



Using the Interactive Map Viewer for RPA Buffer Resiliency Impact Assessments

**Midde Peninsula PDC Host Training for Local Governments
Rappahannock Community College – Glens Campus
July 30, 2025**



www.adaptva.org

**Integrates best available science with legal guidance and planning strategies
for climate change adaptations**

Launched in 2017 by VIMs, William & Mary, Wetlands Watch

Maintained by VIMS Center for Coastal Resources Management



5 Resource Sections

Interactive Map Viewers – Story Maps – Policy Guides

AdaptVA Content Summary



Water Level Trends & Forecasts

Tidewatch Map

Sea Level Projection Viewer

Sea-Level Report Cards

Flood Risk Tools

Wastewater Viewer

*forecast effects of sea-level rise on
VA septic systems*

Locality Road Flood Tool

Link to Virginia Flood Risk Info System



AdaptVA Interactive Map

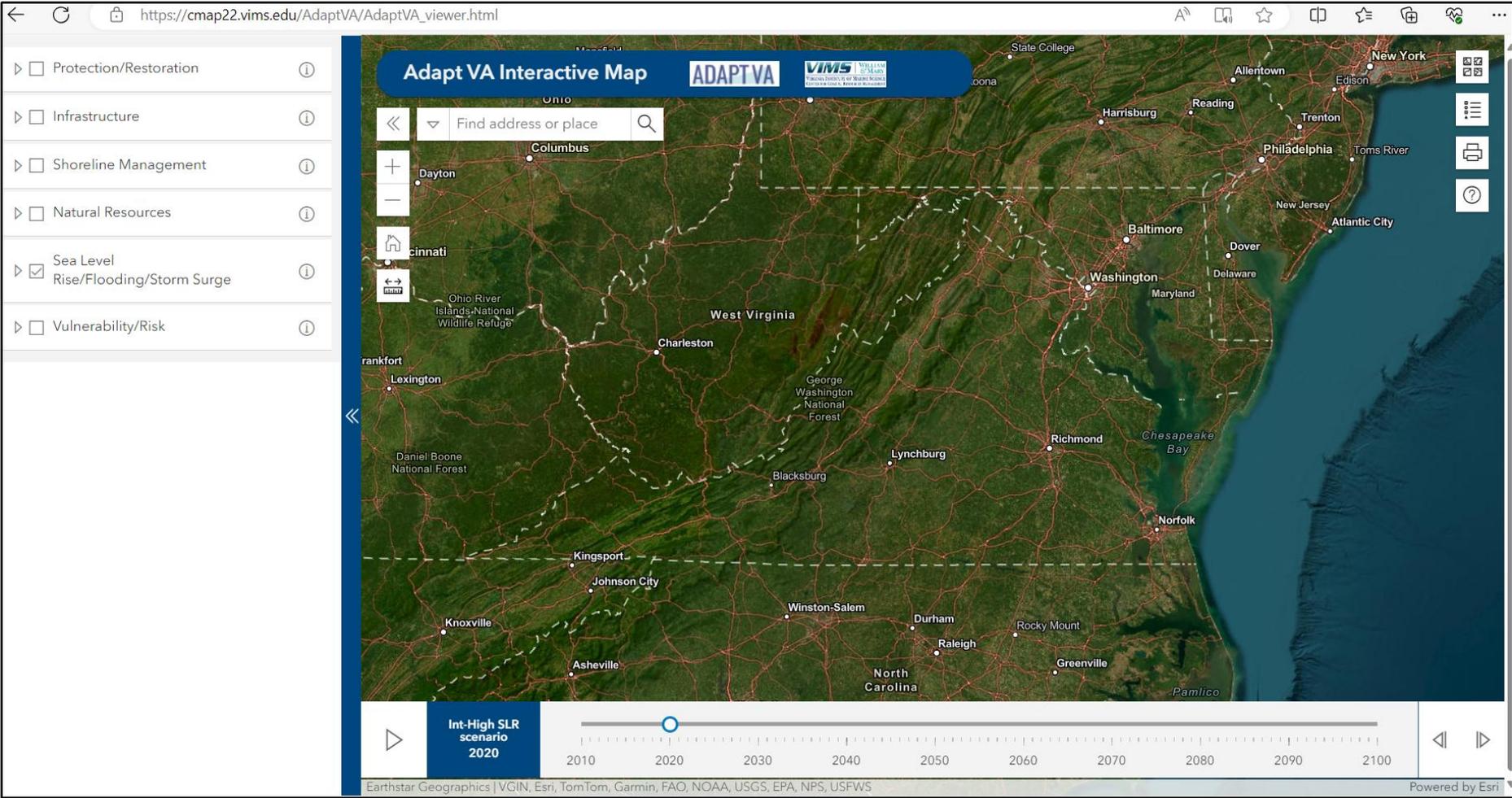
Digital Mapping Platform

integrates data and models from
sources throughout the portal

Planning & Policy Resources

Adaptation Story Maps

AdaptVA Interactive Map



AdaptVA Interactive Map

ADAPT VA
Evidence-based planning for changing climate

- FORECASTS**
Forecasting water levels, temperature, and precipitation helps mitigate impacts and plan resilient communities. Access a tide forecast & sea level projections for Virginia
- ADAPTATIONS**
Case studies and story maps illustrate how adaptation works, and can be financed, through zoning, planning, engineering, and policy practices.
- TOOLS**
Tools assess risk and inform preparation and response to a changing environment. Access flood risk maps, shoreline recommendations, and an interactive comprehensive map of adaptation strategies.
- RESILIENCE RESOURCES**
Data, websites, and other resources important for community adaptation. Including: social and equity issues, climate outlooks, state legislation, and resilience projects.
- PLANNING & POLICY**
Management strategies from local and State code to the Community Rating System. Learn about FEMA National Flood Insurance Program, relevant local ordinances, state legislation, and access legal analyses.

Select Tools

Tools
Evidence-based planning for changing climate

TOOLS are available to help assess risk and vulnerability to climate impacts; build community resiliency against extreme events, and provide guidance to prepare and respond to a changing environment.

- FLOOD RISK**
Floods are among the most frequent and costly natural disasters in terms of human hardship and economic loss. Learn more about flooding and floodplains in maps, models, documents and websites.
Virginia's Flood Risk Information System
Locality Road Flood Tool
Wastewater Viewer
- SHORELINE MANAGEMENT**
What is the best management strategy for your shoreline?
Learn more
- ADAPTVA INTERACTIVE MAP**
View water levels, social vulnerability, infrastructure and natural capital in one viewer.
Launch Viewer

ADAPTVA INTERACTIVE MAP

View water levels, social vulnerability, infrastructure and natural capital in one viewer.

