



Resilient Watch Hill – May Meeting

Welcome & Introduction: *Deborah Lamm*

Town of Westerly Resiliency Projects and Proposals: *Mark Rooney, Lisa Pellegrini*

WHFD DEM Resiliency Program Proposal: *Deborah Lamm, Randy Abood, Beth Bean, Pete August*

Our 2050 Resiliency Planning Goal, 3 feet SLR: *Pete August*

Outcome of ECSU and URI student projects: *Deborah, Janice, Jocelyn, Pete*

Discussion

June Meeting Plans

Adjourn



Resilient Watch Hill: Recap

2018-2019

- Review science and extent of problem
- Learn tools to assess impacts
- Focus immediately on nuisance tide flooding on Napatree entrance and access route
- Community resolution

2019-2020

- Target 2050 three foot SLR as a planning goal
- Learn how other communities have approached the problem
- ECSU and URI student engagement
- Develop plan for nuisance flooding on Napatree entrance and access route

Resiliency Projects in Westerly



Overview By:

Mark Rooney, *Town Manager*

Lisa Pellegrini, *Director of Development Services*



Resiliency Projects in Westerly



Atlantic Avenue Road Raising Demonstration Project
Project Location Map
Westerly, Rhode Island

Resiliency Projects in Westerly



Resiliency Projects in Westerly



Atlantic Avenue High Tide
on March 22, 2019





WHFD DEM Resiliency Grant Proposal

The Opportunity, *Deborah Lamm*

The Fire District's Perspective, *Randy Abood*

The WHFD Park Commission: Solving the Problem, *Beth Bean*

The Proposal & Approach: *Pete August*

WHFD DEM Resiliency Grant Proposal



A Group Effort

- Pete – *proposal writing/editing, document management*
- Randy/Deborah – *proposal writing/editing*
- Randy/Joan Beth – *navigate WHFD Administrative process*
- Beth/Grant/Pete – *Liaison with engineers*
- Bob Peacock – *public safety*
- Janice – *engage Napatree science team (Oakley, August, Rogers) to document and define the problem*
- Jocelyn – *reconciliation of RFP requirements and proposal content*

