

Engaged Scholarship Panel

Dover Progression

Steve Miller, Great Bay NERR

Steve Bird, City of Dover

Carri Hulet, MIT

Coastal Climate Assessments

Julie LaBranche, Rockingham Planning Commission

Peter Britz, City of Portsmouth

Cameron Wake, UNH

Wagon Hill Farm

Kirsten Howard, NH Coastal Program

Mike Lynch, Town of Durham

Tom Ballestero, UNH

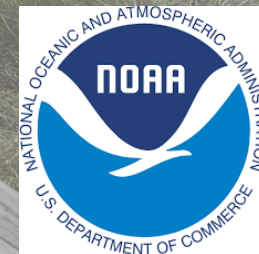
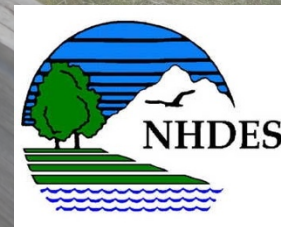


Durham's Wagon Hill Farm Living Shoreline Collaboration

Kirsten Howard, New Hampshire Department of
Environmental Services Coastal Program

Mike Lynch, Town of Durham

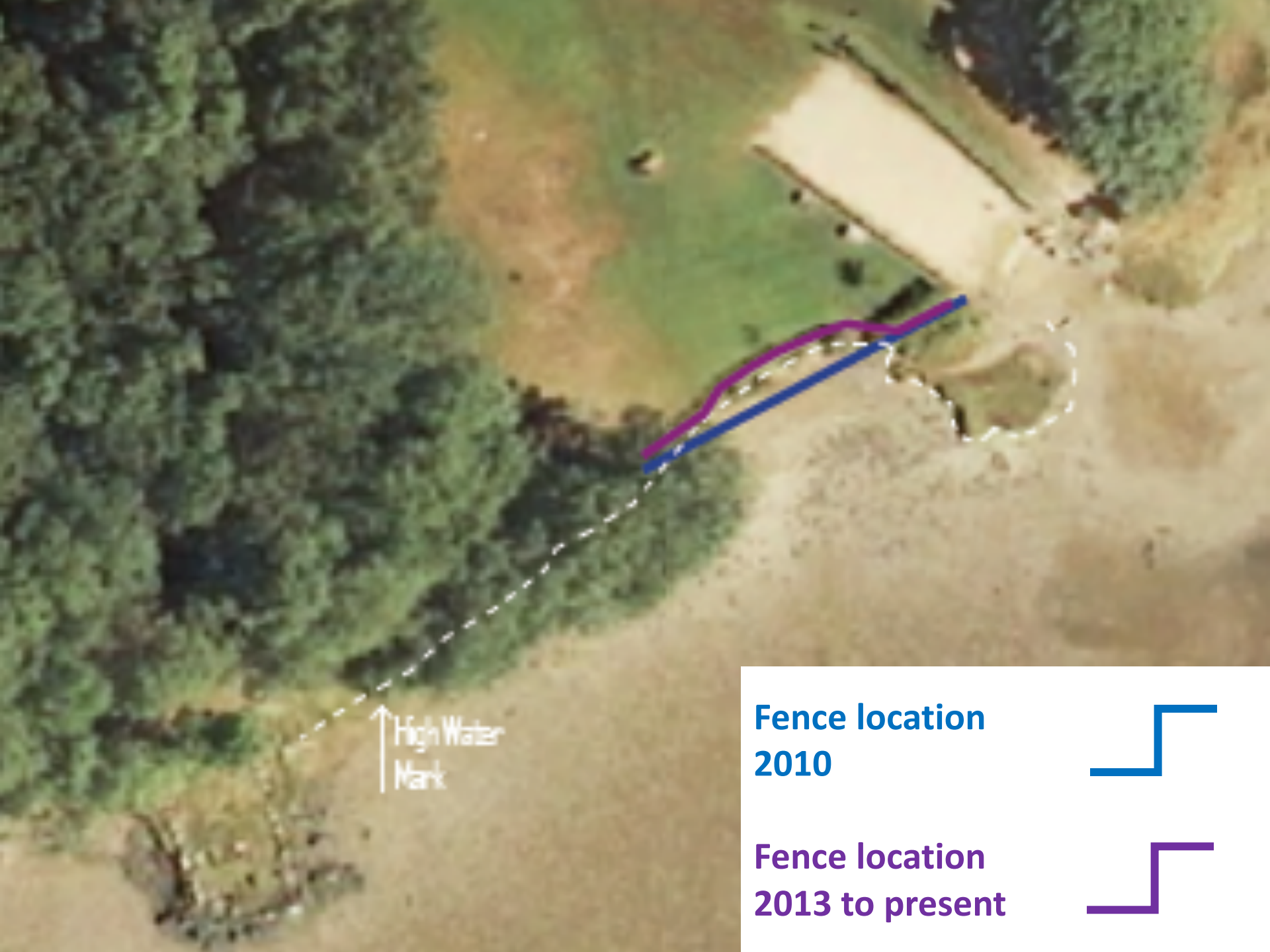
Tom Ballestero, University of New Hampshire