Launch Viewer

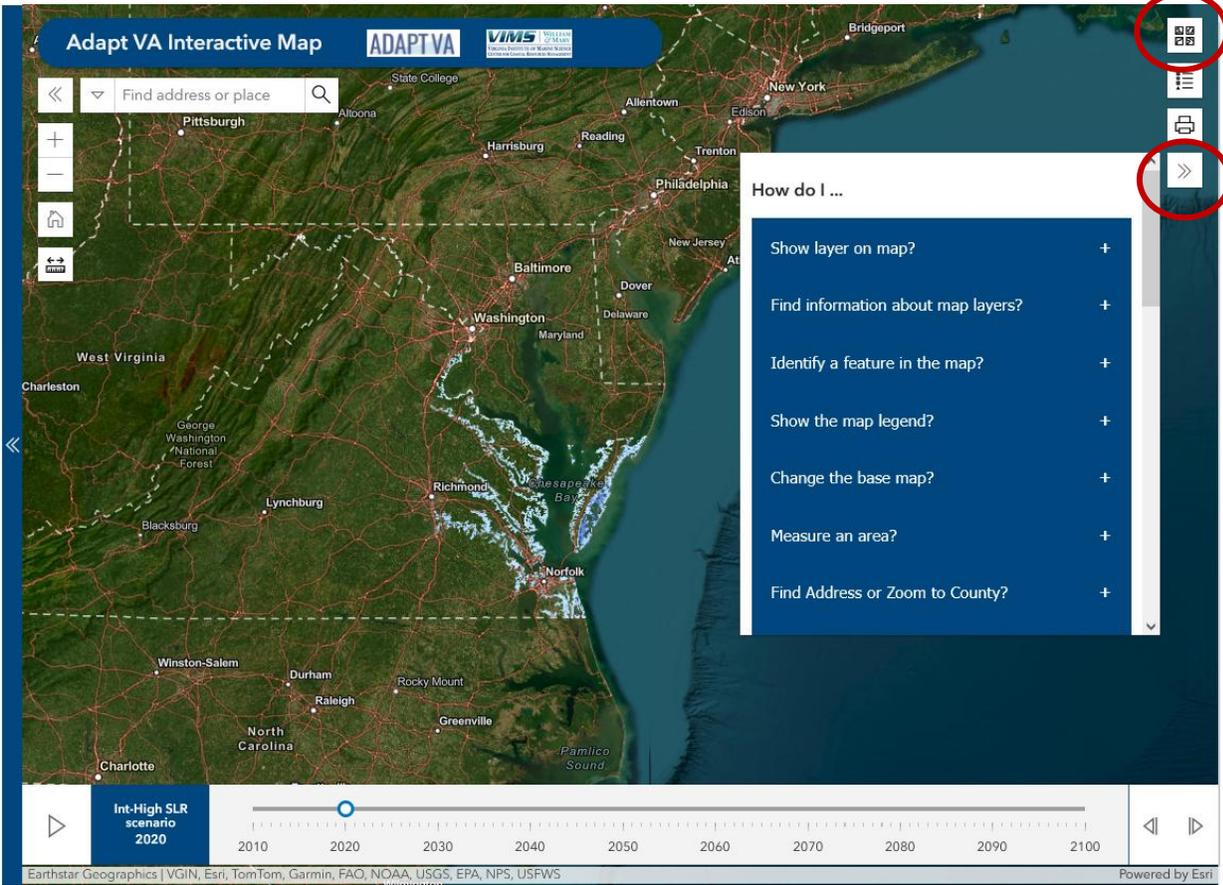
ADAPTVA User Guide

Also available:
User Guide
Map Symbols Quick Guide
GIS Layer List Quick Guide

Map Viewer Features

GIS LAYER LIST

▶ <input type="checkbox"/> Protection/Restoration	
▶ <input type="checkbox"/> Infrastructure	
▶ <input type="checkbox"/> Shoreline Management	
▶ <input type="checkbox"/> Natural Resources	
▶ <input checked="" type="checkbox"/> Sea Level Rise/Flooding/ Storm Surge	
▶ <input type="checkbox"/> Vulnerability/Risk	



Change base map

Close Help



Open Help



Resizable window for large & small screens

User-defined screen views

Universal map navigation symbols

GIS Layer List Categories

GIS Layer List



Expand category



Collapse list

▶ <input type="checkbox"/> Protection/Restoration	
▶ <input type="checkbox"/> Infrastructure	
▶ <input type="checkbox"/> Shoreline Management	
▶ <input type="checkbox"/> Natural Resources	
▶ <input checked="" type="checkbox"/> Sea Level Rise/Flooding/ Storm Surge	
▶ <input type="checkbox"/> Vulnerability/Risk	



More information

TIP: Look for Layer List symbol
on small screens



Where to Find Resilience Assessment Data Layers

▶ <input type="checkbox"/> Protection/Restoration	ⓘ	Nature-based adaptation opportunities
▶ <input type="checkbox"/> Infrastructure	ⓘ	Parcels
▶ <input type="checkbox"/> Shoreline Management	ⓘ	CBPA-specific, Shoreline Management Model
▶ <input type="checkbox"/> Natural Resources	ⓘ	Wetlands, hydrology, contours
▶ <input checked="" type="checkbox"/> Sea Level Rise/Flooding/ Storm Surge	ⓘ	2017 Intermediate-High Scenario, Special Flood Hazard Areas, Storm Surge Risk
▶ <input type="checkbox"/> Vulnerability/Risk	ⓘ	Tidal marsh vulnerability

GIS Layer Map Display

MAIN CATEGORY

Sub-category

GIS data layers

Main Category &
Data Layer Checked

Tidal marshes display on map

Data Layers Checked
Sub-categories not
checked
No Map Display

A screenshot of a GIS layer legend. The legend is divided into several sections. The top section, 'Natural Resources', is enclosed in a green box and contains a checked checkbox for 'Natural Resources' and a checked checkbox for 'Tidal Marsh'. Below this, there are three collapsed sections: 'Natural and Nature-Based Features (NNBFs) less than 10 feet land elevation', 'Shoreline Conditions', and 'Hydrology'. The middle section, 'Nontidal NWI Wetlands (all Virginia)', is enclosed in a red box and contains a collapsed checkbox for 'Nontidal NWI Wetlands (all Virginia)', a checked checkbox for 'Nontidal NWI Wetlands', a collapsed checkbox for 'Submerged Aquatic Vegetation (SAV)', a checked checkbox for 'SAV (most recent)', a checked checkbox for 'SAV Habitat', a checked checkbox for 'SAV Habitat (5 years)', and an unchecked checkbox for 'SAV Habitat (10 years)'. The bottom section contains an unchecked checkbox for 'Contours'.



