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Bringing the Herring River to Market

Blue Carbon as a Restoration Inventive

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Project Location, Wellfleet/Truro, MA

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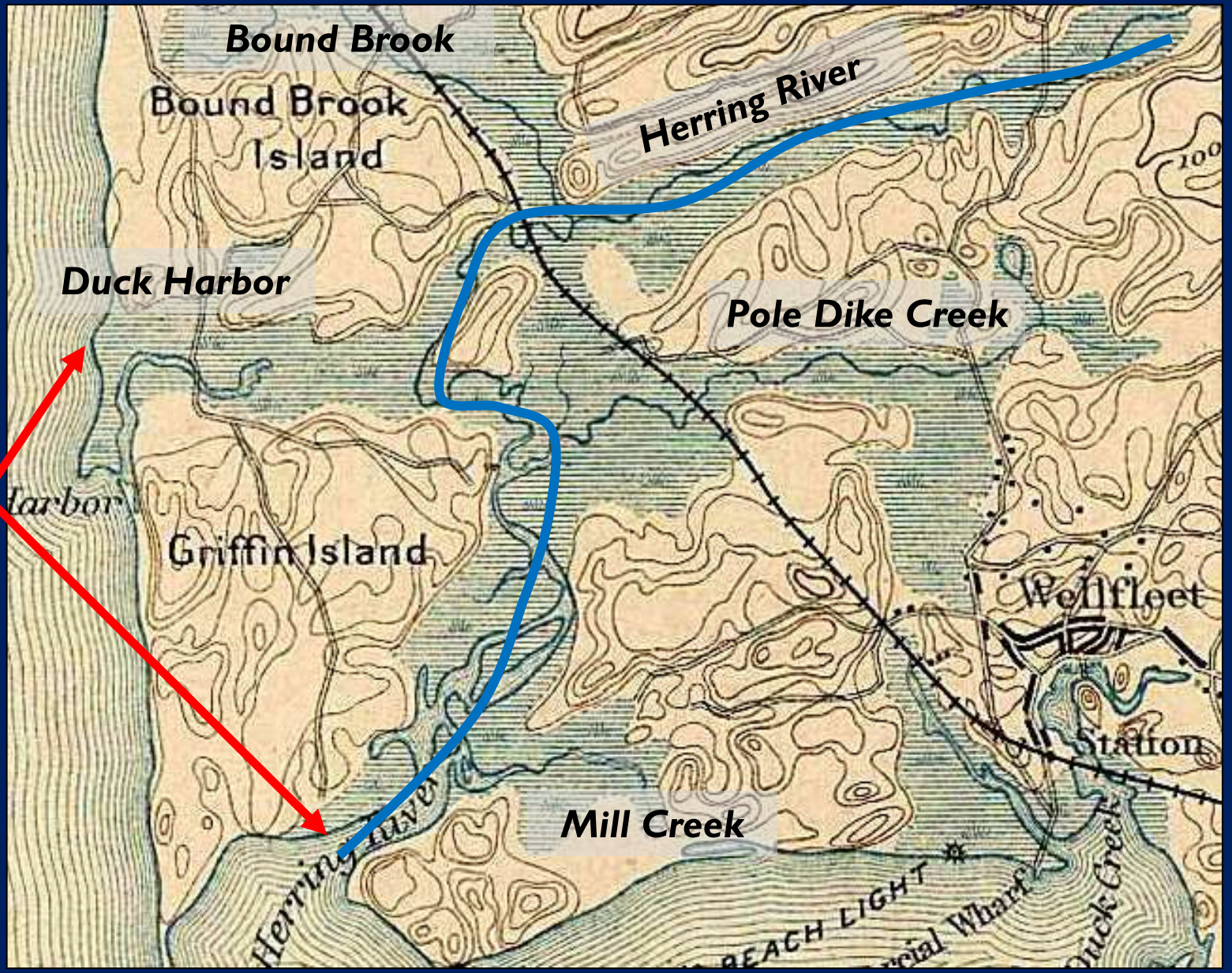
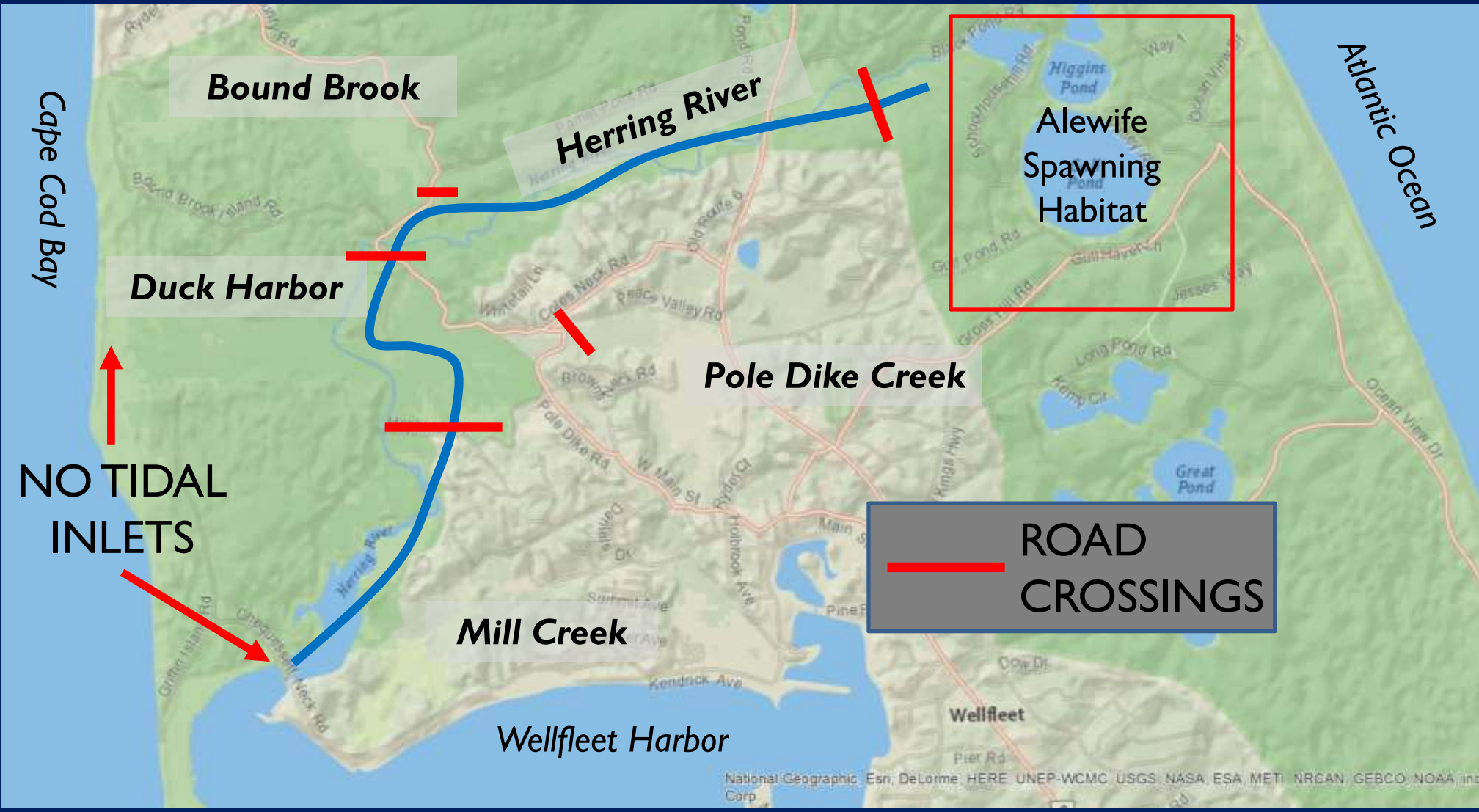
Herring River Estuary: Coastal Survey, c. 1888

