews for completeness and accuracy.

**Existing Structures in Flood Plain Areas** must be brought into conformity with the Floodplain Regulations when it is changed, repaired, or improved unless one of the following exceptions is established before the change is made:

The Floodplain manager has determined that

- change is not a substantial repair or substantial improvement AND
- no new square footage is being built in the floodplain that is not compliant AND
- no new square footage is being built in the floodway AND
- the change complies with this ordinance, the underlying zoning district and the VA USBC

The changes are required to comply with a citation for a health or safety violation.

The structure is a historic structure and the change required would impair the historic nature of the structure.

[Link to full document](#)





# CITY OF HAMPTON'S CHECKLIST FOR REVIEWING DEVELOPMENT

## CITY REVIEW OF DEVELOPMENT IN FLOOD ZONES – PERMIT REQUIREMENTS

### DEVELOPMENT THAT REQUIRES AN INDIVIDUAL PERMIT

#### Building, Mechanical, Electrical, or Plumbing Permit:

See Virginia Construction Code § 108.1

- New buildings
- Additions to existing buildings
- Walls (interior or exterior)
- Means of ingress/egress
- Water supply/distribution (Plumbing)
- Sanitary drainage (Plumbing)
- Electric wiring
- Mechanical systems, if gas (HVAC)
- Stairs (exterior or interior)
- Gas lines
- Pools
- Decks
- Footing/foundation
- Basements
- Carports over 256 SF in area
- Sheds over 256 SF in area
- Gazebos over 256 SF in area
- Garages
- Retaining walls supporting 3'+ of fill
- Fireplaces
- Chimneys
- Patios/porches (including enclosing existing)
- Solar energy equipment
- Mobile homes

### DEVELOPMENT CONSIDERED COMPLIANT (DOES NOT REQUIRE AN INDIVIDUAL PERMIT)

- Replacement only (originals require permit):
  - Windows **(R)**
  - Doors **(R)**
  - Plumbing fixtures (e.g., faucet)
  - Electrical fixtures (e.g., switches) **(R)**
  - Roofing (1 or 2 family only)
  - Siding (1 or 2 family only)
  - Mechanical appliances not fueled by gas or oil **(R)**
- Finishes (e.g., flooring, paint, wallpaper)
- Cabinetry/trim
- Pools less than 24" deep
- Flagpoles under 30' in height
- Alteration of grade less than 3' if total area of disturbance is less than 10,000 SF (2,500 SF in **CBPD**)
- Temporary ramps
- Sandboxes
- Swing sets/play equipment
- Dog runs
- Mailboxes
- At-grade patios (when not in **CBPD**)
- Gardens not exceeding 2,500 SF (when not in **CBPD**)
- Other repair work deemed by the building official to be minor and ordinary which does not

[Link to full document](#)



# FLOOD WATER REDIRECTION INQUIRY NORFOLK FLOODWALL

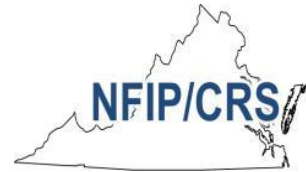
Interest in conveyancing a discussion on impacts of  
flood barriers in coastal region?



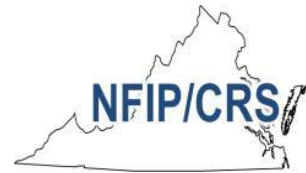


# CRS TRAINING OPPORTUNITY

- Available to any non-participating CRS community located in the Coastal Zone ([as defined by CZM](#))
- FREE 5-hour intensive training (lunch is provided!) on CRS Program & review of activities already underway in the community that could earn CRS credits
- Provided by Wetlands Watch, email Mary-Carson or Madison if interested



# POLL





# L-273 COURSE OPPORTUNITY

- The L-273 course teaches the fundamentals of floodplain management and helps prepare you for the CFM exam
- Dates: April 24th - 27th, 9:00 AM - 5:00 PM
- Location: James City County
- [Learn more & register here](#)



# ADVANCED FLOODPLAIN CONCEPTS

- Advanced Concepts in Floodplain Management:  
Every Tuesday in April (VIRTUAL): [Details here](#)
  - 4/11: Manufactured homes and flood hazards as well as flood insurance principals
  - 4/18: Substantial improvement and substantial damage (SI/SD) as well as higher standards in floodplain management
  - 4/25: Hydrology and hydraulic (H&H) methods and studies, while further detailing how H&H data is used to develop Flood Insurance Studies (FIS)



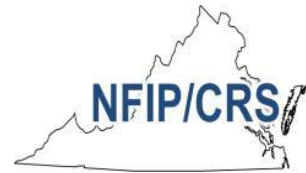


# 2023 ASFPM CONFERENCE

- Multi-day training and education event that lets you share experiences with other floodplain management professionals
- Dates: May 7th - 11th
- Location: Raleigh, North Carolina
- [Registration now open!](#)



# POLL



# CRS VIZ DATA UPDATED

	<b>October 2022 Data</b>	<b>April 2023 Data</b>	<b>Difference</b>
<b>Total Policies in Force</b>	74,409	68,313	6,096
<b>Total Annual Premiums Paid</b>	\$46,714,653	\$37,241,964	\$9,472,689
<b>Total CRS Savings</b>	\$6,411,307	\$5,228,690	\$1,182,617

[Link to CRS Viz](#)





# GENERAL ANNOUNCEMENTS

- CFPF round 4 grant manual release delayed
- Wetlands Watch Online CRS Training - coming soon!



# WORKGROUP ATTENDEE REPORT OUT

Time for Workgroup attendees to bring up any news, questions, or future meeting topics to the group



# THANK YOU!

[mc.stiff@wetlandswatch.org](mailto:mc.stiff@wetlandswatch.org)

[madison.teeter@wetlandswatch.org](mailto:madison.teeter@wetlandswatch.org)