GIS Layer Map Display

MAIN CATEGORY

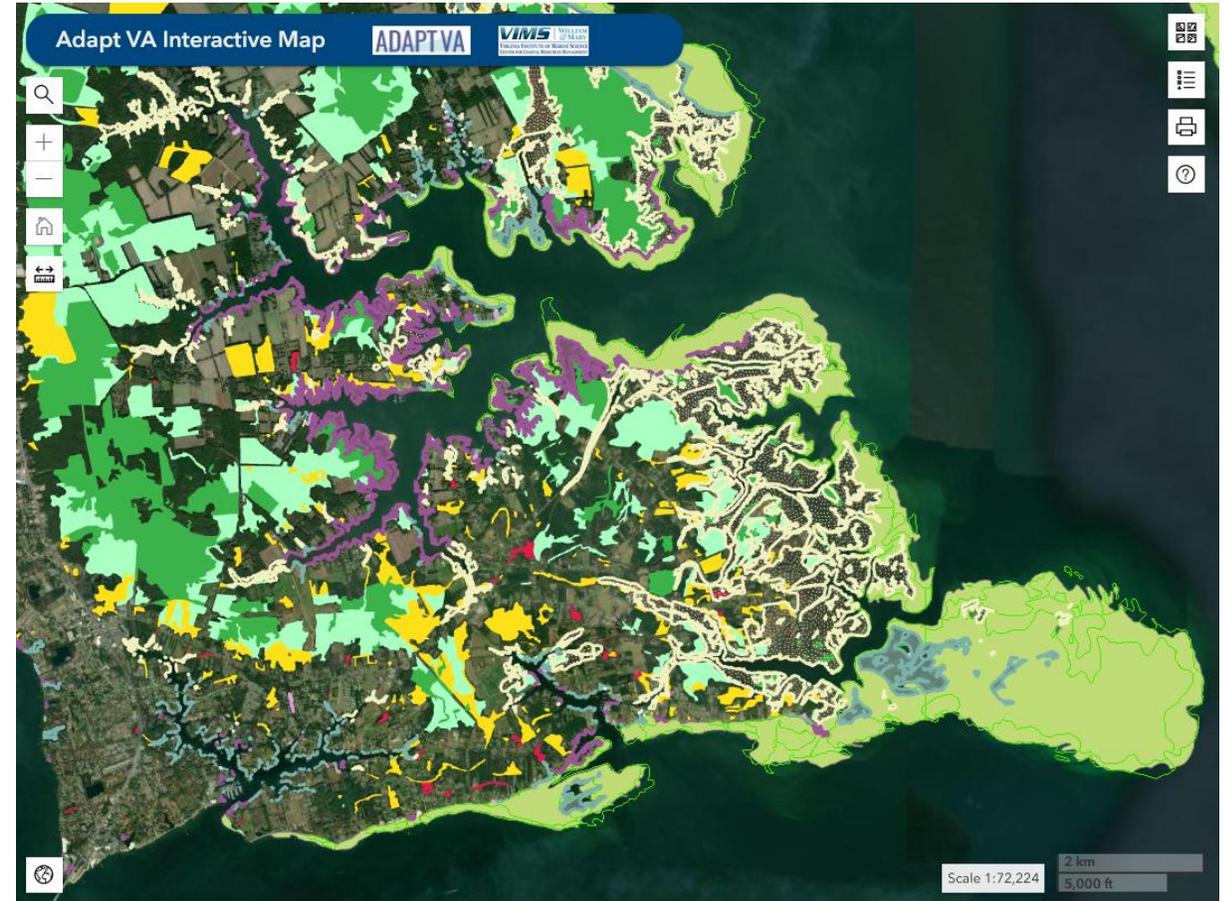
Sub-category

GIS data layers

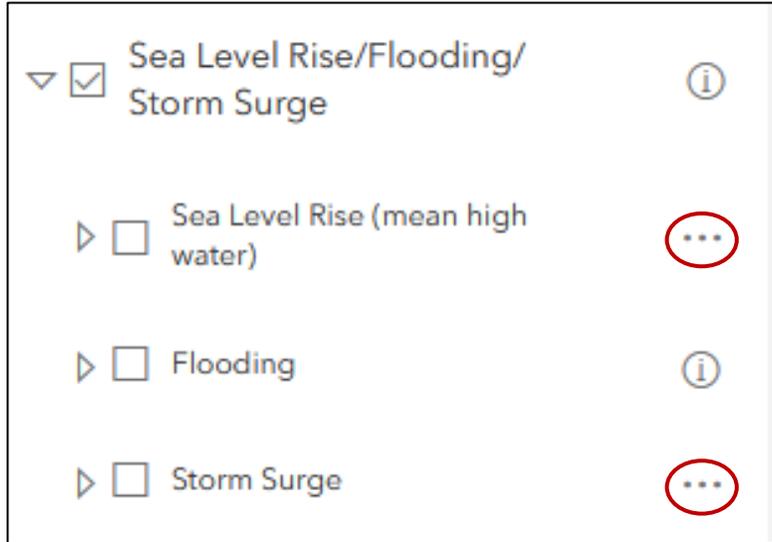
Main Category
Sub-categories

Data Layers
All checked
for map display

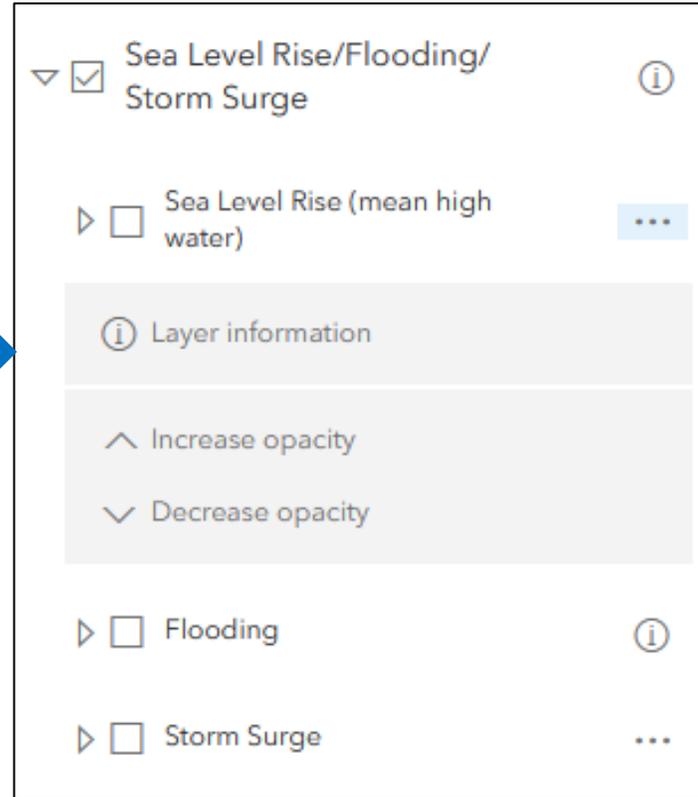
- Natural Resources
 - Tidal Marsh
- Natural and Nature-Based Features (NNBFs) less than 10 feet land elevation
- Shoreline Conditions
- Nontidal NWI Wetlands (all Virginia)
 - Nontidal NWI Wetlands
- Submerged Aquatic Vegetation (SAV)
 - SAV (most recent)
 - SAV Habitat
- SAV Habitat (5 years)



GIS Layer Display Options



Initial GIS layer display options panel. It contains four layers: 'Sea Level Rise/Flooding/Storm Surge' (checked), 'Sea Level Rise (mean high water)', 'Flooding', and 'Storm Surge'. The 'More' icons (three dots) for 'Sea Level Rise (mean high water)' and 'Storm Surge' are circled in red.



Expanded GIS layer display options panel. The 'Sea Level Rise (mean high water)' layer is expanded to show 'Layer information' and opacity controls ('Increase opacity' and 'Decrease opacity'). The 'More' icon for this layer is highlighted in blue.

Less Transparent
More Transparent



Open More...



Close More...

Existing Conditions

Find Parcel Location

Enter address or zoom to locality

Magnifying glass zooms there

Enter or find coordinates

Virginia Parcels scale-dependent layer

Infrastructure

General Infrastructure

 Virginia Parcels 

Zoomed too far out, parcels will not display

 Virginia Parcels 

Zoomed in close enough to display

▼ Shoreline Management

▼ Chesapeake Bay Preservation Act

▼ Resource Protection Area (RPA) 100-foot Buffer

Pervious SFHA Area in 100-ft Buffer

Pervious Area in RPA 100-ft Buffer

100-ft RPA Buffer

Potential 2050 Upland Interface Shoreline: NOAA 2017 intermediate high curve

Potential 2050 Wetlands: NOAA 2017 intermediate high curve

▶ Sea Level 5-year Intervals

Bay Act GIS Layers

Does not represent jurisdictional boundaries and should not be used for legal purposes.