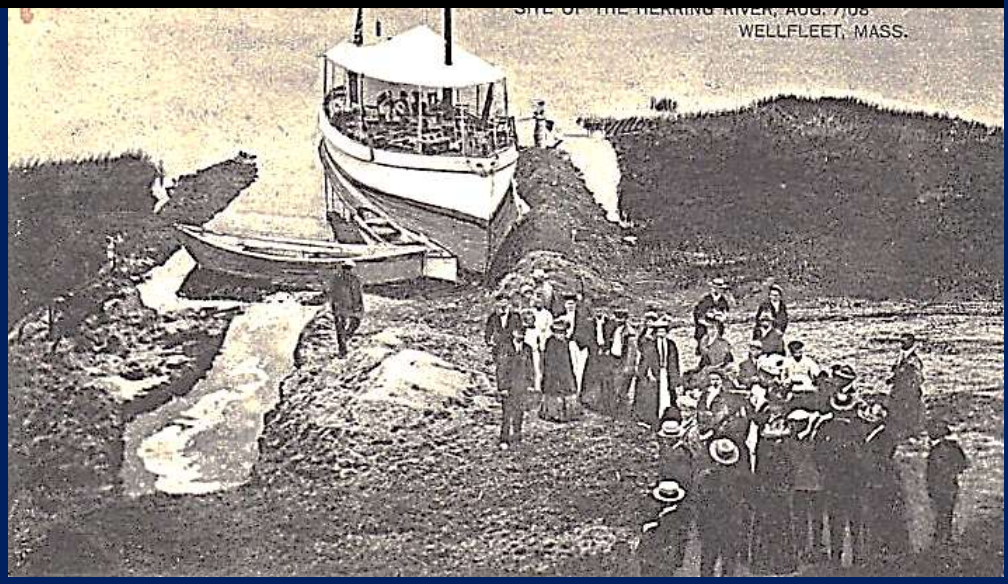
2 TIDAL INLETS Supported 1,100+ Acres of Inter-Tidal Wetlands

