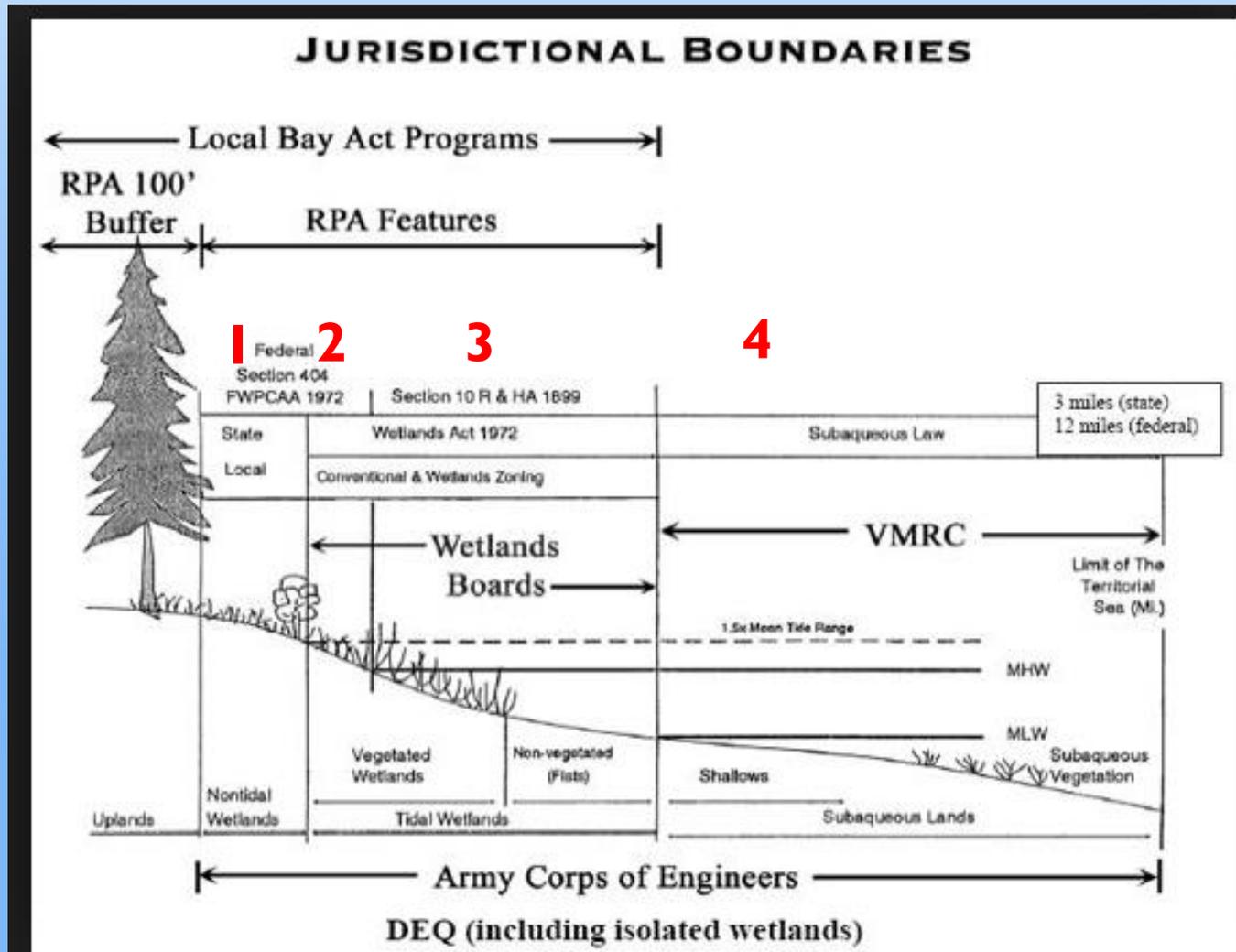


Where on the landscape should the resiliency projects be located?

I, 2, 3 and 4



What will we mitigate with and how?