COMING SOON:
NEW DEQ GIS LAYER DEPICTING RPA/RMA/IDA

Sea Level Rise Related Data Layers

Shifting shorelines

Shifting wetlands

2017 Intermediate-High projection in 5-yr time steps

Existing Natural Features

▼ Natural Resources

Tidal Marsh

From VIMS Tidal Marsh Inventory

▼ Wetlands (less than 10 feet land elevation)

Scrub-shrub wetlands

Forested wetlands

Emergent wetlands

Other Wetlands Near Tidal Shorelines

▼ Hydrology

Hydrologic Units (12-digit)

National Hydrography Dataset (NHD)

Flow lines for streams/rivers & artificial paths

Contours

Scale-dependent layer from National Elevation Dataset

▼ Natural Resources

▼ Natural and Nature-Based Features (NNBFs) less than 10 feet land elevation

Tidal Marshes

▼ Wetlands (less than 10 feet land elevation)

Scrub-shrub wetlands

Forested wetlands

Emergent wetlands

▼ Nontidal NWI Wetlands (all Virginia)

Nontidal NWI Wetlands

Existing Wetlands

Tidal Marshes + Wetlands below 10 ft land elevation
+ Nontidal NWI Wetlands



Existing Shoreline Structures & Shoreline Management Model

▼ Shoreline Management

Shoreline Management Model

▼ Existing Structures

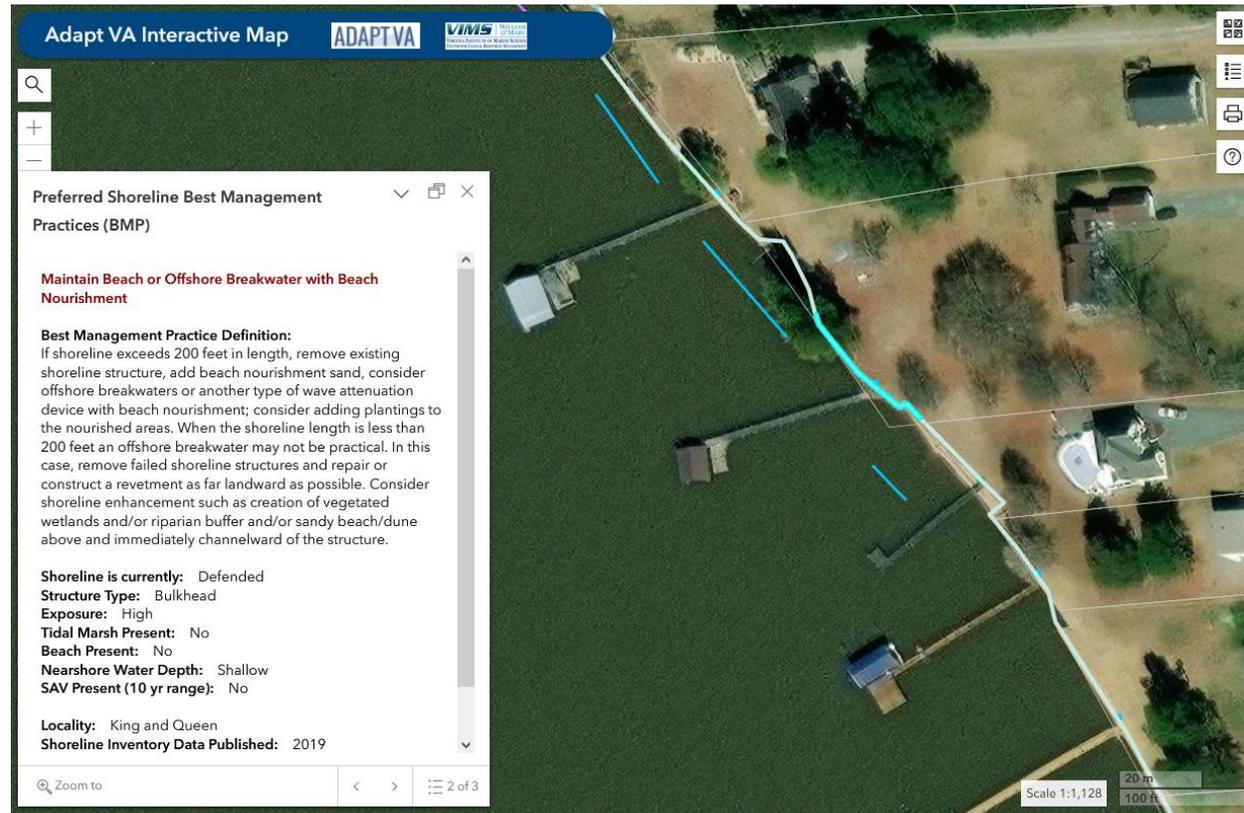
Public/Private Access

Defended Shoreline

Marina

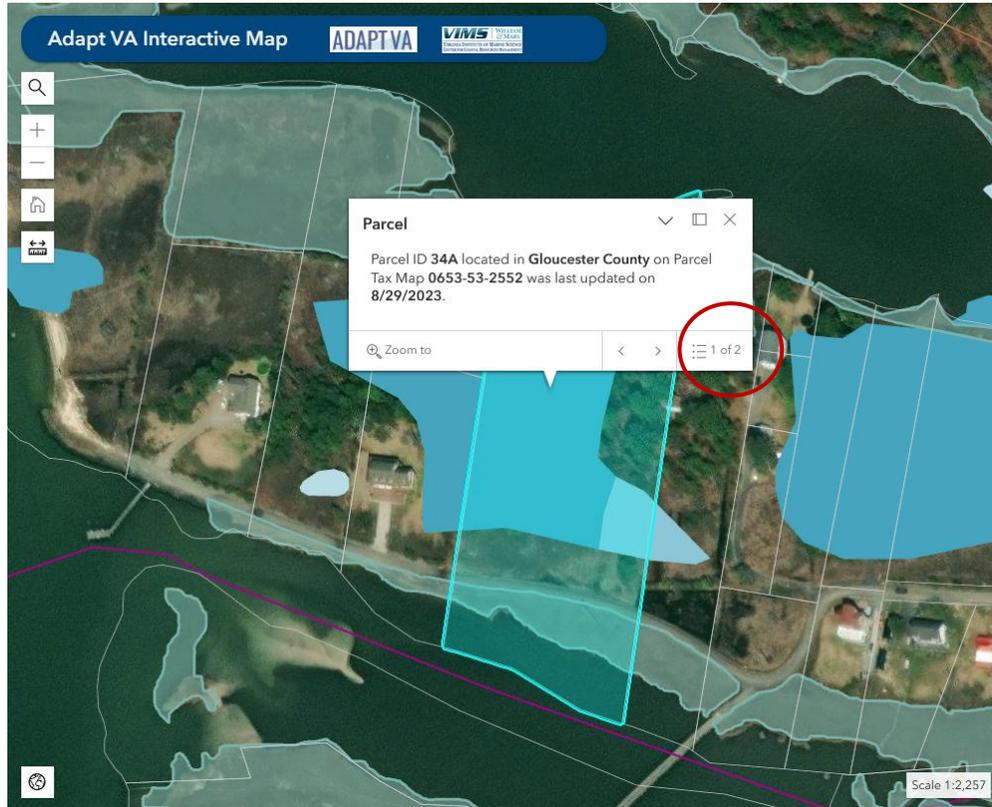
Preferred practices based on available GIS data