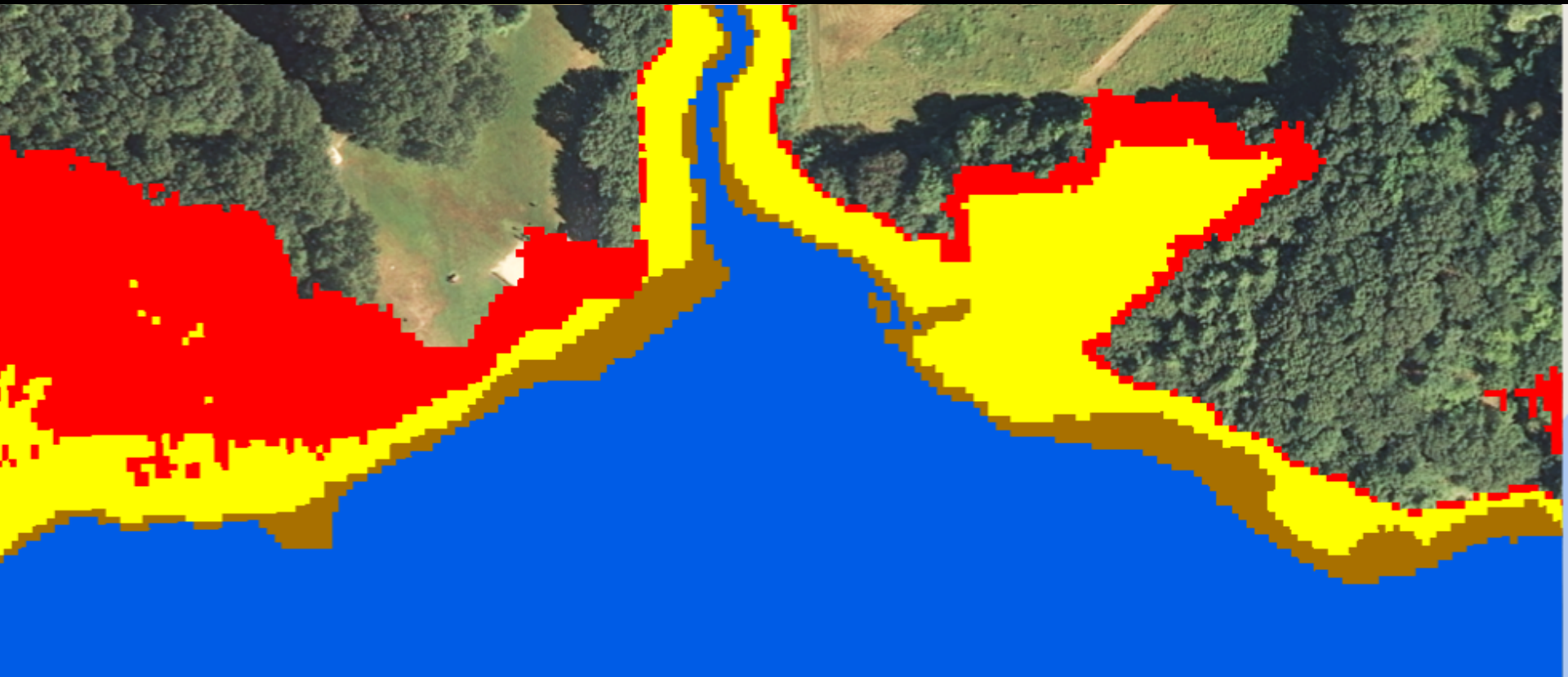
**Fence location
2010**



**Fence location
2013 to present**



Wagon Hill Farm marsh migration with 3.9 feet sea-level rise



A LIVING SHORELINE!

“A new approach to protecting and restoring coastal shoreline is to create a “living shoreline.” Research has shown that traditional hard structures often increase erosion and limit the ability of the shoreline to carry out natural processes. The “living shoreline” technique uses natural materials or a mix of soft and hard materials. *Consult with the NH Coastal Program on technical assistance and grant funding to explore feasibility of creating “living shoreline” at Wagon Hill Farm.* This effort could create a *phenomenal demonstration area and educational site* at Wagon Hill Farm.”

-Ellen Snyder, Stewardship Plan for
Wagon Hill Farm
2009





What Could A Living Shoreline at Wagon Hill Farm Look Like?

View of the Wagon Hill Farm Shoreline from the Oyster River

EXISTING CONDITIONS

OPTION 1: COIR LOGS WITH MARSH

OPTION 2: MARSH WITH SALT BUSHES + BREAKWATER

The Problem + Potential Solution

The shoreline of Wagon Hill Farm is retreating. A living shoreline may help stabilize the bank and reduce erosion.

The Town of Durham has owned Wagon Hill Farm and maintained public access to the shoreline as the result of the Superfund cleanup. Over the years, officials noticed erosion along the property adjacent to the River. Loss of salt marsh vegetation and erosion of marsh sediments have resulted in shoreline retreat at a rate of up to 10 feet per year along almost 2,000 feet of shoreline.

The Town is working with the University of New Hampshire and the New Hampshire Coastal Program to design, build, and monitor a living shoreline in order to increase erosion and what is expected increases in water levels. The project will include shoreline vegetation, habitat enhancement, and food structures to incorporating natural structures.

What Causes Erosion?

- Human and animal traffic
- Boat wake
- Tree shade that inhibits marsh vegetation
- Sea level rise
- Ice refilling

Benefits of Living Shorelines

- Stabilization of the shoreline
- Protection of surrounding riparian and overbank environment
- Improvement of water quality via filtration of silt and runoff
- Creation of habitat for aquatic and terrestrial species