(DEQ-WIP3)

(Local Govt-Tax Revenue)

Ecological Benefits

- Water Quality Improvements
- Erosion Reduction
- Habitat creation

FUNDING:

National Fish and Wildlife Funding

Mitigation Benefits

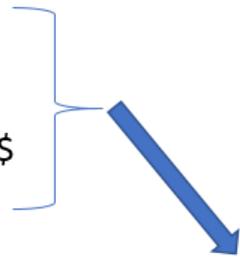
- Hazard mitigation
- Resiliency
- Reduce Economic losses
- Maintaining tax base

FUNDING:

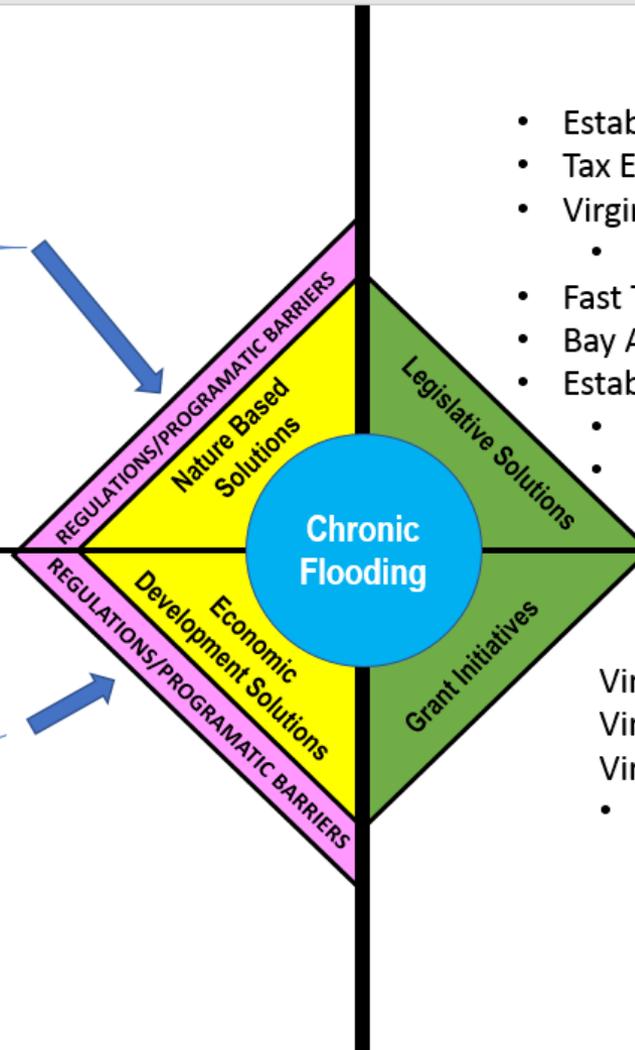
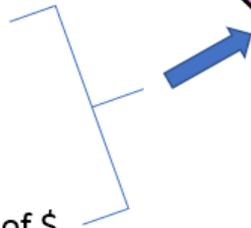
VDEM/FEMA

Pathway to Chronic Flooding Solutions

WIP 3 Investment \$
 FEMA/VDEM \$
 DEQ Clean Water \$
 Lots of other sources of \$
 Bay Act



Go Virginia \$
 EDA @ Commerce \$
 HUD \$
 DHCD\$
 Lots of other sources of \$



General Assembly Actions

(Rural Coastal Leadership)

- Established Living Shoreline Revolving Loan Fund
- Tax Exempt Status for Living Shoreline
- Virginia Waterway Management Fund
 - Sub Requirement for SLR- Resiliency Plan
- Fast Tracking Dredge Spoil Permitting
- Bay Act Elevation Bill/Study
- Establishment of Public Access Authorities
 - Recipient of donated waterfront lands
 - Regional Coastal Dredging coordination

Virginia Coastal Zone Management Program
 Virginia Coastal Policy Center
 Virginia Sea Grant