VIMS Shoreline Inventory results

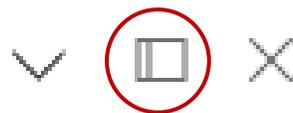
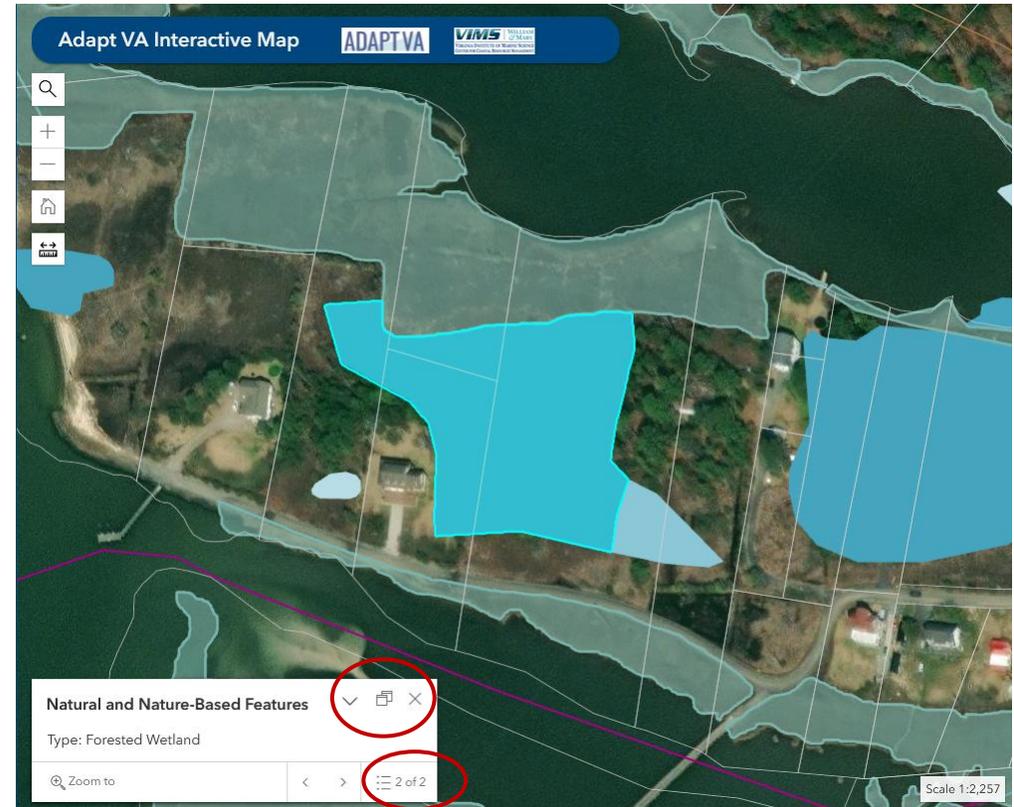


Feature Identification

Parcel Feature 1 of 2



Forested Wetland Feature 2 of 2



Docking symbol puts pop-up window in lower left corner of map

Sea Level Rise – Storm Surge – Flooding Assessments

Sea Level Rise Scenarios

Sea Level Rise/Flooding/
Storm Surge

Sea Level Rise/Flooding/
Storm Surge

Sea Level Rise (mean high
water)

Sea Level Rise Low Scenario

Sea Level Rise Intermediate
Scenario

Sea Level Rise Intermediate-
High Scenario

Sea Level Rise Extreme
Scenario



NOAA 2017 Intermediate High Scenario
Checked on by default when map opens

Sea level rise time slider

Hit Play to watch sea level rise forecast in 10-year increments
Or advance through decades manually

Sea Level Rise/Flooding/
Storm Surge

Sea Level Rise 10-yr Intervals

INTERMEDIATE-HIGH SCENARIO IN 2050

Land areas shaded in blue are expected to be flooded daily during high tides (mean high water)

Darker shades indicate deeper inundation above the land surface

Click on blue area for water depth predictions in feet above land surface at selected point



▼ Shoreline Management

▼ Chesapeake Bay
Preservation Act

▼ Sea Level 5-year Intervals

DEQ Sea Level Rise 2050 -
2054

DEQ Sea Level Rise 2055 -
2059

DEQ Sea Level Rise 2060 -
2064

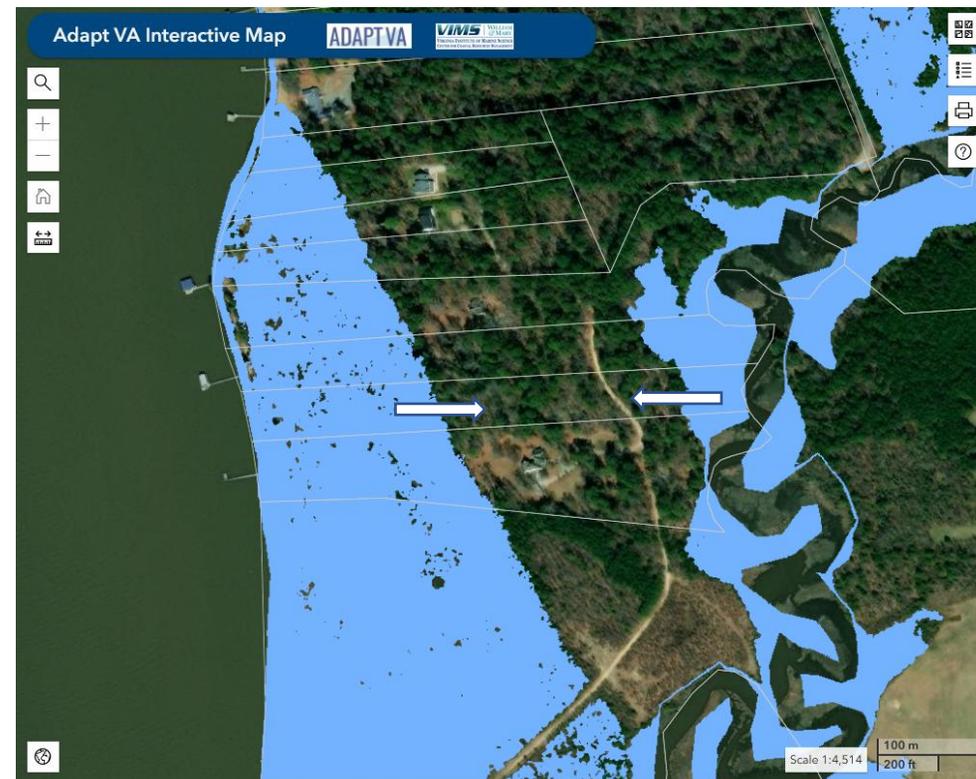
DEQ Sea Level Rise 2065 -
2069

Sea Level Rise 5-yr Intervals

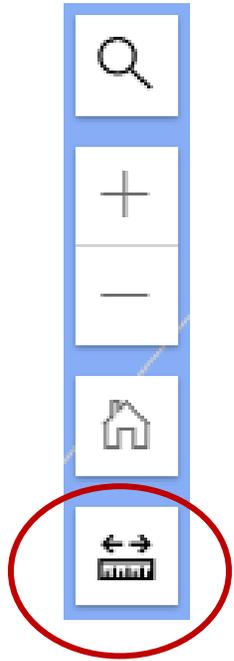
Shorter time increments for 30-yr assessments