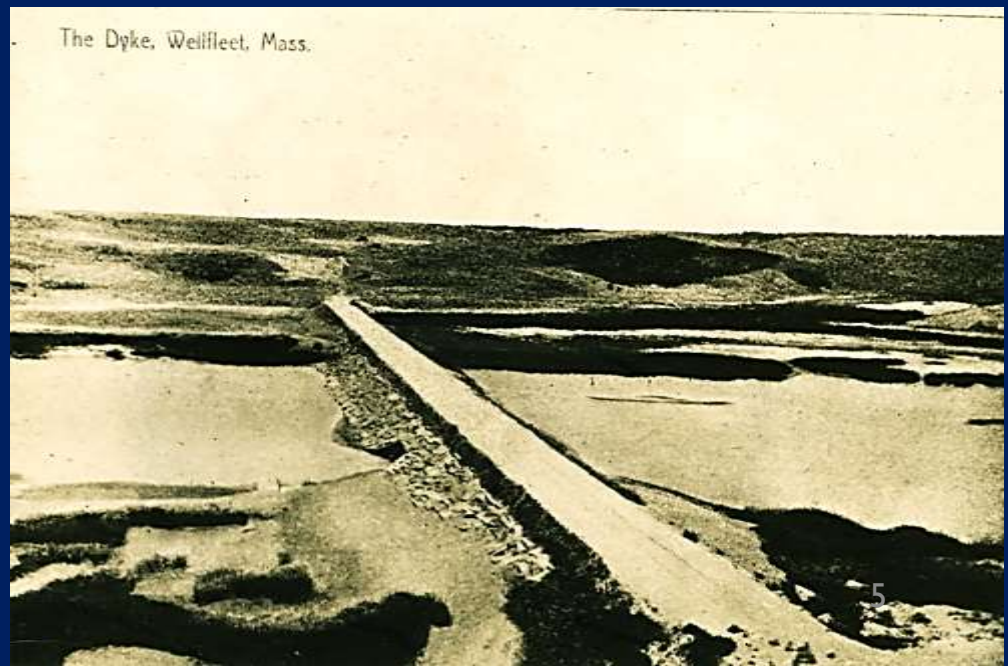


Current Herring River Estuary



1908: Construction of Herring River Dike at Chequessett Neck





Herring River Dike at Chequessett Neck

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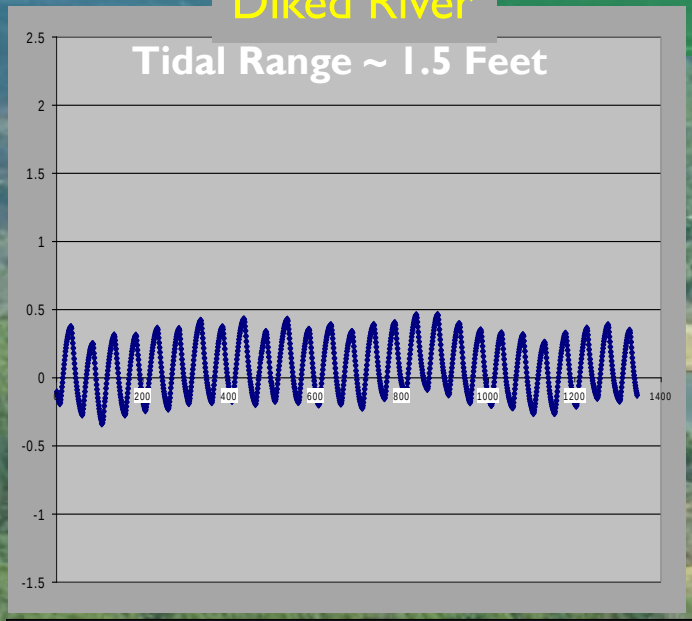
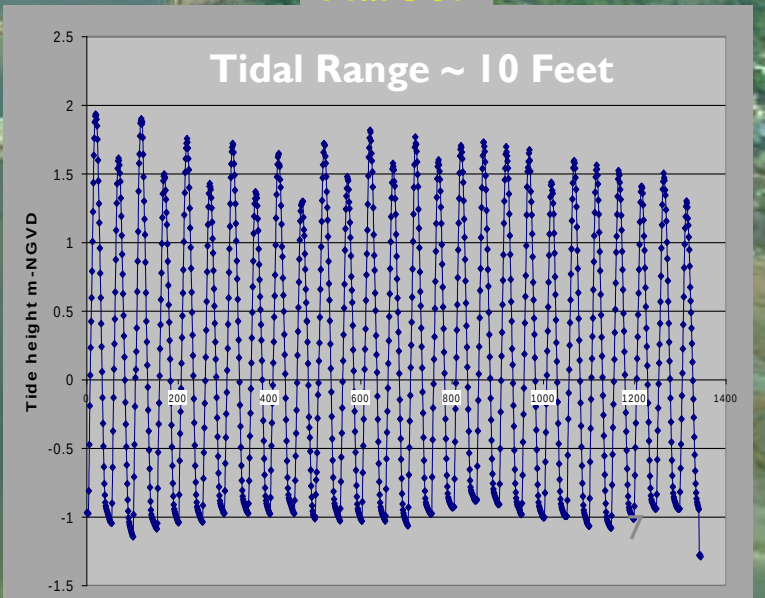
Chequessett Neck Road Dike

18 ft wide opening with flap gates has reduced upstream tide range in the River to less than 2 ft.

Diked River



Harbor



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Herring River: Effects of Tidal Restriction