Living Shoreline Management Options

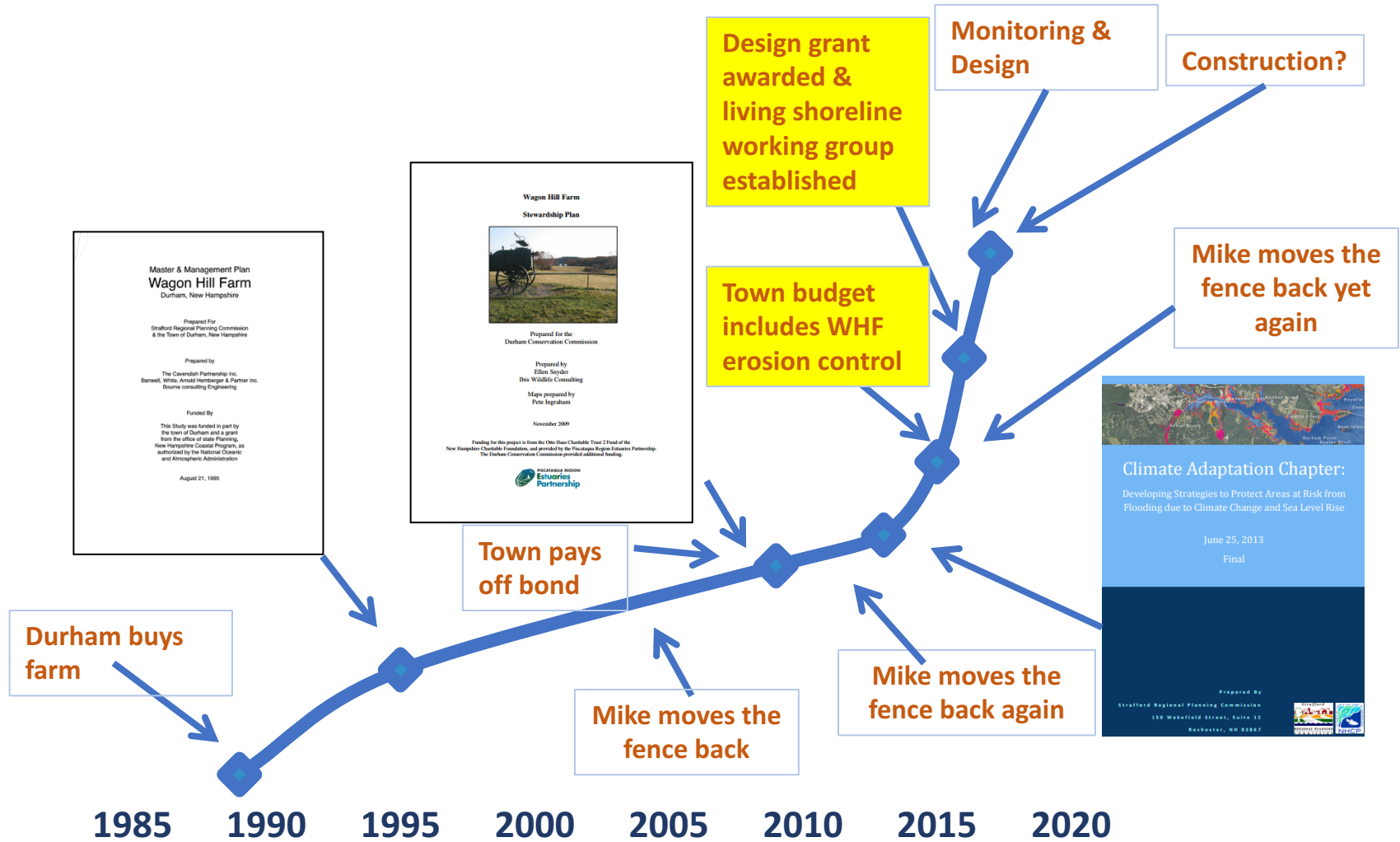
Shoreline management options range from vegetation only to combinations of vegetation and structures to a completely hardened shoreline. It is likely that the best type of living shoreline for Wagon Hill Farm will be a hybrid type that includes marsh, coir logs or breakwater, rip-rap, and breakwaters.

← Soft Shoreline Hard Shoreline →

LIVING SHORELINE EXAMPLES AND MONITORING



THE WAGON HILL FARM LIVING SHORELINE PROJECT A TIMELINE





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What Could A Living Shoreline at Wagon Hill Farm Look Like?

View of the Wagon Hill Farm Shoreline from the Dyster River



Potential Phase One Experimental Design: Construction in 2018 (hopefully)

Slope allows habitat migration with
sea-level rise