No water depths assigned

Zoom out to look for sea level rise impacts entering parcel from
different directions



Measure Tool



Length

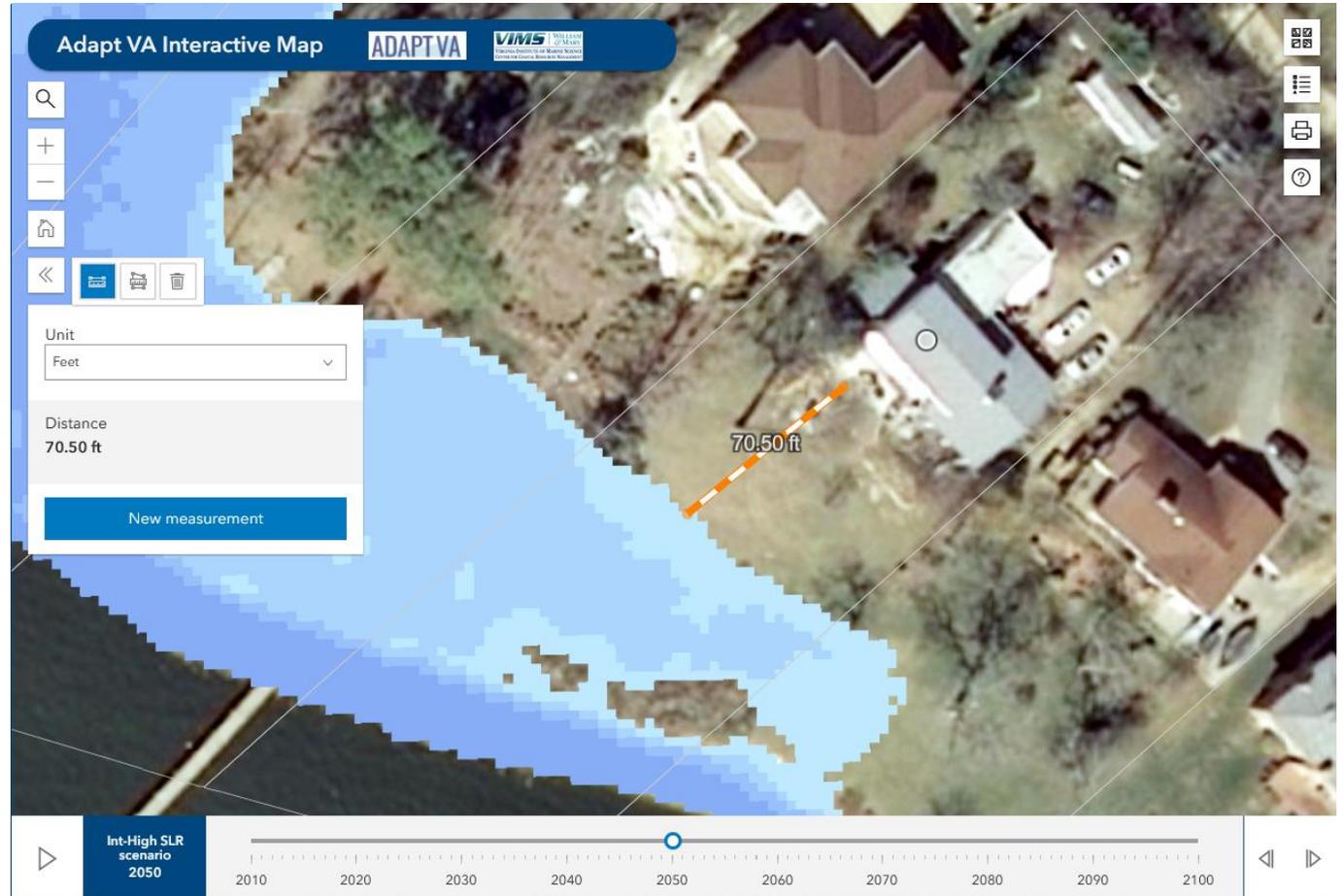


Area



Clear

- Select length then click and release on 1st point
- Pull line to 2nd point and double click
- Default unit is metric. Change units after drawing line
- Clear measurement from display



▼ Shoreline Management

▼ Chesapeake Bay
Preservation Act

Potential 2050 Wetlands:

- NOAA 2017 intermediate
high curve

Forecasted future location

- existing tidal wetlands
- immediately adjacent non-tidal wetlands
- upland areas expected to be flooded daily by 2050

Potential 2050 Wetlands

NOAA 2017 Intermediate High Curve



Storm Surge Assessment

▼ Sea Level Rise/Flooding/
Storm Surge

▼ Storm Surge

Category 4 - Flood Height

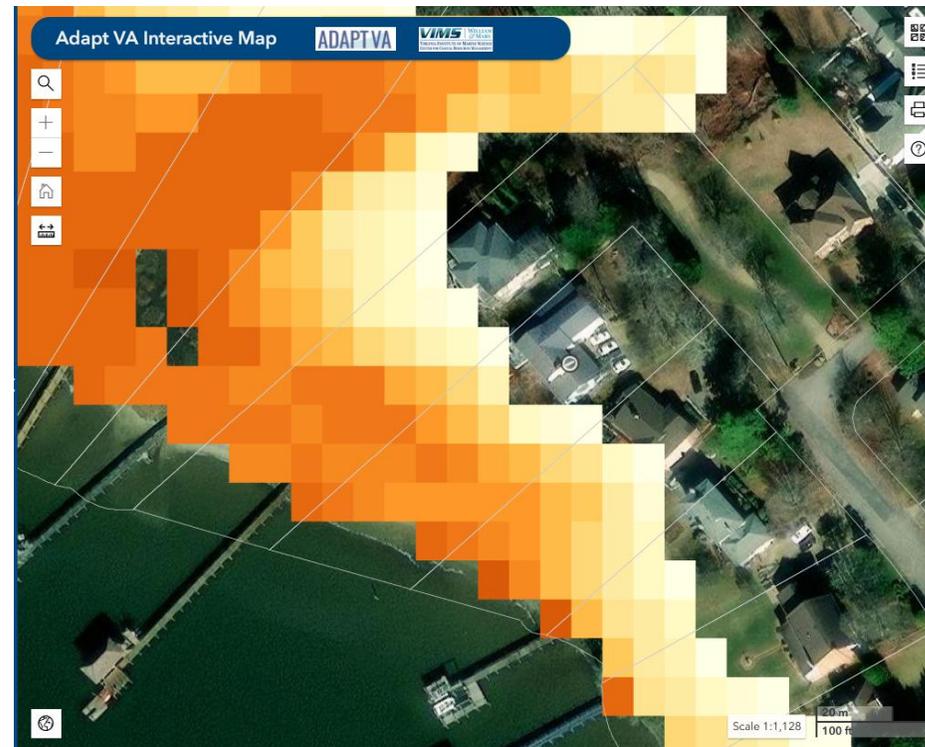
Category 3 - Flood Height

Category 2 - Flood Height

Category 1 - Flood Height

Abnormal rise of water generated by a storm

Sea, Lake, and Overland Surges from Hurricanes SLOSH Model used by National Weather Service to predict expected flood heights during tropical storms