Fecal Coliform Bacteria Pollution = Closed Shellfish Areas

Loss of Estuarine Vegetation

Degraded Habitat for River Herring; Acidification

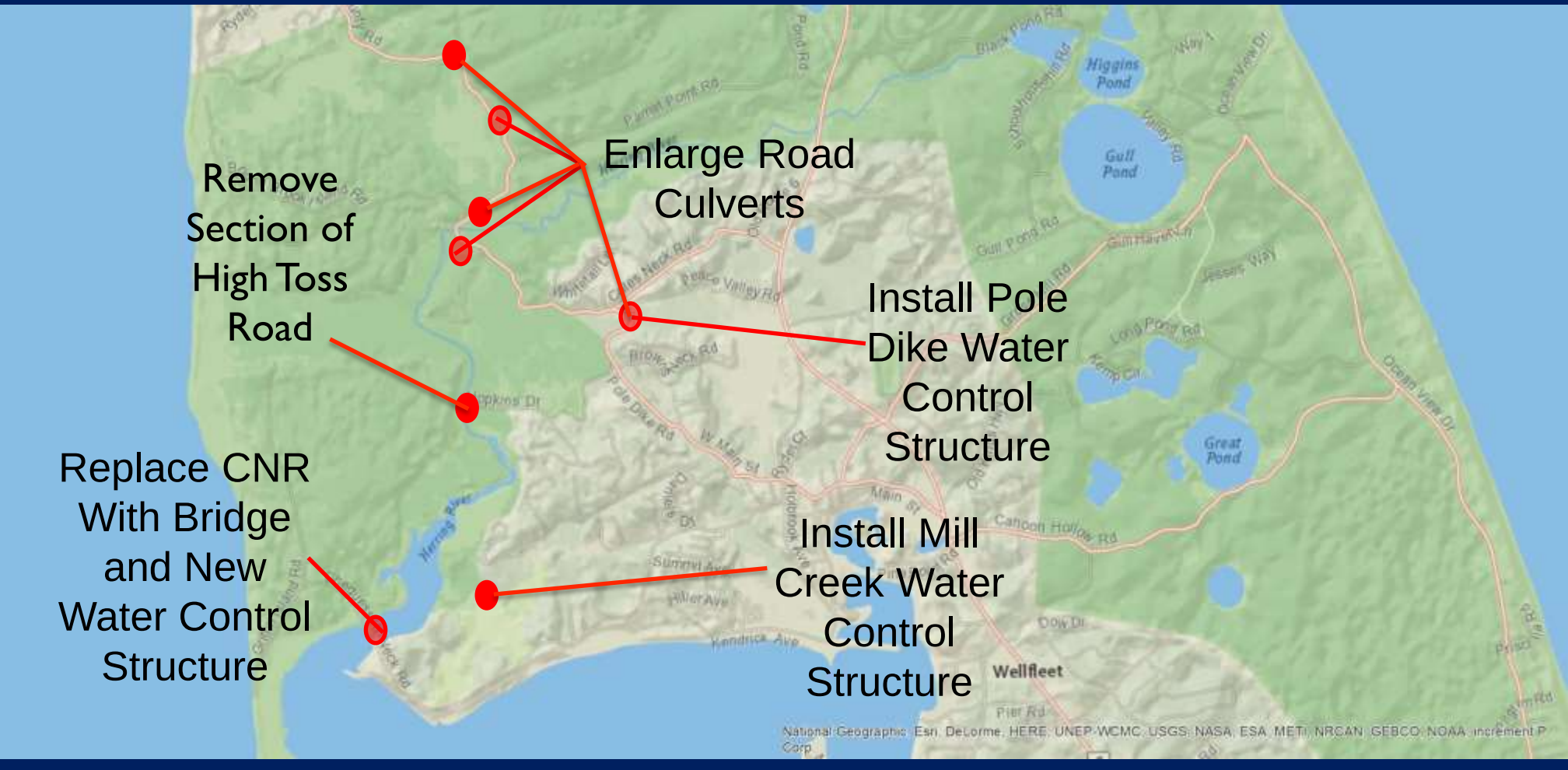
Poor Water Quality/Low Dissolved Oxygen = Fish Kills

Proposed Project / Preferred Alternative

Tidal restoration for Herring River = ***The controlled removal of tidal restrictions to allow incremental restoration of tides, salinity, water quality and plant and animal communities.***