WHFD DEM Resiliency Grant Proposal

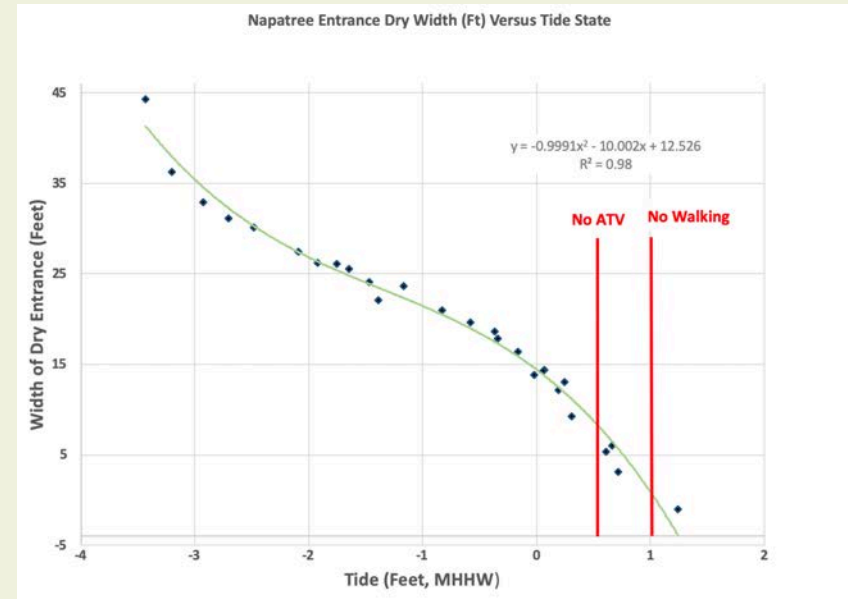


Two Components

1. Mitigate nuisance tide flooding at Napatree entrance
2. Mitigate flooding in the parking lot on Napatree access route

Major Drivers

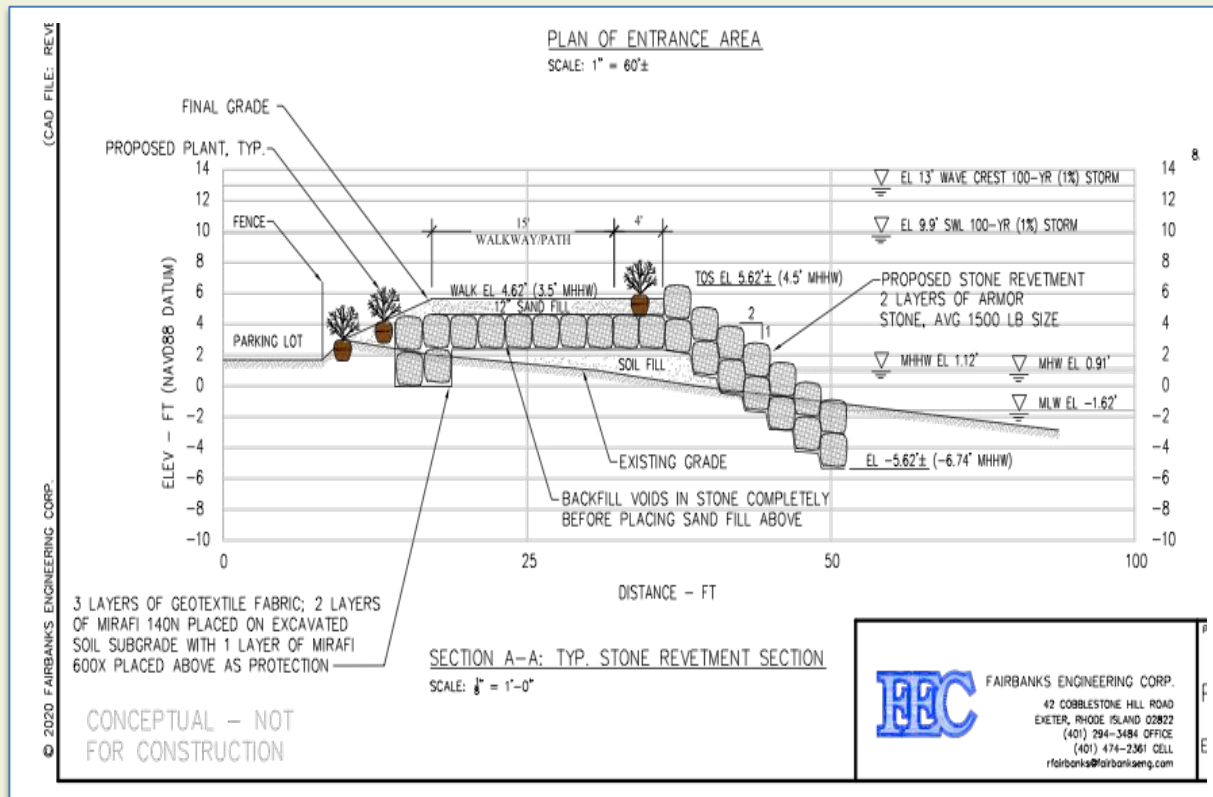
1. Public Access
2. Public Safety
3. Commerce