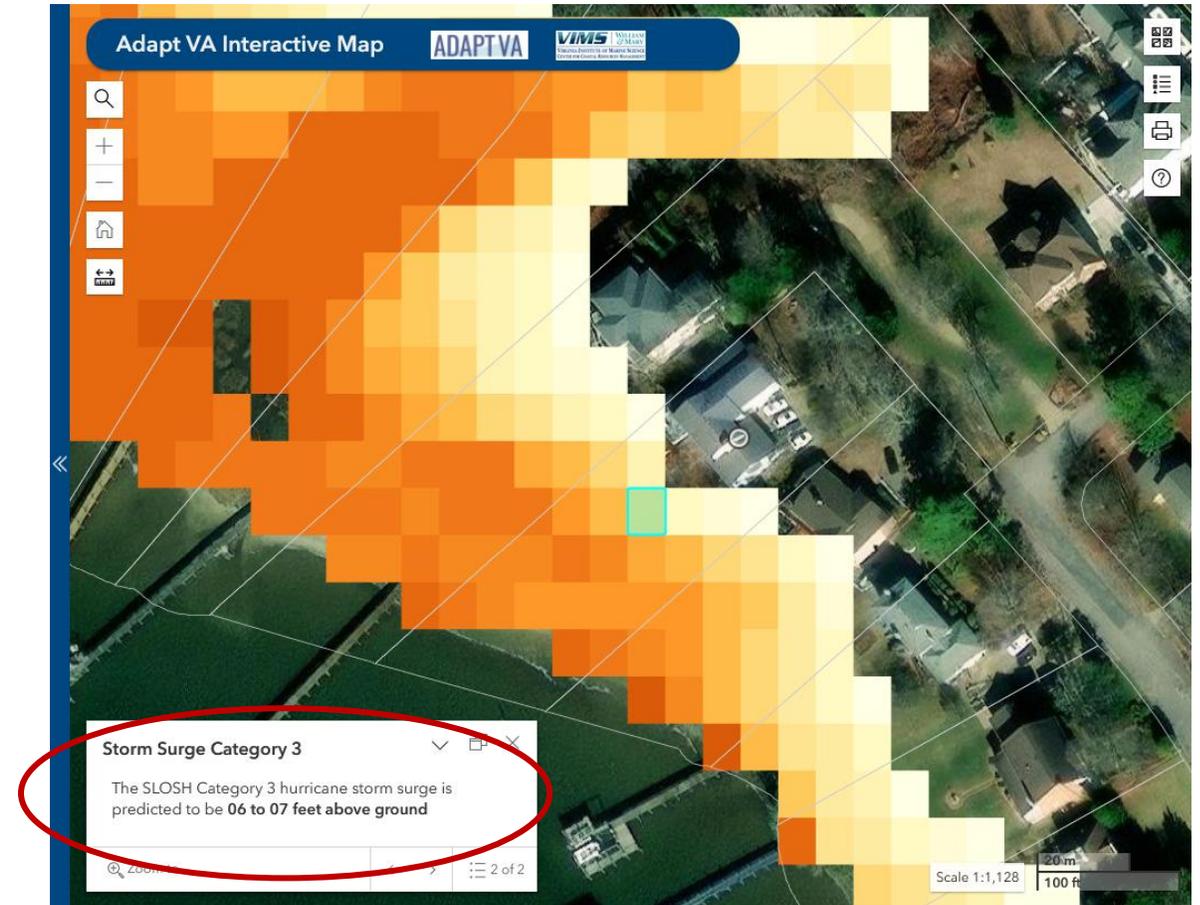


Storm Surge Assessment

- ▼ Sea Level Rise/Flooding/
Storm Surge
 - ▼ Storm Surge
 - Category 4 - Flood Height
 - Category 3 - Flood Height
 - Category 2 - Flood Height
 - Category 1 - Flood Height

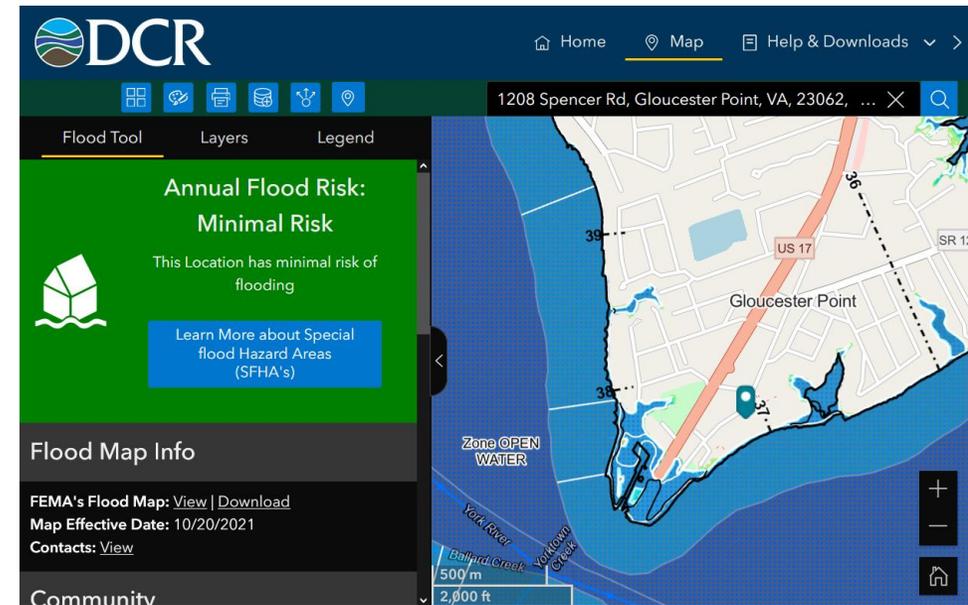
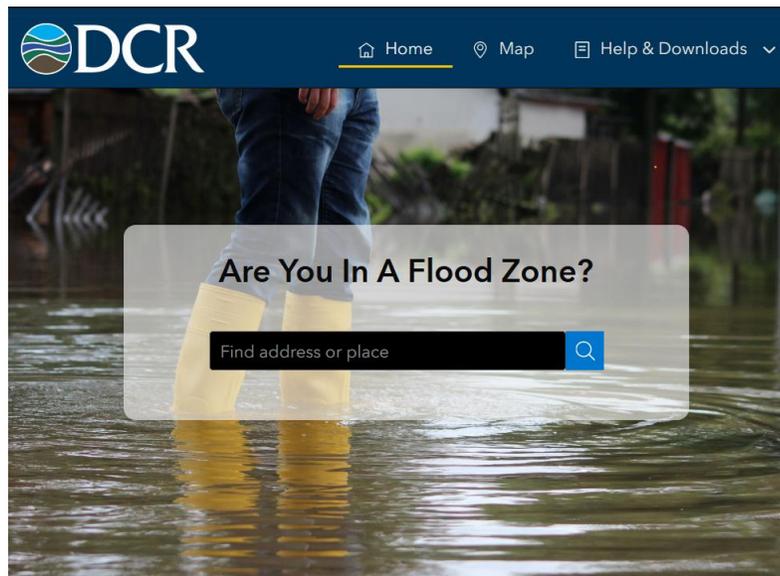
Select storm category based on local experiences