- Applied Policy and Implementation

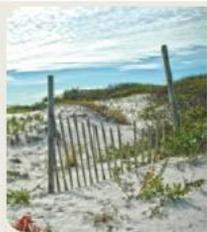
FEMA-NOAA-NFWF-ACE

Nature Based Mitigation

Natural and Nature Based Features (NNBF) Considered in this Report

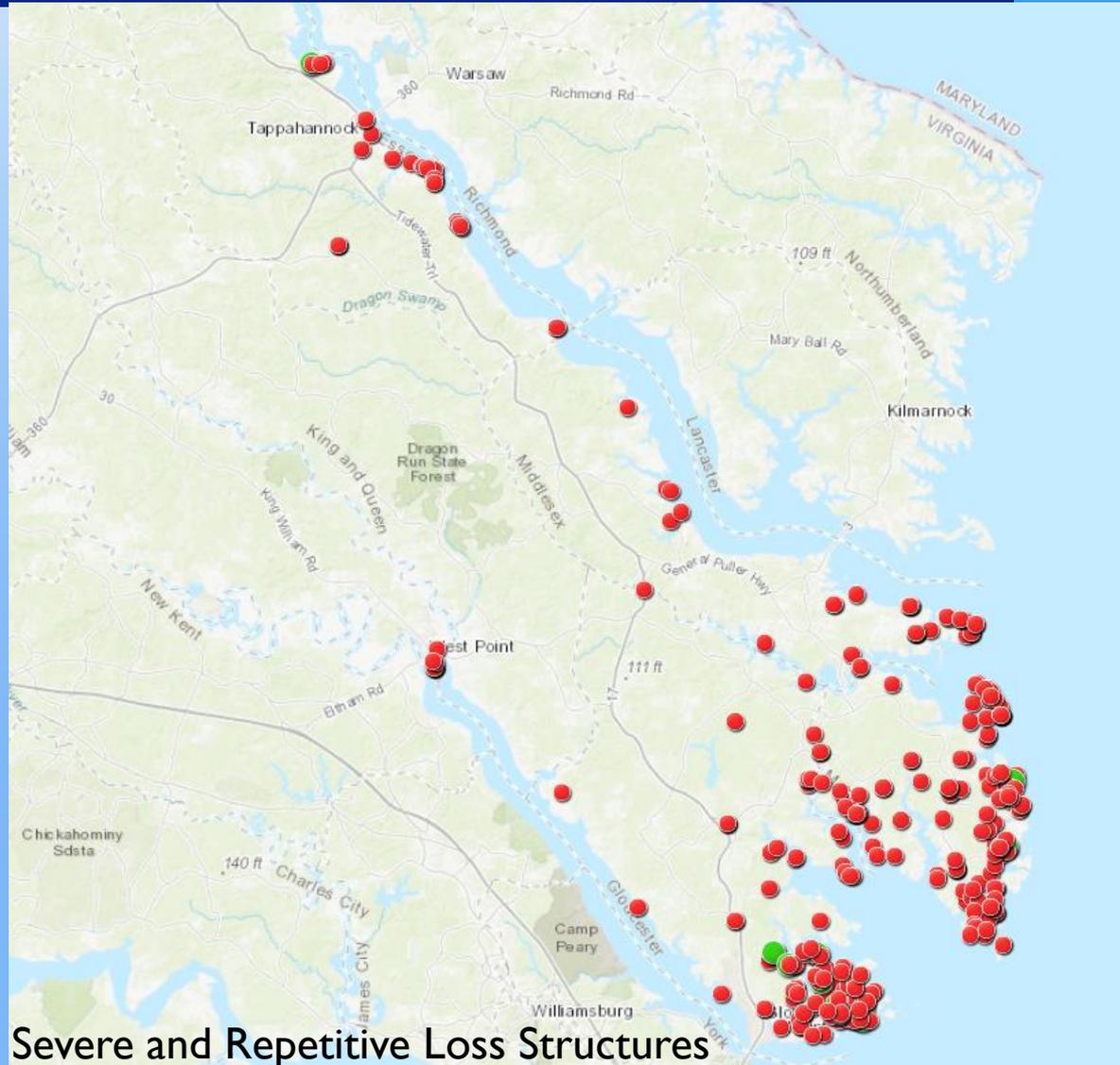
- Islands
- Reefs
- Beaches (sand, gravel, cobble)
- Dunes / swale complex
- Mudflats / sandflat
- Submerged aquatic vegetation (seagrass, other - fresh or saline)
- Salt marshes (emergent herbaceous)
- Shrub-scrub wetlands (brackish)
- Flooded swamp forests (brackish)
- Bluffs (any material, if sand assume eroding dune)
- Maritime grasslands
- Maritime shrublands
- Maritime forests
- Riparian buffers
- Emergent herbaceous marshes/wetlands (fresh)
- Shrub-scrub wetlands (fresh)
- Flooded swamp forests (fresh)
- Ponds
- Terrestrial grasslands
- Terrestrial shrublands
- Terrestrial forests

Table 1. Examples of NNBF relevant to coastal systems (USACE 2013).