Project Elements

Remove or Retrofit Tidally Restrictive Structures



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Project Elements

Rebuild Chequessett Neck Road Dike and Tidal Control Structure

18 ft wide culverts with restrictive gates

165 ft wide bridge span

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Project Elements

Examples of Tide Control Gates

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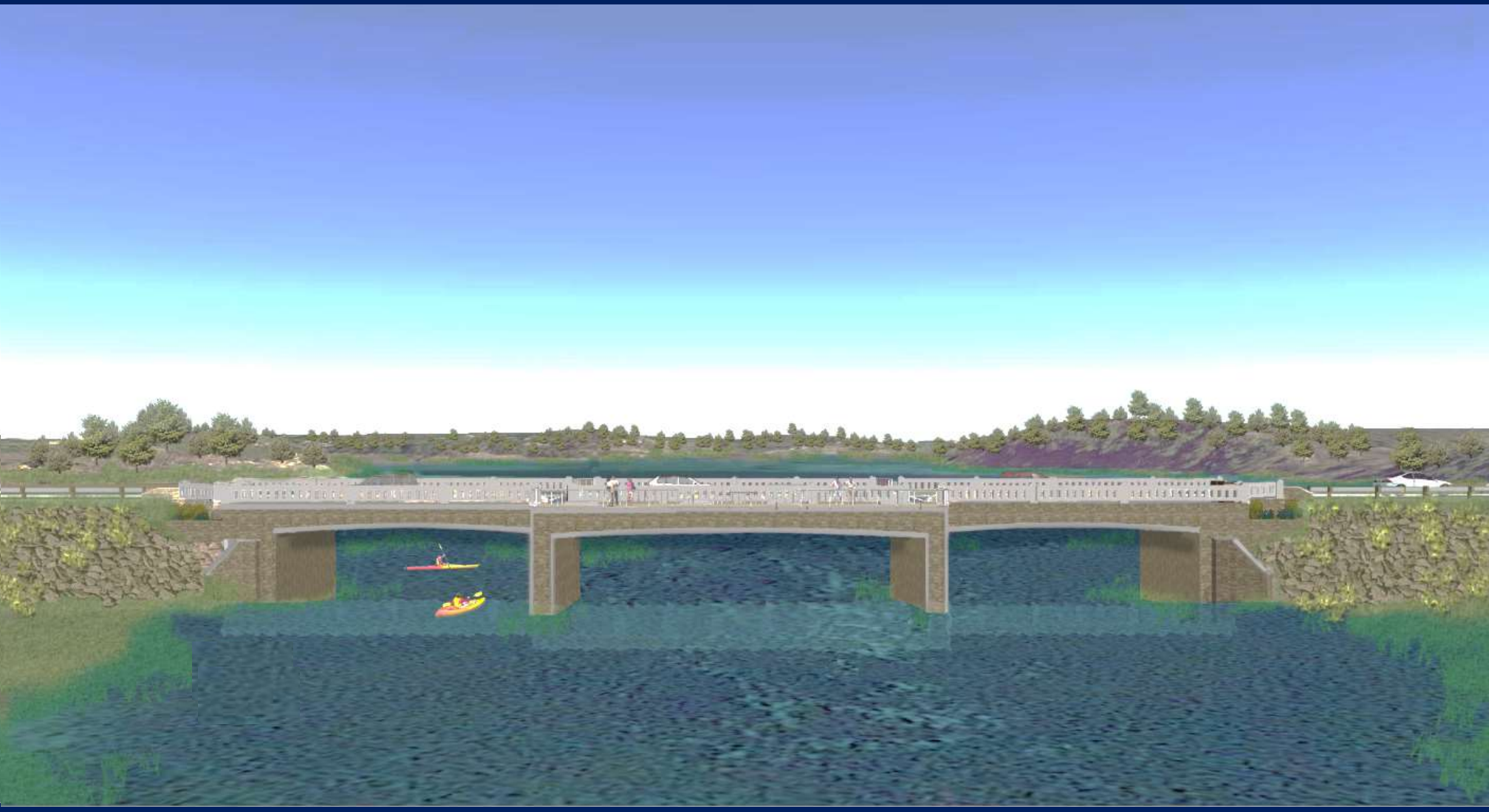
Project Elements

Rebuild Chequessett Neck Road Dike and Tidal Control Structure



Project Elements

Rebuild Chequessett Neck Road Dike and Tidal Control Structure

Why Incremental Tidal Restoration?

- Unprecedented Size of Area and Duration of Impairment
- Wide Range of Outcomes for Some Ecosystem Responses
- Potential for Sudden Nutrient and Sediment Flux, Eutrophication of River and Harbor
- Protective of Low-Lying Structures and Roads
- Provides Ability to Make Small Changes and Monitor Results
- Allows 'Dialing Back' if Necessary
- Facilitates Specific Tidal Management Strategies That Favor Restoration Objectives
- Able to Maintain Tide Range Sustainable for Salt Marsh in Face of Long-term Sea Level Rise