Click on squares to find storm surge depth



<https://www.dcr.virginia.gov/dam-safety-and-floodplains/fpvfris>

Helps communities understand an area's flood risk by quickly finding if a property is within a Special Flood Hazard Area SFHA



Sea Level Rise/Flooding/
Storm Surge

Flooding Assessment

Flooding

Limit of Moderate Wave
Action (LiMWA)

Flood Hazard Zones (FHZ)

Coastal Barrier Resource
System



Limit of Moderate Wave Action
(LiMWA)

LiMWA



Flood Hazard Zones (FHZ)

FHZ

 1% Annual Chance Flood
Hazard

 Regulatory Floodway

 Special Floodway

 Area of Undetermined Flood
Hazard

 0.2% Annual Chance Flood
Hazard

 Future Conditions 1% Annual
Chance Flood Hazard

 Area with Reduced Risk Due to
Levee

 Area with Risk Due to Levee

From FEMA map services
Automatic updates

Protection/Restoration Opportunities Nature-Based Adaptations

▼ Protection/Restoration

Existing Protection Features

▼ Lands for Protection

Coastal NNBFs Ranked:

Benefits to Coastal Buildings

Nature-based features ranked by benefits provided to low-elevation coastal buildings

Adapt VA Interactive Map ADAPTVA VIMS VIRGINIA INSTITUTE OF MARINE SCIENCE CENTER FOR COASTAL RESOURCES MANAGEMENT

Coastal NNBFs Ranked: Benefits to Coastal Buildings

Type of NNBF: **Wooded** [Fact Sheet](#) (opens in a new tab)

This Wooded feature provides the **Most Benefits** to buildings and communities, including:

- **High rank** for the natural capacity of NNBF to mitigate coastal flooding
- **Low rank** for the number of buildings on land less than 10 feet in elevation that the NNBF benefits (*0 buildings*)
- **Low rank** for the number of critical community facilities on land less than 10 feet in elevation that the NNBF benefits (*0 critical community facilities*)
- **High rank** for the NNBF to be used for incentive programs (2 out of 2: The NNBF has water quality benefit of nitrogen, phosphorus, and/or sediment reduction, and all or a portion of the NNBF has potential to earn credit in the CRS Program.)

Protection/Restoration

Restoration Opportunities

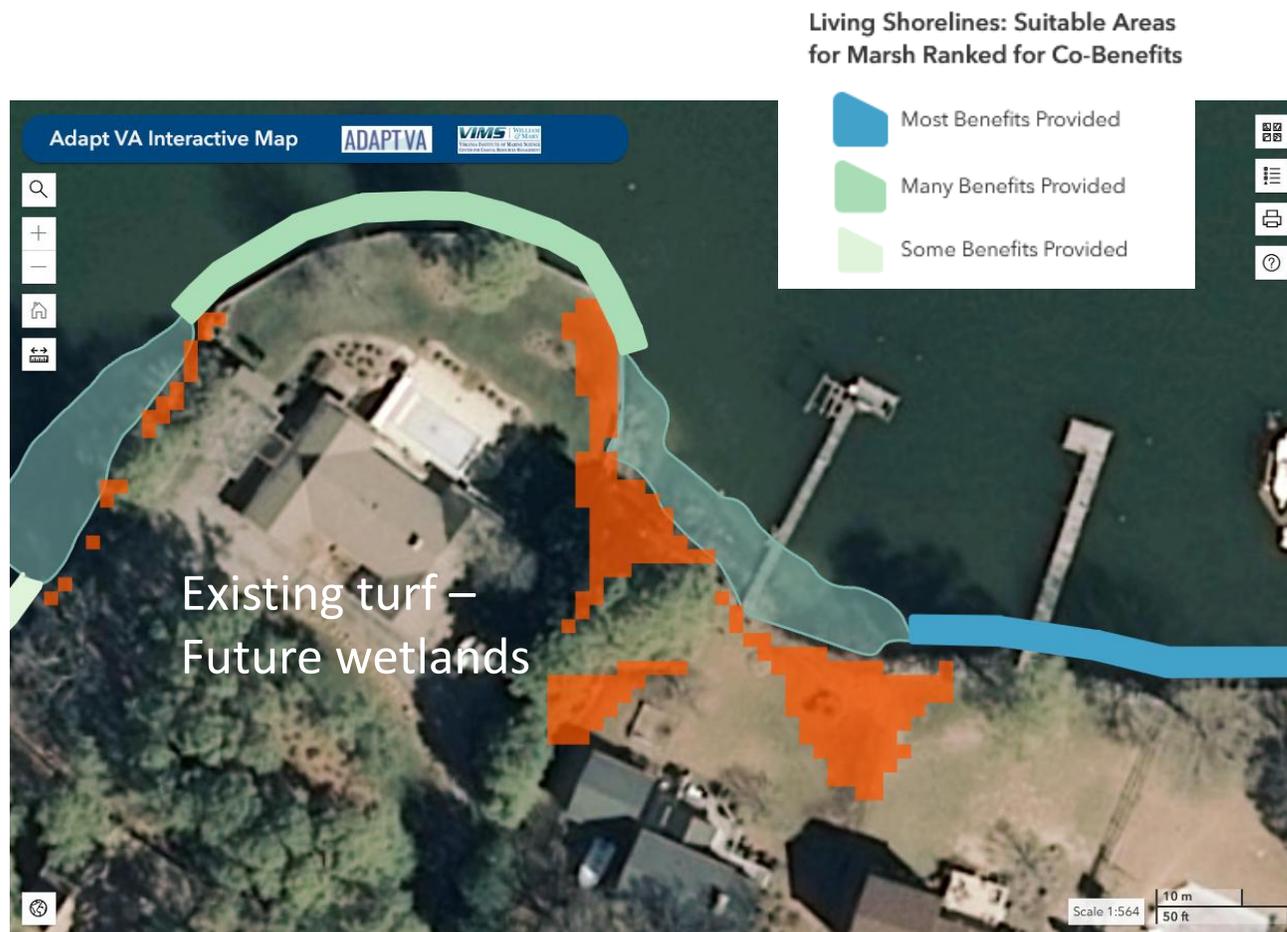
Target Areas: Create/
Restore shoreline NNBFs
to benefit coastal
buildings

Living Shorelines:
Suitable Areas for Marsh
Ranked for Co-Benefits

Protected Lands Suitable
for Living Shoreline

Opportunity for Wetlands
Migration: Existing Turf
Grass in Potential 2050
Wetland Areas

Adaptation Measures



Target tree plantings away from potential
wetland migration areas

Interactive Map User Guides



VIDEO: AdaptVA forecasting tools explained

- **AdaptVA** - Website
- **Rivers & Coast** - Users Guide
- **AdaptVA Interactive Map**
 - **User Guide**
 - **Map Symbols Quick Guide**
 - **GIS Layer List Quick Guide**

https://www.vims.edu/ccrm/research/climate_change/adaptation/adaptva/

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