WHFD DEM Resiliency Grant Proposal

Napatree Entrance



*ACOE rates site V-13,
3 foot wave energy*

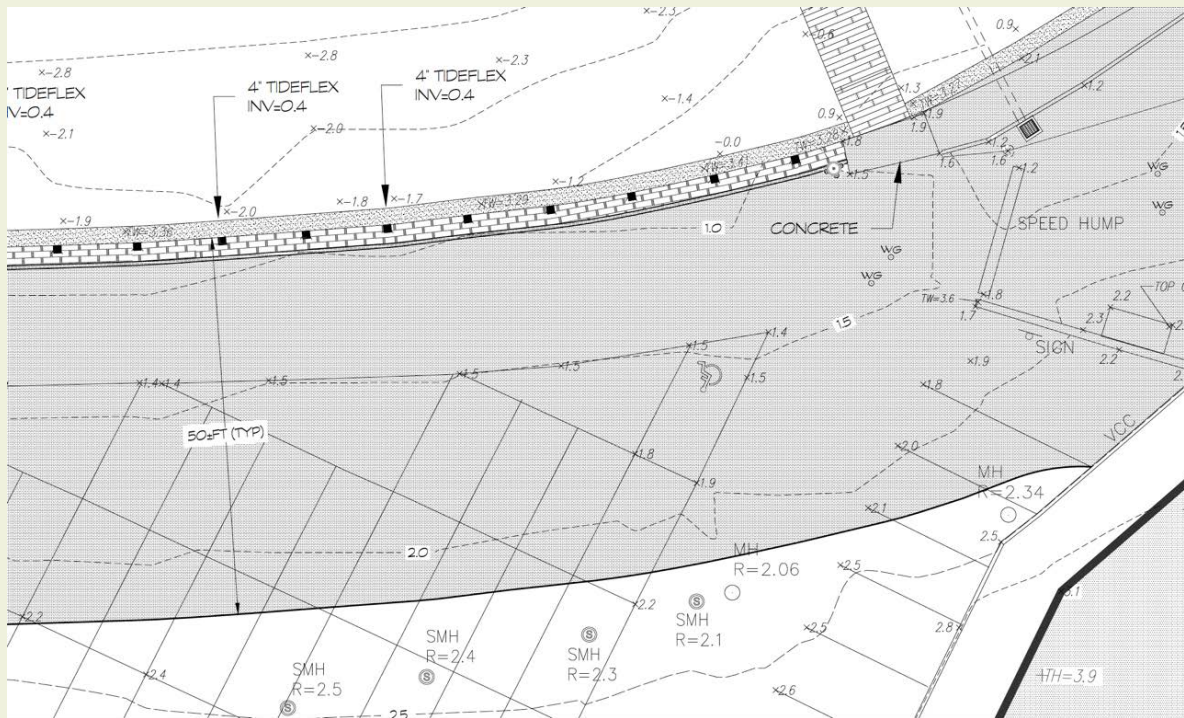
*Design by Robert Fairbanks, Marine Engineer;
Scott Rabideau, Wetland Scientist*

Planning for a Resilient Future for Watch Hill

WHFD DEM Resiliency Grant Proposal



Napatree Access Route



- Raise gap in seawall
- Elevate “speedbump” to accommodate YC ramp
- Raise and seal roadbed
- Seal road/seawall junction

*Design by Keith Neilson,
Marine and Civil Engineer*



WHFD DEM Resiliency Grant Proposal

The Request

Total in Grant Funds: \$259,000

Match Funding (25% total cost):