Project Benefits and Impacts

Full Project

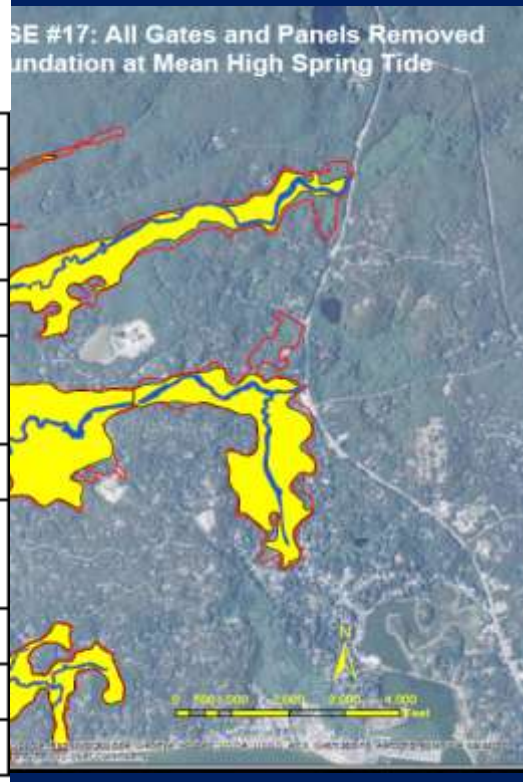
- Increase in Inter-Tidal Area: 75 to 890 Acres
- Increase in
- Analyzing 25 years

Project Scale

Largest 10 Tidal Restoration Projects in MA, 443 Acres

Herring River, 890 Acres (Full Project)

Castle Neck Marsh	Ipswich / Essex	Tidal	130.0
Hatches Harbor	Provincetown	Tidal	120.0
Straits Pond	Hull	Tidal	94.0
Nonquitt Marsh	Dartmouth	Tidal	80.2
Musquashcut Pond	Scituate	Tidal	77.0
Sesuit Creek	Dennis	Tidal	65.0
Green Harbor River	Marshfield	Tidal	60.0
Town Creek	Salisbury	Tidal	56.0
Muddy Creek	Chatham / Harwich	Tidal	55.0
Sagamore Marsh	Bourne / Sandwich	Tidal	50.0



Project Benefits and Impacts

Saltwater Extent at Mean High Spring Tide

Existing

Full Project

Ecosystem Benefits

- Opening 90 Acres of Permanently Closed Shellfish Beds
- Hundreds of Acres of Restored Shellfish Habitat
- Natural Attenuation of Nitrogen by Restored Oyster Reefs
- Enhanced Resiliency of Coastal Floodplain w/ Marsh Accretion
- Recreation (Fishing/Boating, etc.), Aesthetics, Education
- Avoided Methane Release: Polyhaline Habitat, 13 to 600 Acres > 18 psu
- Carbon Sink: 250 Acres of Sub-tidal to Inter-tidal, Plus Accretion of 200-300 Additional Acres of Current Inter-tidal Habitat

Project Status:

- NEPA/MEPA Complete; Final Environmental Impact Statement, NPS Record of Decision: Summer 2016
- Design and Permitting: 2019-2020
- Earliest Construction Start: 2021 (Pending Funding)
- Begin Tidal Restoration, Adaptive Management Phase: 2022

Summary: Next Steps for Blue Carbon & the Herring River Restoration Project?

- Restoration Project Team Reviewing and Evaluating Blue Carbon Feasibility Study, Completed as part of BWM project
- Need to Understand Blue Carbon Project Involving Multiple Landowners and Funders
- National Park Service Internal Review to Understand Implications of Generating Marketable Carbon Credits on Federal Land
- Further Assessment of How Carbon Credits Could be Coordinated with the Long-term and Incremental Nature of the Project; i.e, under various stages of partial tidal restoration, how would credits accrue?
- Determine Details to Meet Verified Carbon Standard Requirements
- Seek Additional Support and Resources to Develop a Fully Fledged Carbon Project

Summary: How Does Bringing Wetlands to Market Support the Herring River Restoration Project?

- First to Quantify Newly Recognized Ecosystem Service for a Large Site in the New England
- Developed Partnership to Provide Logistical and Financial Support for Research at a Tidal Restoration Site; Coordinated with On-going NPS Monitoring and Research Activity
- Herring River Research Conducted as Part of BWM is Being Applied to Other Monitoring Goals of the Project; i.e. water quality, sediment dynamics
- Monetized Carbon Credits Could Provide a Funding Source for Long-term Project Activities that are Typically Difficult to Fund; i.e. data collection, community stewardship, education
- Carbon Credits Generated on Private Land Could Provide Incentive for Increased Project Support within the Community
- Even Without Monetization, Quantifying Carbon Fluxes Resulting from the Herring River Project Could Attract Project Support From Sectors Focused on GHG Issues, Beyond Those Traditionally Interested in Habitat Restoration

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