NATURAL AND NATURE-BASED FEATURES AT A GLANCE				
				
Dunes and Beaches	Vegetated Features (e.g., Marshes)	Oyster and Coral Reefs	Barrier Islands	Maritime Forests/Shrub Communities
Benefits/Processes Breaking of offshore waves Attenuation of wave energy Slow inland water transfer	Benefits/Processes Breaking of offshore waves Attenuation of wave energy Slow inland water transfer Increased infiltration	Benefits/Processes Breaking of offshore waves Attenuation of wave energy Slow inland water transfer	Benefits/Processes Wave attenuation and/or dissipation Sediment stabilization	Benefits/Processes Wave attenuation and/or dissipation Shoreline erosion stabilization Soil retention
Performance Factors Berm height and width Beach slope Sediment grain size and supply Dune height, crest, and width Presence of vegetation	Performance Factors Marsh, wetland, or SAV elevation and continuity Vegetation type and density Spatial extent	Performance Factors Reef width, elevation, and roughness	Performance Factors Island elevation, length, and width Land cover Breach susceptibility Proximity to mainland shore	Performance Factors Vegetation height and density Forest dimension Sediment composition Platform elevation

General coastal risk reduction performance factors include: Storm surge and wave height/period, and water levels

We know where we need to focus mitigation



Delegate Hodges Legislative Work: Positioning the Middle Peninsula?

2015 SESSION

HB 1734 Living shorelines; loans for creation.

Introduced by: [M. Keith Hodges](#) | [all patrons](#) ... [notes](#) | [add to my profiles](#)

2016 SESSION

HB 526 Living shorelines; tax exemption from local property taxes.

Introduced by: [M. Keith Hodges](#) | [all patrons](#) ... [notes](#) | [add to my profiles](#)

2017 SESSION

HB 1774 Stormwater management; work group to examine ways to improve.

Introduced by: [M. Keith Hodges](#) | [all patrons](#) ... [notes](#) | [add to my profiles](#)

and

[another bill?](#) | [print ve](#)

2018 SESSION

[another bill?](#) | [print version](#)

HB 1307 Stormwater management; rural Tidewater, tiered approach to water quantity technical criteria.

Introduced by: [M. Keith Hodges](#) | [all patrons](#) ... [notes](#) | [add to my profiles](#)

2018 SESSION

[another bill?](#) | [print version](#)

SB 693 Virginia Waterway Maintenance Fund and Grant Program; established, awarding a grant of funds.

Introduced by: [Lynwood W. Lewis, Jr.](#) | [all patrons](#) ... [notes](#) | [add to my profiles](#)

2018 SESSION

[another bill?](#) | [print version](#)

HB 1096 Dredged material siting; fast-track permitting program.

Introduced by: [M. Keith Hodges](#) | [all patrons](#) ... [notes](#) | [add to my profiles](#)

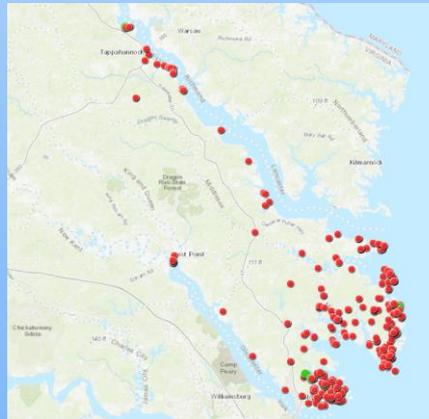
2018 SESSION

[another bill?](#) | [print version](#)

HB 1094 Chesapeake Bay Preservation Areas; regulations, local permit to raise land.

NFWF / VDEM/FEMA Funding Request

Improving Coastal Resiliency through Nature-Based Solution



Moving away from a parcel by parcel approach and focusing on stretches of coast, increasing overall resiliency and hazard mitigation.

Offer grants & loans via MPPDC Living Shorelines

WIP 3

PROGRAMMATIC ACTIONS TO IMPLEMENT SELECTED BMPS

Oyster Remediation: Goal 10,000,000,000 Oysters/ nutrient remediation 18,750 new workers needed to handle 6,250,000 cages

Tax Credit/Grants for Living Shorelines/ RPA buffer enhancement (Removal Rates for Shoreline Management report page 32 foot note. TMDL credit if mitigated) Projects

In Water submerged aquatic vegetation (SAV) restoration mitigation bank (Wetland mitigation bank), but in the water (more research needed for TMDL credit) page 31 of Removal Rates for Shoreline Management Projects. Is there an existing BMP that can represent this well to avoid developing a new BMP.