WHFD - \$70,000 over two years

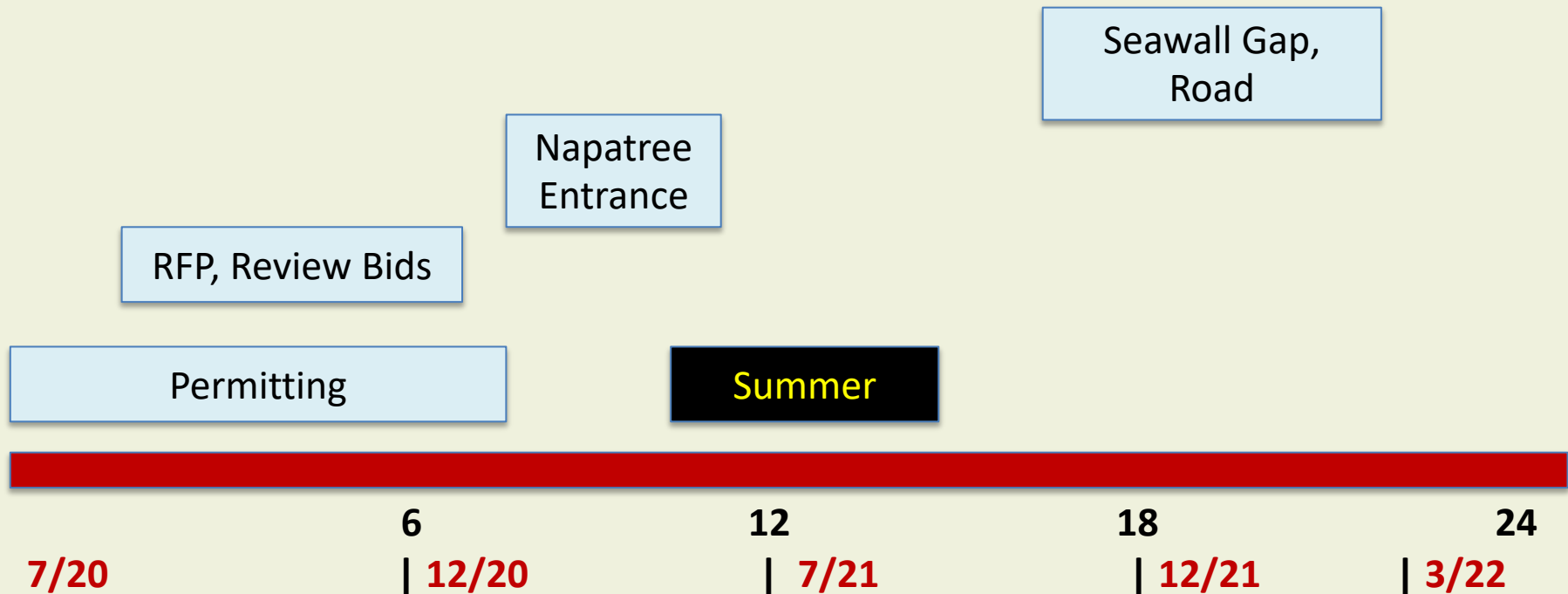
In-kind Match - \$16,750

Total - \$86,750

WHFD DEM Resiliency Grant Proposal



Timeline (21 months)



Our Planning Goal



2050 -- 3 feet SLR



Planning for a Resilient Future for Watch Hill

Our Planning Goal



Can not protect from major storm (100 Year Storm)



Planning for a Resilient Future for Watch Hill

ECSU & URI Student Projects



Eastern CT State University

Honors Seniors, 15 students
from biology, history, political sci, math,
computer sci, finance, accounting,
psychology, english

Mentor – Dr. Bryan Oakley



EASTERN
CONNECTICUT
STATE UNIVERSITY

ECSU & URI Student Projects



University of Rhode Island Integrated Coastal Resilience Capstone Project

Senior capstone class. Led by Teresa Crean
(RI Sea Grant)



Students from:

Landscape Architecture (14 students, Professor Richard
Sheridan mentor)

Environmental Economics (37 students, Professor Emi
Uchida mentor)

THE
UNIVERSITY
OF RHODE ISLAND

ECSU & URI Student Projects



University of Rhode Island Capstone

Ocean Engineering (8 students, Professor Chris Baxter mentor)

Marine Affairs (1 student, Professor Austin Becker mentor)

THE
UNIVERSITY
OF RHODE ISLAND

Landscape Architecture Students



Major Themes:

- Elevate sea wall
- Traffic flow and parking
- Green solutions
- Napatree access route

Course taught by Professor Richard Sheridan with professional guidance provided by Nathan Socha of Beta Group





The Challenge

Address 3' of sea level rise, storm surge, historic character, and commercial development in a multidisciplinary fashion

StormTOOLS Mapping



Infrastructure Elements of Concern

- Existing buildings
- Vehicular access & pedestrian access
- Sewer, water, & utility lines
- Parking lots

Precedent Project



<https://www.boston.gov/departments/environment/preparing-climate-change>

Vehicular Access & Pedestrian Connectivity



Current and Proposed Parking



Pedestrian connections



- Offsite alternative transportation
- One-way travel
- Create experiences
- Improved public safety
- Access to Napatree during flooding events

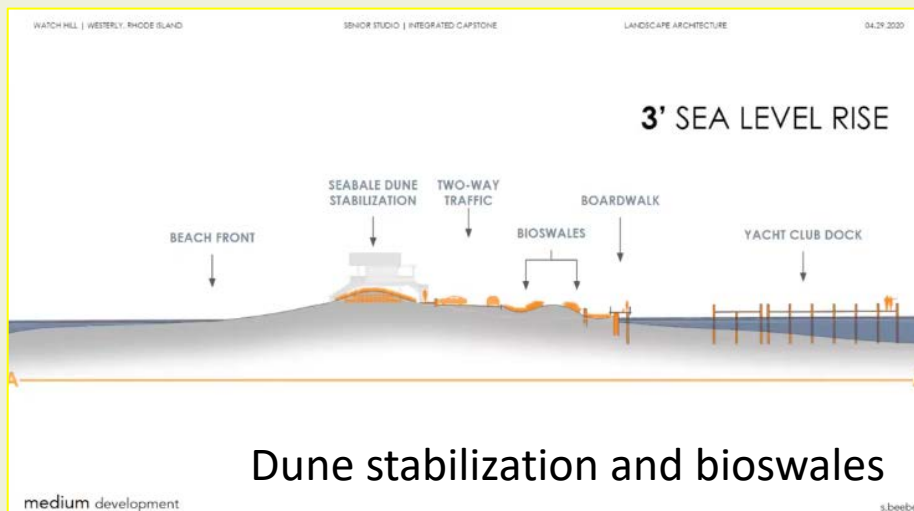
Green Infrastructure



Eelgrass revitalization



- Reducing erosion
- Create interaction with the environment
- Water management
- Native plantings
- Bioswales and berms
- Biomimicry