Living Sea Wall- Conversion of bulkheads to living sea wall (Volvo initiative). JMU 3D printed oyster panels to be affixed to sea walls.

Off Shore Bio-genic reef. Looking at offshore structures as nature based flood mitigation structures not subject to repetitive loss emergency loss issues. VMRC / FEMA area. Offshore is outside of Ches Bay area.

Align/leverage the use of the Virginia Waterway Management Fund...

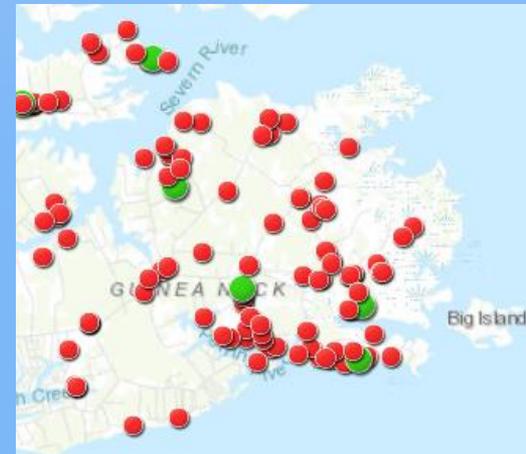
Harvest of seaweed, algae from aquaculture cages and along shoreline. (Soil Additive - Shipped out of watershed)

List of 40+
Job Creating approaches
For Economic Development/
Water quality/Resiliency

VDEM/FEMA:

Reducing Flooding Impact on Repetitive Loss Properties

- Work with FEMA NFIP **repetitive loss property** owners to offer grant and loan funds via MPPDC Living Shorelines Program to install living shorelines.
- **Create planning template for Virginia Waterway Maintenance Fund – utilization of dredge material to combat repetitive flooding on repetitive loss properties**
- **OUTCOME:** Decrease future risk to repetitive loss properties; mitigate flooding, storm surge, and sea level rise



VA Waterway Management Fund

- ▣ \$1.3 Million Dredging Fund (SB 693)
 - ▣ Have to consider dredge material use: Resiliency
 - ▣ Living Shorelines
- ▣ HB 1096 VMRC Fast Track Dredge Material



2018 Coastal Program Grant

- ▣ **Project Title: Dredged material siting; fast-track permitting and Beneficial Use program**

Dredged material siting; fast-track permitting and Beneficial Use program

- **Product #1** will evaluate opportunities for use of dredge material holding sites along shorelines that are the subject of any fast track permitting pursuant to HB 1096 to address to coastal resiliency along Virginia's shoreline as identified in Virginias Coastal Hazard Strategy Section

Dredged material siting; fast-track permitting and Beneficial Use program

- **Product #2:** identification of publicly owned waterfront land that could be used for the beneficial use of dredged materials.
- **Product #3:** VIMS Shoreline Studies Program intends to:
 - Document existing dredge material disposal sites
 - evaluate publicly owned dredge material disposal sites
 - Provide general recommendations for the design an upland dredge material disposal site for future use

Dredged material siting; fast-track permitting and Beneficial Use program

- Apply these criteria to a type site, for example Davis Creek in Mathews County
- Describe the process used to determine the composition of dredge material

Product #4: VCPC students will develop a legal white paper exploring the following issues

- Identification of regulatory permitting challenges for agencies beyond VMRC that could accelerate permitting processes associated with establishing a dredge material holding site, including:

Dredged material siting; fast-track permitting and Beneficial Use program

Product #4:

- Chesapeake Bay Preservation Act permitting,
- Erosion and Sediment Control permitting,
- Stormwater Management permitting,
- Virginia Water Protection Program permitting,
- VDMME requirements related to establishing future sediment mining operations, and
- VDOT traffic and site development requirements

Dredged material siting; fast-track permitting and Beneficial Use program

- Research regarding ownership rights at sites with material from completed dredging projects
- Research on whether a publicly-owned dredge material upland site that receives quality material from a dredging project, can then use that material for other applications