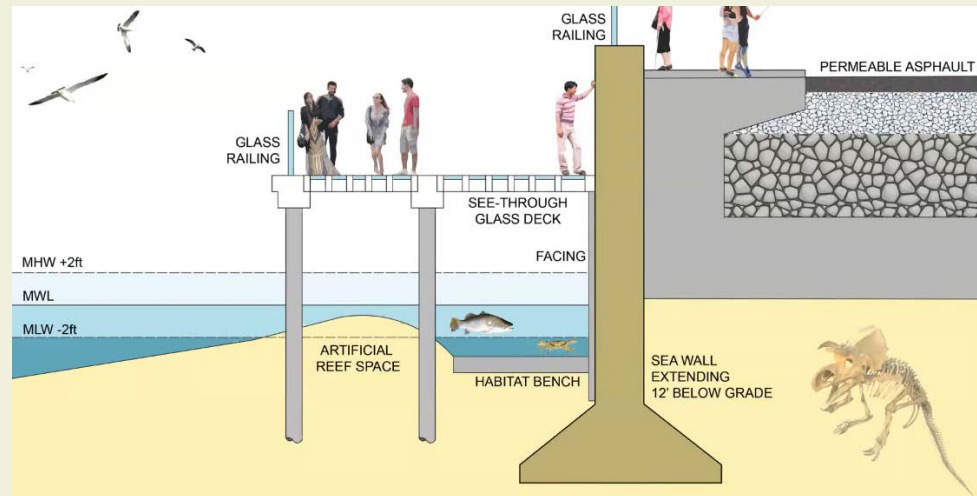


Heavy Infrastructure

- Raise sea wall
- Raise or move buildings
- Harborside structures



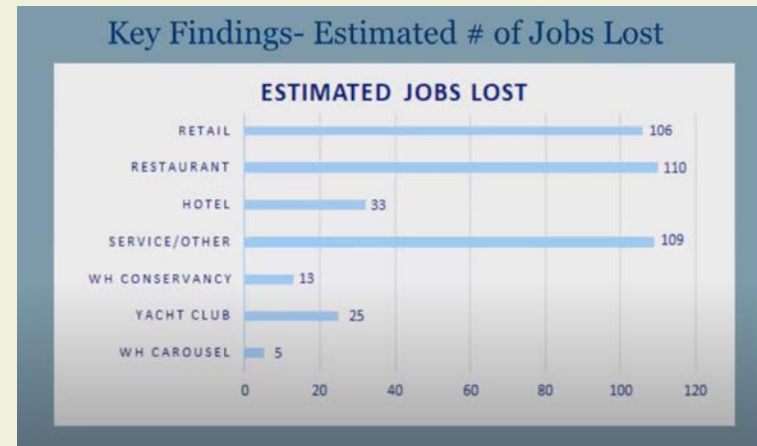
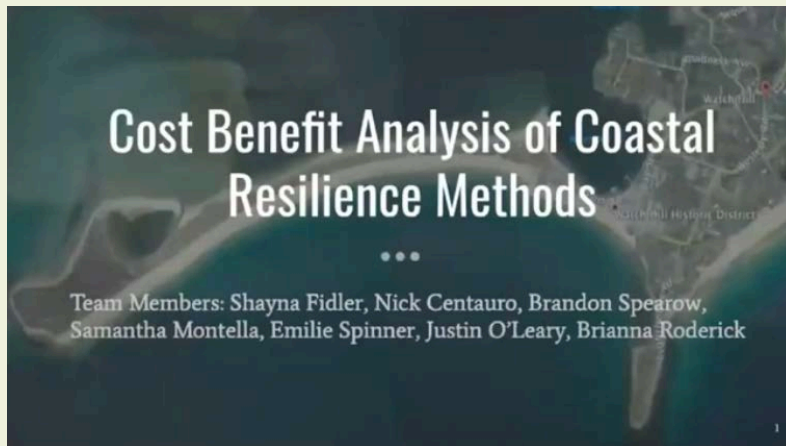
Parking Garage





Projects: Environmental Economics

- Cost Benefit Analysis of Mitigation Options
- Economic Impacts of Coastal Hazards





Projects: Environmental Economics

- Resilience Financing
- Community Survey & Willingness to Pay

Financing Options

Types of financing options:	Small Scale Projects	Large Scale Projects	Community Projects	Individual Projects	Resilience Project Financing	Disaster Recovery Financing
Catastrophe Bonds		x	x			x
Resilience Bonds		x	x		x	x
Taxes on Watch Hill Fire District	x		x		x	
Taxes on town of Westerly		x	x		x	
PAR System	x			x	x	
Insurance	x	x	x	x		x
Donations	x		x		x	x





Projects: Marine Affairs

- Mitigation Through Zoning

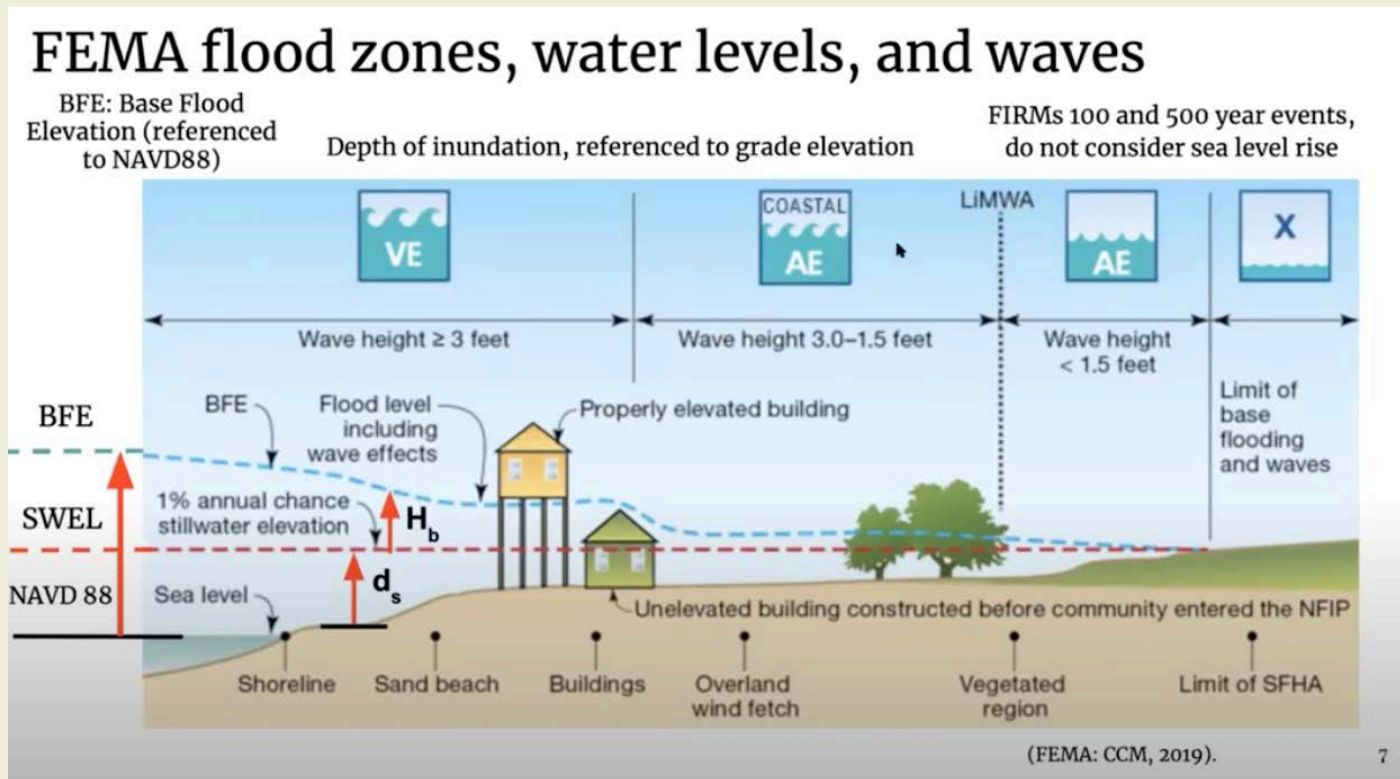
LOCAL ZONING

		District		
		Watch Hill District	RICRMC Type 5 Waters	Norfolk, VA
Permitted		Mixed-use development, patient and caregiver cultivation of medical marijuana, solar energy system- accessory use, municipal water facilities, apparel and accessory stores, restaurants (no alcohol), sporting goods and bicycle shops), drug stores, professional offices, off-street parking, accessory use to a permitted use, boating marinas/yacht club, beach cabins or bathhouses, conservation	Berthing, mooring, and servicing of recreational craft, commercial fishing vessels, and ferries; water dependent and water enhance commerce, including businesses catering to tourists; maintenance of navigational channels and berths, and removal of obstructions to navigation; and activities that maintain or enhance water quality	Ground-floor elevations 3ft above grade in 100-year base flood plain, 1.5ft elevation for 500-year floodplain; permeable parking lot surfaces, stormwater infiltration; development of LEED-certified buildings with gold certification, renovation/expansion of a building where cost of work is <50% of appraised value; any kind of residential development that shows risk reduction, stormwater management and energy

Projects: Ocean Engineering



- Structural Damage Modeling in a 100 Year Storm





Projects: Eastern CT State Univ

- Emergency access
- Glass seawall
- Elevating structures
- Re-purpose shops and residences

Final Recommendation

- ☐ **Combination of elevating both the building and parking lot**
 - ☐ Elevate the parking lot 2 feet
 - Elevate the building 16 feet



Next (virtual) Meeting Saturday 13 June



- Short presentations by landscape architecture and environmental economics students
- Reconcile student projects and Cote Case Studies
- Develop workplan for 2020-2021 – A plan to mitigate for 3 feet of SLR